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Formerly Çağdaş Tıp Dergisi

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The Owner and Publishing Manager on behalf of
the Journal of Contemporary Medicine

Prof. Dr. Resul YILMAZ

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INSTRUCTIONS FOR AUTHORS

AIM AND SCOPE

The Journal will not consider manuscripts any that have been published elsewhere, or manuscripts that are being considered for another publication, or are in press. Studies previously announced in the congresses are accepted if this condition is stated. If any part of a manuscript by the same author(s) contains any information that was previously published, a reprint or a copy of the previous article should be submitted to the Editorial Office with an explanation by the authors

A technical review is performed to confirm that all of the required documentation has been submitted and to conduct a preliminary evaluation of the manuscript and supplementary files to assess suitability for the Journal. The manuscript will be returned to the Author in the event of any deficiency.

Journal of Contemporary Medicine operates a blind review process. Contributions deemed suitable are then typically sent to a minimum of two independent expert reviewers in the field of study to assess the scientific quality of the paper. (You can see at the picture below).

The Editor/Editors are responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. If necessary, author(s) may be invited to submit a revised version of the manuscript. This invitation does not imply that the manuscript will be accepted for publication. Revised manuscripts must be sent to the Editorial Office within 4 (four) weeks, otherwise they will be considered as a new application. The corresponding author will be notified of the decision to accept or reject the manuscript for publication.

Statements and suggestions published in manuscripts are the authors' responsibility and do not reflect the opinions of the Editor, Associate Editors and the Editorial Board members.

The manuscript will not be returned to the authors whether the article is accepted or not. Copyright fee is not paid for the articles published in the journal. A copy of the journal will be sent to the corresponding author.

Language of the Journal

The official languages of the Journal are Turkish and English. The manuscripts that are written in Turkish have abstracts in English, which makes the abstracts available to a broader audience.

Authorship Criteria

After accepted for publication, all the authors will be asked to sign "CoyrightTransfer Form" which states the following: " This work is not under active consideration for publication, has not been accepted for publication, nor has it been published, in full or in part (except in abstract form). I confirm that the study has been approved by the ethics committee. " All authors should agree to the conditions outlined in the form.

Journal of Contemporary Medicine has agreed to use the standards of the International Committee of Medical Journal Editors. The author(s) should meet the criteria for authorship according to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. It is available at www.icmje.org.

Ethical Responsibility

The protocol of clinical research articles must be approved by the Ethics Committee.

In all studies conducted on humans, the "Material and Method" section was approved by the relevant committee or the Helsinki Declaration of Principles (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/).

It should be stated in the text that all persons included in the study signed the am Informed Consent Form ".

The articles submitted to the Journal of Contemporary Medicine will be deemed to have been conducted in accordance with the Helsinki Declaration of Principles, and have received ethical and legal permissions and will not be held responsible.

If the "Animal" item was used in the study, the authors stated that in the Material and Method section of the article, they protect the animal rights in their studies in accordance with the principles of Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) and that they have received approval from the ethics committees of their institutions. must specify.

In case reports, Informed Consent a should be obtained from patients regardless of the identity of the patient.

If the article includes the institution (directly or indirectly) providing financial support for the commercial connection or work, the authors; the commercial product used, the drug, the company has no commercial relationship with, or if there is any relationship (consultant, other agreements, etc.), the editor must inform the presentation page.

If Ethics Committee Approval is required in the article; the received document should be sent with the article.

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The manuscript should be submitted to the Academic Plagiarism Prevention Program by the authors.

It is the authors' responsibility to ensure that the article complies with the ethical rules.

Policy of Screening for Plagiarism

The manuscripts are scanned by the Journal using the iThenticate program for determination of plagiarism and non-ethical situations. Journal of Contemporary Medicine will immediately reject manuscripts leading to plagiarism.

TYPES OF MANUSCRIPT

Manuscripts should be submitted online via www.jcontempmed.com

Original Articles should not exceed 3000 words and should be arranged under the headings of Abstract (not more than 250 words), Introduction, Materials and Methods, Results, Discussion, Conclusion and References.

Case Reports should not exceed 1000 words and 10 references, and should be arranged as follows: Abstract, Introduction, Case Report, Discussion and References. It may be accompanied by only one figure or table.

Letter to the Editor should not exceed 500 words. Short relevant comments on medical and scientific issues, particularly controversies, having no more than five references and one table or figure are encouraged. Where letters refer to an earlier published paper, authors will be offered right of reply.

Reviews are not accepted unless written on the invitation of the Editorial Board.

PREPARATION OF MANUSCRIPTS

All articles submitted to the Journal must comply with the following instructions:

a) Submissions should be doubled-spaced and typed in Arial 10 points.

b) All pages should be numbered consecutively in the top right-hand corner, beginning with the title page.

c) The title page should not include the names and institutions of the authors.

d) The manuscript should be presented in the following order: Title page, Abstract (English, Turkish), Keywords (English, Turkish), Introduction, Materials and Methods, Results, Discussion, Conclusion, Acknowledgements (if present), References, Figure Legends, Tables (each table, complete with title and foot-notes, on a separate page) and Appendices (if present) presented each on a separate page.

Title

The title should be short, easy to understand and must define the contents of the article.

Abstract

Abstract should be in both English and Turkish and should consist "Aim, Materials and Methods, Results and Conclusion". The purpose of the study, the setting for the study, the subjects, the treatment or intervention, principal outcomes measured, the type of statistical analysis and the outcome of the study should be stated in this section (up to 250 words). Abstract should not include reference. No abstract is required for the letters to the Editor.

Keywords

Not more than five keywords in order of importance for indexing purposes should be supplied below the abstract and should be selected from Index Medicus Medical Subject Headings (MeSH), available at www.nlm.nih.gov/meshhome.html.

Text

Authors should use subheadings to divide sections regarding the type of the manuscript as described above. Statistical methods used should be specified in the Materials and Methods section.

References

In the text, references should be cited using Arabic numerals in parenthesis in the order in which they appear. If cited only in tables or figure legends, they should be numbered according to the first identification of the table or figure in the text. Names of the journals should be abbreviated in the style used in Index Medicus. The names of all authors should be cited when there are six or fewer; when seven or more, the first three should be followed by et al. The issue and volume numbers of the referenced journal should be added.

References should be listed in the following form:

Journal article

Teke Z, Kabay B, Aytekin FO et al. Pyrrolidine dithiocarbamate prevents 60 minutes of warm mesenteric ischemia/reperfusion injury in rats. Am J Surg 2007;194(6):255-62.

Supplement

Solca M. Acute pain management: Unmet needs and new advances in pain management. Eur J Anaesthesiol 2002; 19(Suppl 25): 3-10.

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Online article not yet published in an issue

Butterly SJ, Pillans P, Horn B, Miles R, Sturtevant J. Off-label use of rituximab in a tertiary Queensland hospital. Intern Med J doi: 10.1111/j.1445-5994.2009.01988.x

Book

Sample1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Sample 2: Sümbüloğlu K, Akdağ B. Regresyon Yöntemleri ve Korelasyon Analizi. Hatiboğlu Yayınevi: Ankara; 2007.

Chapter in a book

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

Journal article on the Internet

Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

Website

Cancer-pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources [updated 16 May 2002; cited 9 Jul 2002]. Available from: www.cancer-pain.org

An organization as an author

The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Acknowledgements

The source of financial grants and the contribution of colleagues or institutions should be acknowledged.

Tables

Tables should be complementary, but not duplicate information contained in the text. Tables should be numbered consecutively in Arabic numbers, with a descriptive, self-explanatory title above the table. All abbreviations should be explained in a footnote. Footnotes should be designated by symbols in the following order: *,†, ‡, §, ¶.

Figures

All illustrations (including line drawings and photographs) are classified as figures. Figures must be added to the system as separate .jpg or .gif files (approximately 500x400 pixels, 8 cm in width and at least 300 dpi resolution). Figures should be numbered consecutively in Arabic numbers and should be cited in parenthesis in consecutive order in the text.

Figure Legends

Legends should be self-explanatory and positioned on a separate page. The legend should incorporate definitions of any symbols used and all abbreviations and units of measurements should be explained. A letter should be provided stating copyright authorization if figures have been reproduced from another source.

Measurements and Abbreviations

All measurements must be given in metric system (Système International d'Unités, SI). Example: mg/kg, µg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, etc. Statistics and measurements should always be given in numerals, except where the number begins a sentence. When a number does not refer to a unit of measurement, it is spelt out, except where the number is greater than nine.

Abbreviations that are used should be defined in parenthesis where the full word is first mentioned. Some common abbreviations can be used, such as iv, im, po, and sc.

Drugs should be referred to by their generic names, rather than brand names.

Editorial Correspondence

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Checklist for Manuscripts

Review guide for authors and instructions for submitting manuscripts through the electronic submission, website at

http://www.jcontempmed.com

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YAZARLARA BİLGİ

AMAÇ ve KAPSAM

Çağdaş Tıp Dergisi, üç ayda bir yayımlanır ve dört sayı ile bir cilt tamamlanır. Dergi; tüm tıp alanlarıyla ilgili nitelikli klinik ve deneysel araştırmaları, olgu sunumlarını ve editöre mektupları yayımlar.

Çağdaş Tıp Dergisi, bilimsel yayınlara açık erişim sağlar. Dergi basımından hemen sonra, makalelerin tam metinlerine ücretsiz ulaşılabilir.

Dergide yayımlanmak üzere gönderilen yazıların daha önce başka bir yerde yayımlanmamış veya yayımlanmak üzere gönderilmemiş olması gerekir. Daha önce kongrelerde sunulmuş çalışmalar, bu durum belirtilmek koşuluyla kabul edilir. Makale, yazar(lar) ın daha önce yayımlanmış bir yazısındaki konuların bir kısmını içeriyorsa bu durum belirtilmeli ve yeni yazı ile birlikte önceki makalenin bir kopyası da Yayın Bürosu'na gönderilmelidir.

Gerekli tüm belgelerin sunulduğunu teyit etmek ve dergiye uygunluğunu değerlendirmek için makale ve ek dosyaların ön değerlendirmesini yapmak üzere teknik bir inceleme yapılır. Herhangi bir eksiklik olması halinde makale yazara iade edilecektir. Journal of Contemporary Medicine kör bir inceleme süreci yürütmektedir. Uygun görülen yazılar daha sonra makalenin bilimsel kalitesini değerlendirmek için çalışma alanında en az iki bağımsız uzmana gönderilir. Editör / Editörler makalelerin kabulü veya reddi ile ilgili nihai karardan sorumludur. (Aşağıdaki akış şemasında görüldüğü gibi).

Editörün kararı kesindir. Gerekli olduğu durumlarda, yazar(lar) dan düzeltme istenebilir. Yazardan düzeltme istenmesi, yazının yayımlanacağı anlamına gelmez. Bu düzeltmelerin en geç 21 gün içinde tamamlanıp dergiye gönderilmesi gereklidir. Aksi halde yeni başvuru olarak değerlendirilir. Sorumlu yazara yazının kabul veya reddedildiğine dair bilgi verilir.

Dergide yayımlanan yazıların etik, bilimsel ve hukuki sorumluluğu yazar(lar)a ait olup Editör, Editör Yardımcısı ve Yayın Kurulu'nun görüşlerini yansıtmaz.

Dergide yayımlanması kabul edilse de edilmese de, yazı materyali yazarlara geri verilmez. Dergide yayımlanan yazılar için telif hakkı ödenmez. Bir adet dergi, sorumlu yazara gönderilir.

Derginin Yazı Dili

Derginin yazı dili Türkçe ve İngilizcedir. Dili Türkçe olan yazılar, İngilizce özetleri ile yer alır. Yazının hazırlanması sırasında, Türkçe kelimeler için Türk Dil Kurumundan (www.tdk.gov.tr), teknik terimler için Türk Tıp Terminolojisinden (www.tipterimleri.com) yararlanılabilir.

Yazarlık Kriterleri

Dergide yayınlanması uygun bulunan tüm yazıların araştırma ve yayın etiğine uygun hazırlandığı, varsa sağlanan fonun kaynağının tanımlandığı, başka yerde yayımlanmadığı veya yayımlanmak üzere gönderilmediği, çalışmaya katılan tüm yazarlar tarafından yazının son halinin onaylandığı, yayımlanacak yazı ile ilgili telif haklarının dergiye devredildiği, tüm yazarların imzaları ile "Yayın Hakkı Devir Formu"nda belirtilmesi gerekir.

Çağdaş Tıp Dergisi, Uluslararası Tıp Dergileri Editörleri Kurulu'nun (International Committee of Medical Journal Editors) "Biyomedikal Dergilere Gönderilen Makalelerin Uyması Gereken Standartlar: Biyomedikal Yayınların Yazımı ve Baskıya Hazırlanması (Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication)" standartlarını kullanmayı kabul etmektedir. Bu konudaki bilgiye www.icmje.org adresinden ulaşılabilir.

Etik Sorumluluk

Etik Sorumluluk / Kurallar: Klinik araştırma makalelerinin protokolü Etik Komitesi tarafından onaylanmış olmalıdır.

İnsanlar üzerinde yapılan tüm çalışmalarda "Gereç ve Yöntem" bölümünde çalışmanın ilgili komite tarafından onaylandığı veya çalışmanın Helsinki İlkeler Deklarasyonu'na (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/) uyularak gerçekleştirildiğine dair bir cümle yer almalıdır.

Çalışmaya dahil edilen tüm kişilerin Bilgilendirilmiş Onam Formu'nu imzaladığı metin içinde belirtilmelidir.

Journal of Contemporary Medicine'e gönderilen makalelerdeki çalışmaların Helsinki İlkeler Deklarasyonu'na uygun olarak yapıldığı, kurumsal etik ve yasal izinlerin alındığı varsayılacak ve bu konuda sorumluluk kabul edilmeyecektir.

Çalışmada "Hayvan" öğesi kullanılmış ise yazarlar, makalenin Gereç ve Yöntem bölümünde hayvan haklarını Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) prensipleri doğrultusunda koruduklarını, çalışmalarında ve kurumlarının etik kurullarından onay aldıklarını belirtmek zorundadır.

Olgu sunumlarında hastanın kimliğinin ortaya çıkmasına bakılmaksızın hastalardan "Bilgilendirilmiş rıza" alınmalıdır.

Makalede ticari bağlantı veya çalışma için maddi destek veren kurum (doğrudan veya dolaylı) mevcut ise yazarlar; kullanılan ticari ürün, ilaç, firma ile ticari hiçbir ilişkisinin olmadığını veya varsa nasıl bir ilişkisinin olduğunu (konsültan, diğer anlaşmalar vs.), editöre sunum sayfasında bildirmek zorundadır.

Makalede Etik Kurul Onayı alınması gerekli ise; alınan belge makale ile birlikte gönderilmelidir.

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Makale yazarlar tarafından akademik intihal önleme programından geçirilmelidir.

Makalenin etik kurallara uygunluğu yazarların sorumluluğundadır.

İntihal Taraması Politikası

Makaleler, intihal ve etik olmayan durumların belirlenmesi için iThenticate programı kullanılarak Journal tarafından taranır. Journal of Contemporary Medicine intihallere yol açan makaleleri derhal reddedecektir.

YAZI TÜRLERİ

Yazılar, elektronik ortamda www.cagdastipdergisi.com adresine gönderilir.

Orijinal makaleler, 3000 sözcük sayısını aşmamalı, "Öz (250 sözcükten fazla olmamalı), Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Kaynaklar" bölümlerinden oluşmalıdır.

Olgu Sunumu, "Öz, Giriş, Olgu Sunumu, Tartışma, Kaynaklar" şeklinde düzenlenmelidir. En fazla 1000 sözcük ve 10 kaynak ile sınırlıdır. Sadece bir tablo veya şekil ile desteklenebilir.

Editöre Mektup, yayımlanan metinlerle veya mesleki konularla ilgili olarak 500 sözcüğü aşmayan ve beş kaynak ile bir tablo veya şekil içerecek şekilde yazılabilir. Ayrıca daha önce dergide yayınlanmış metinlerle ilişkili mektuplara cevap hakkı verilir.

Yayın Kurulu'nun daveti üzerine yazılanlar dışında derleme kabul edilmez.

MAKALENİN HAZIRLANMASI

Dergide yayınlanması istenilen yazı için aşağıdaki kurallara uyulmalıdır.

a) Yazı; iki satır aralıklı olarak, Arial 10 punto ile yazılmalıdır.

b) Sayfalar başlık sayfasından başlamak üzere, sağ üst köşesinde numaralandırılmalıdır.

c) Online makale sistemine yüklenen word dosyasının başlık sayfasında (makalenin adını içeren başlık sayfası), yazarlara ait isim ve kurum bilgileri yer almamalıdır.

d) Makale, şu bölümleri içermelidir: Her biri ayrı sayfada yazılmak üzere; Türkçe ve İngilizce Başlık Sayfası, Öz, Abstract, Anahtar Sözcükler, Keywords, Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Açıklamalar (varsa), Kaynaklar, Şekil Alt Yazıları, Tablolar (başlıkları ve açıklamalarıyla beraber), Ekler (varsa).

Yazının Başlığı

Kısa, kolay anlaşılır ve yazının içeriğini tanımlar özellikte olmalıdır.

Özetler

Türkçe (Öz) ve İngilizce (Abstract) olarak yazılmalı, Amaç, Gereç ve Yöntem, Bulgular ve Sonuç (Aim, Materials and Methods, Results, Conclusion) olmak üzere dört bölümden oluşmalı, en fazla 250 sözcük içermelidir. Araştırmanın amacı, yapılan işlemler, gözlemsel ve analitik yöntemler, temel bulgular ve ana sonuçlar belirtilmelidir. Özette kaynak kullanılmamalıdır. Editöre mektup için özet gerekmemektedir.

Anahtar Sözcükler

Türkçe Öz ve İngilizce Abstract bölümünün sonunda, Anahtar Sözcükler ve Keywords başlığı altında, bilimsel yazının ana başlıklarını yakalayan, Index Medicus Medical Subject Headings (MeSH)'e uygun olarak yazılmış en fazla beş anahtar sözcük olmalıdır. Anahtar sözcüklerin, Türkiye Bilim Terimleri'nden (www.bilimterimleri.com) seçilmesine özen gösterilmelidir.

Metin

Yazı metni, yazının türüne göre yukarıda tanımlanan bölümlerden oluşmalıdır. Uygulanan istatistiksel yöntem, Gereç ve Yöntem bölümünde belirtilmelidir.

Kaynaklar

Çağdaş Tıp Dergisi, Türkçe kaynaklardan yararlanmaya özel önem verdiğini belirtir ve yazarların bu konuda duyarlı olmasını bekler.

Kaynaklar metinde yer aldıkları sırayla, cümle içinde atıfta bulunulan ad veya özelliği belirten kelimenin hemen bittiği yerde ya da cümle bitiminde noktadan önce parantez içinde Arabik rakamlarla numaralandırılmalıdır. Metinde, tablolarda ve şekil alt yazılarında kaynaklar, parantez içinde Arabik numaralarla nitelendirilir. Sadece tablo veya şekil alt yazılarında kullanılan kaynaklar, tablo ya da şeklin metindeki ilk yer aldığı sıraya uygun olarak numaralandırılmalıdır. Dergi başlıkları, Index Medicus'ta kullanılan tarza uygun olarak kısaltılmalıdır. Kısaltılmış yazar ve dergi adlarından sonra nokta olmamalıdır. Yazar sayısı altı veya daha az olan kaynaklarda tüm yazarların adı yazılmalı, yedi veya daha fazla olan kaynaklarda ise üç yazar adından sonra et al. veya ve ark. yazılmalıdır. Kaynak gösterilen derginin sayı ve cilt numarası mutlaka yazılmalıdır.

Kaynaklar, yazının alındığı dilde ve aşağıdaki örneklerde görüldüğü şekilde düzenlenmelidir.

Dergilerdeki yazılar

Teke Z, Kabay B, Aytekin FO et al. Pyrrolidine dithiocarbamate prevents 60 minutes of warm mesenteric ischemia/reperfusion injury in rats. Am J Surg 2007;194(6):255-62.

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Ek sayı (Supplement)
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Henüz yayınlanmamış online makale
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Kitap
Örnek 1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.
Örnek 2: Sümbüloğlu K, Akdağ B. Regresyon Yöntemleri ve Korelasyon Analizi. Hatiboğlu Yayınevi: Ankara; 2007.

Kitap bölümü
Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

İnternet makalesi
Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

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Yazar olarak bir kuruluş
The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Açıklamalar
Varsa finansal kaynaklar, katkı sağlayan kurum, kuruluş ve kişiler bu bölümde belirtilmelidir.

Tablolar
Tablolar metni tamamlayıcı olmalı, metin içerisinde tekrarlanan bilgiler içermemelidir. Metinde yer alma sıralarına göre Arabik sayılarla numaralandırılıp tablonun üstüne kısa ve açıklayıcı bir başlık yazılmalıdır. Tabloda yer alan kısaltmalar, tablonun hemen altında açıklanmalıdır. Dipnotlarda sırasıyla şu semboller kullanılabilir: *, †, ‡, §, ¶.

Şekiller
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Şekil Alt Yazıları
Şekil alt yazıları, her biri ayrı bir sayfadan başlayarak, şekillere karşılık gelen Arabik rakamlarla çift aralıklı olarak yazılmalıdır. Şeklin belirli bölümlerini işaret eden sembol, ok veya harfler kullanıldığında bunlar alt yazıda açıklanmalıdır. Başka yerde yayınlanmış olan şekiller kullanıldığında, yazarın bu konuda izin almış olması ve bunu belgelemesi gerekir.

Ölçümler ve Kısaltmalar
Tüm ölçümler metrik sisteme (Uluslararası Birimler Sistemi, SI) göre yazılmalıdır. Örnek: mg/kg, µg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, vb. Ölçümler ve istatistiksel veriler, cümle başında olmadıkları sürece rakamla belirtilmelidir. Herhangi bir birimi ifade etmeyen ve dokuzdan küçük sayılar yazı ile yazılmalıdır.

Metin içindeki kısaltmalar, ilk kullanıldıkları yerde parantez içinde açıklanmalıdır. Bazı sık kullanılan kısaltmalar; iv, im, po ve sc şeklinde yazılabilir.

İlaçların yazımında jenerik isimleri kullanılmalıdır.

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Evaluation of the Prevalence and Distribution of Congenital Heart Diseases Who Presented to a Pediatric Cardiology Outpatient Clinic

Çocuk Kardiyoloji Kliniğine Başvuran Çocuklarda Konjenital Kalp Hastalığı Sıklığının ve Dağılımının Değerlendirilmesi

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Öz

Amaç: Çocuk kardiyoloji kliniğine başvuran hastalarda konjenital kalp hastalığı sıklığının ve dağılımının belirlenmesi amaçlandı.

Gereç ve Yöntem: Çocuk Kardiyoloji kliniğinde Ocak 2013-Aralık 2015 tarihlerinde 3 yıllık periyodda transtorasik ekokardiyografi ile değerlendirilen çocukların dosya kayıtları geriye dönük olarak incelendi. Konjenital kalp hastalıkları soldan sağa şantlı hastalıklar, obstrüktif hastalıklar, siyanotik hastalıklar, kardiyak malpozisyon, vasküler ring ve sınıflandırılmayan hastalıklar olmak üzere gruplandırıldı. Hastalıkların sıklığı, cinsiyet ve yaş grupları arası dağılımı incelendi.

Bulgular: Çalışmaya 12.342 birey dahil edildi. Çalışma bireylerinin 6996'si erkek (%56,7), 5346'si kız (%43,3) idi. Bireylerin yaş aralığı 1 gün - 18 yıl, ortanca yaş 7 yıl (IQR:10.5) idi. Konjenital kalp hastalığı tüm bireylerin %27,7'sinde tespit edildi. Konjenital kalp hastalığı erkeklerde ve 0-1 ay yaş grubunda en sık saptandı. Konjenital kalp hastalıkları sırasıyla %87 soldan sağa şantlı hastalıklar, %21,2 sınıflandırılmayan hastalıklar, %7 obstrüktif hastalıklar, %1,6 siyanotik hastalıklar, %0,8 vasküler ring ve %0,7 kardiyak malpozisyon olarak tespit edildi.

Sonuç: Çocuk kardiyoloji kliniğine başvuran bütün çocuklara ekokardiyografi yapılmasını öneriyoruz çünkü bu çocukların dörtte birinde konjenital kalp hastalığı tespit edildi. Yaşamın ilk bir ayında çocuk kardiyoloji bölümüne yönlendirilen yenidoğanlara ekokardiyografik inceleme yapılması ile özellikle soldan sağa şantlı ve siyanotik konjenital kalp hastalıklarının tespit edilmesi ve böylece bunların uygun zamanda tedavilerinin planlanması sağlanacaktır.

Anahtar Sözcükler: Çocukluk çağı, konjenital kalp hastalığı, prevalans

Abstract

Aim: The present study aimed to determine the prevalence and distribution of congenital heart disease in patients who presented to the pediatric cardiology clinic.

Material and Method: File records of the children who underwent transthoracic echocardiography within the 3-year period between January 2013 and December 2015 at the pediatric cardiology clinic were retrospectively evaluated. Congenital heart diseases were grouped as follows: diseases with a left-to-right shunt, obstructive diseases, cyanotic diseases, cardiac malposition, vascular ring and unclassified diseases. Prevalence of the diseases, distribution among gender and age groups were investigated.

Results: This study included 12,342 subjects; 6996 (56.7%) subjects were male and 5346 (43.3%) subjects were female. The subjects were aged between 1 day and 18 years, and the median age was 7 years (IQR:10.5); 27.7% of the subjects were determined to have congenital heart disease. The prevalence of congenital heart disease was higher in males and in the 0–1 month age group. Of the subjects with congenital heart disease, 87% had a disease with a left-to-right shunt, 21.2% had an unclassified disease, 7% had obstructive disease, 1.6% had cyanotic disease, 0.8% had a vascular ring and 0.7% had cardiac malposition.

Conclusion: We recommend performing echocardiography in all children who presented to the pediatric cardiology clinic because one-fourth of these children have congenital heart disease. Conducting echocardiographic examination on new-borns who are referred to the pediatric cardiology department within the first month of life would enable detecting, particularly the diseases with a left-to-right shunt and cyanotic congenital heart diseases, and ensure timely treatment planning.

Keywords: Childhood, congenital heart diseases, prevalence

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INTRODUCTION

The prevalence of congenital heart disease (CHD) is 8 per 1000 live births. The disease is the most common cause of prenatal mortality.[1,2] Therefore, early diagnosis and timely treatment are vital for CHD. The prevalence of CHD varies by age, continents and countries. According to a recent study conducted in Canada, the recent prevalence of CHD was higher than the previous years (13.1 per 1000 live births).[3] A limited number of studies exist on the distribution of CHD in Turkey.[4-6] Our study aimed to investigate the prevalence and distribution of CHD and comorbidities in children who underwent transthoracic echocardiography between January 2013 and December 2015 at the pediatric cardiology clinic.

MATERIAL AND METHOD

Subjects

Subjects included in this retrospective study consisted of individuals between the ages 1 day-18 years, which presented to the pediatric cardiology outpatient clinic of our hospital within the 3-year period between January 2013 and December 2015 and underwent transthoracic echocardiography upon their first admission. In addition to outpatients; patients consulted by newborn intensive care unit were included in the study. Patients consulted from other departments and patients with missing data were excluded from the study. In addition, patients older than 18 years and premature neonates who had patent ductus arteriosus (PDA) were excluded from the study.

Approval for the study was obtained from the Ethics Committee of Necmettin Erbakan University Meram Faculty of Medicine with decision no. 2015/224.

Patient demographics and diagnoses according to the transthoracic echocardiograms at the time when patients first presented were obtained from patient records. Patients divided into 4 groups according to their ages (0-1 month, 1 month-2 years, 2-6 years and 6-18 years).

Patients were classified according to their diseases as follows: diseases with a left-to-right shunt, obstructive lesions, cyanotic heart defects, vascular rings, cardiac malposition and unclassified diseases.[7] Ventricular septal defects (VSD) classified as perimembranous (inlet, outlet, trabecular), muscular and doubly commited.[8]

Echocardiographic Examination

All transthoracic echocardiographic examinations were conducted by a single pediatric cardiologist. All subjects included in the study underwent two-dimensional, M-mode, colour and pulsed-wave Doppler echocardiography. ProSound Alpha 7 Aloka (Hitachi-Aloka Medical, Tokyo, Japan) was used for echocardiography.

Statistical Analysis

Statistical analysis was performed using Statistical Package for the Social Sciences software (version 18). Descriptive statistical methods (percentage calculations, median, mean, standard deviation) were used when evaluating the study data. Visual and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk's tests) were used to determine if the variables showed normal distribution. Descriptive analyzes are expressed as mean ± SD for variables showing normal distribution and as median and interquartile range (IQR) for those lacking normal distribution. In comparisons between groups; Chi-square test was used for categorical variables. Situations where the p-value was below 0.05 were evaluated as statistically significant results.

RESULTS

A total of 12342 subjects were included in the study, of which 6996 subjects (56.7%) were male and 5346 subjects (43.3%) were female. The patients were aged between 1 day and 18 years; the the median age was 7 (IQR:10.5) years.

Of all the subjects, 54.9% (n=6774) had normal echocardiographic findings, whereas 45.1% (n=5568) had abnormal echocardiographic findings. Of the subjects with abnormal echocardiographic findings, 3418 were included in the CHD classification. 632 patients classified in CHD had two or more combined defects and they included in different subgroups for each defect. Other 2150 subjects had different diagnosis that were not evaluated in CHD such as mitral valve prolapse, patent foramen ovale (PFO) or bicuspid aortic valve. Diagnosis and gender distributions of the subjects and comprasions of gender were presented in **Table 1**.

Table 1. Diagnosis distributions and gender comparisons of the subjects

	n	Prevalence in CHDs, %	Prevalence in the study, %	Male, %
All CHDs	3418	100	27.7	53.5
Diseases with a left-to-right shunt	2975	87	24.1	52.9
ASD	2435	71.2	19.7	52.5
VSD	455	13.3	3.7	49.2
PDA	498	14.5	4	52.2
AVSD	24	0.7	0.2	37.5
PAPVR	10	0.2	0.1	70
Obstructive diseases	239	7	1.9	56.9
Pulmonary stenosis	135	3.9	1.1	43.7
Aortic stenosis	81	2.3	0.7	77.8
Coarctation of the aorta	28	0.8	0.2	60.7
Interrupted aortic arch	2	0.06	0.01	
Cyanotic heart diseases	55	1.6	0.4	50.9
Cardiac malposition	26	0.7	0.2	73.1
Vascular ring	30	0.8	0.2	50
Unclassified Diseases	725	21.2	5.9	47.7

ASD: atrial septal defect, AVSD: atrioventricular septal defect, CHD: Congenital Heart Diseases, PAPVR: partial anomalous pulmonary venous return, PDA: patent ductus arteriosus, VSD: ventricular septal defect.

Cyanotic Diseases: Of the subjects included in the study; 0.1% (n=7) had transposition of the great arteries (TGA), 0.2% (n=20) had tetralogy of Fallot, 3 had corrected-TGA, 1 had total anomalous pulmonary venous return (TAPVR), 3 had tricuspid atresia, 4 had pulmonary atresia, 1 had hypoplastic left heart syndrome, 1 had Ebstein anomaly, 4 had double outlet right ventricle, 1 had heterotaxia, 2 had tricuspid atresia accompanied with pulmonary atresia, 6 had pulmonary atresia accompanied by tetralogy of Fallot and 2 had corrected TGA accompanied with pulmonary atresia.

Vascular Rings: Of the subjects included in the study; 0.2% (n=22) had right-sided aortic arch accompanied by left ligamentum arteriosum, 1 had double aortic arch, 1 had aberrant innominate artery, 2 had aberrant right subclavian artery, 3 had abnormal left pulmonary artery and 1 had right-sided aortic arch accompanied by abnormal left pulmonary artery. In addition to echocardiography, cardiac computed tomography imaging was used in the diagnosis of these patients. 1 double aortic arch, 2 of right-sided aortic arch accompanied by left ligamentum arteriosum and 2 of abnormal left pulmonary arteries were isolated defects. Other 25 patients had another CHD (7 Cardiac Malposition, 7 tetralogy of Fallot, 3 pulmonary atresia, 1 TGA, 11 ASD, 7 VSD, 3 PDA, 1 PAPVD).

Cardiac Malposition: Of the subjects included in the study; 0.2% (n=19) had dextrocardia and 0.1% (n=7) had mesocardia.

Unclassified Diseases: Of the subjects included in the study; 0.1% (n=13) had coronary AV fistula, 1 had pulmonary AV fistula, 1 had systemic AV fistula, 0.6% (n=70) had atrial septal aneurysm, 4 had double chambered right ventricle, 0.1% (n=10) had idiopathic dilatation of the pulmonary artery, 1 had pseudo coarctation of the aorta, 0.1% (n=16) had systemic venous anomaly, 4.7% (n=583) had peripheral pulmonary stenosis, 0.1% (n=7) had atrial septal aneurysm accompanied by peripheral pulmonary stenosis, 1 had hemitruncus arteriosus accompanied with peripheral pulmonary stenosis, 5 had aortopulmonary collateral artery (APCA), 0.1% (n=10) had major aortopulmonary collateral artery (MAPCA), 2 had systemic venous anomaly accompanied by peripheral pulmonary stenosis, and 1 had atrial septal aneurysm accompanied by systemic venous anomaly. In addition to echocardiography, cardiac computed tomography imaging has also been used in the diagnosis of these patients.1 systemic AV fistula and 1 pseudo coarctation of the aorta were isolated defects. All other patients in this group had another CHD.

4 age group compared in all subjects and CHDs were more common in subjects aged 0–1 months (p<0.001). Distribution of CHD according to age groups and their comprasions was presented in **Table 2**.

Of the diseases with a left-to-right shunt; 81.8% were atrial septal defects (ASDs), 15.3% were ventricular septal defects (VSDs), 16.7% were PDAs, 0.8% was atrioventricular septal defect (AVSDs) and 0.3% was partial anomalous pulmonary venous return (PAPVR).

Of the ASDs, 98% (n=2385) were secundum ASDs, 0.2% (n=5) were isolated primum ASDs, 0.1% (n=3) were sinus venosus ASDs, 0.3% (n=8) were coronary sinus ASDs, and 1.3% (n=33) were operated upon ASDs. One subject had both primum and secundum ASDs.

Of the VSDs, 2.4% (n=11) were perimembranous inlet VSDs, 19.4% (n=88) were perimembranous outlet VSDs, 12.1% (n=55) were perimembranous trabecular VSDs, 53.1% (n=242) were muscular VSDs, 1.1% (n=5) were doubly committed VSDs, 5.1% (n=23) were operated VSDs and 6.8% (n=31) were closed VSDs.

Of the obstructive diseases; 56.5% were pulmonary stenoses, 33.9% were aortic stenoses, 11.7% were coarctation of the aorta and 0.8% were interrupted aortic arch.

Table 2. Distribution and comprasions of congenital heart diseases by age

	0-1 month %, (n)	1 month- 2 years %, (n)	2-6 years %, (n)	6-18 years %, (n)	P value
Diseases with a left-to-right shunt	35.9 (1067)	29.4 (874)	11.5 (343)	23.2 (691)	<0.001
ASD	36.6 (890)	28.8 (702)	10 (243)	24.6 (600)	<0.001
VSD	42 (191)	30.1 (137)	14.3 (65)	13.6 (62)	<0.001
PDA	55.8 (278)	28.1 (140)	9 (45)	7 (35)	<0.001
AVSD	4.1 (1)	29.1 (7)	33.3 (8)	33.3 (8)	0.08
PAPVR	30 (3)	20 (2)	20 (2)	30 (3)	0.32
Obstructive diseases	15.9 (38)	31.8 (76)	23 (55)	29.3 (70)	<0.001
Pulmonary stenosis	22.2 (30)	40 (54)	21.5 (29)	16.3 (22)	<0.001
Aortic stenosis	1.2 (1)	22.2 (18)	22.2 (18)	54.3 (44)	<0.05
Coarctation of the aorta	25 (7)	25 (7)	32.1 (9)	17.9 (5)	<0.05
Interrupted aortic arch	100 (2)	0 (0)	0 (0)	0 (0)	-
Cyanotic heart diseases	25.4 (14)	34.5 (19)	10.9 (6)	29 (16)	<0.05
Cardiac malposition	15.4 (4)	23.1 (6)	19.2 (5)	42.3 (11)	0.71
Vascular ring	30 (9)	16.7 (5)	23.3 (7)	30 (9)	<0.05
Unclassified Diseases	61.2 (444)	17 (123)	6.5 (47)	15.3 (111)	<0.001

ASD: atrial septal defect, AVSD: atrioventricular septal defect, PAPVR: partial anomalous pulmonary venous return, PDA: patent ductus arteriosus, VSD: ventricular septal defect.

A total of 93.3% (n=126) of the pulmonary stenoses were valvular, 5.2% (n=7) were supravalvular and 2.5% (n=2) were subvalvular stenoses.

Of the aortic stenoses, 12.3% (n=10) were supravalvular stenoses, 60.5% (n=49) were valvular stenoses, 21% (n=17) were subaortic ridge without subaortic stenosis, 2.5% (n=2) were subaortic stenoses and 3.7% (n=3) were subaortic ridge accompanied by subaortic stenosis.

DISCUSSION

The prevalence of CHD varies by continents and countries. In a meta-analysis conducted in 2011 in the Netherlands, it was found that there were 1.35 million new-borns with CHD every year over the last 15 years, that the prevalence of CHD in Europe were significantly higher than that in Northern America, that the highest prevalence of CHD was observed in Asia (9.3 per 1000) and the lowest prevalence was observed in Africa (1.9 per 1000) and that the global prevalence of CHD increased from 0.6 per 1000 in 1930 to 9.1 per 1000 after 1995.[9] The prevalence of CHD was found to be 8 per 1000 in studies conducted in Turkey, which is similar to the rates reported in the Western countries.[4-6]

In our retrospective study based on selected subjects, 27.7% of the subjects were diagnosed with CHD by echocardiography. This rate was higher in our study compared with that present the literature is because our study was not a population-based study. Our hospital provides secondary and tertiary healthcare services. The most common causes for presenting to our pediatric cardiology outpatient clinic were murmurs and chest pain. Besides the individuals who present to our clinic as outpatients, new-borns who are suspicious in cardiac screening were also examined using echocardiography.

In our study, 46.1% of the subjects with CHD were 0–1 month old and 87% of the subjects with CHD comprised those with diseases with a left-to-right shunt. A study conducted in 2007 showed that the prevalence of diseases with a left-to-right shunt was higher in girls than in boys.[10] However, diseases with a left-to-right shunt were more common in boys (52.9%) according to our study.

Egbe et al.[11] reported that the frequency of ASD within CHDs was 15.6%, whereas Kula et al.[12] reported the same to be 11.1% in Turkey. Our study showed that 19.7% of all subjects and 71.2% of the subjects with CHD had ASD. This is because the subjects included in this study were selected from individuals who presented to the cardiology outpatient clinic and that ASD closure can be observed in time. Our clinic provides the opportunity of echocardiographic examination within the first days of life for neonates who cannot pass new-born screening. Therefore, it is possible that secundum ASD could not be distinguished from patent foramen ovale (PFO) due to the presence of left atrial flap tissue during echocardiographic examination and the defects that appeared larger than 3 mm in colour Doppler were classified as secundum ASD.

In our study, ASD was more common in 0–1-month-old subjects. Previous studies showed that ASD was more common in girls, whereas the prevalence of ASD was slightly higher in boys according to our study.[13] It was reported in the literature that 75% of the ASDs were secundum, 15% were primum and 10% were sinus venosus ASDs.[14] In our study, 98% of the ASDs were secundum, 0.2% were primum, 0.1% were sinus venosus, 0.3% were coronary sinus and 1.3% were operated upon ASDs. We think that the prevalence of secundum ASD is higher than the literature since the subjects in 0-1 month group are very much in our study (%12.7 in whole study). The prevalence of primum ASD in our study appears to be less than the literature. Primum ASDs are often observed as a component of AVSD. We included these patients in the AVSD classification and did not specify them as primum ASD.

Van der Linde et al.[8] reported a worldwide VSD prevalence of 2.62 per 1000 live births, and stated that VSDs constituted 34% of all CHDs. In our study, the prevalence of VSD was 3.7% in all subjects and 13.3% of all CHDs were VSDs, which was a relatively lower rate. Holst et al.[15] reported that VSD was more common in girls (52.5%) than boys. Similarly, our study also showed that VSD was more common in girls (50.8%) than boys (49.2%). In addition, VSD was more common in 0–1-month-old subjects. In a study conducted in 2011, it was reported that 70% of VSDs were perimembranous VSDs.[16] On the contrary, most of the VSDs were muscular VSDs (53.1%) in our study, whereas perimembranous VSDs constituted 40% of all VSDs.

The frequency of PDA in CHDs was reported to be 15.9% in Turkey by Başpınar et al.[17] and 15.8% in Saudi Arabia by Abbag et al.[18] Our study showed that the frequency of PDA in CHDs was 14.5%, which was similar to the values reported in the literature. We excluded the preterm neonates with PDA. In our study, the mean age at the time of PDA diagnosis was 1.2 years and 55.8% of the PDAs were observed in 0–1-month-old subjects. Although numerous studies reported that the prevalence of PDA was nearly twofold higher in girls than boys, 52% of the subjects with PDA were boys in our study.

AVSD represents around 3% of CHDs.[19] In our study, the frequency of AVSD in CHDs was 0.7%.

The prevalence of PAPVR was reported to be 0.1% by Ho et al.[20] In our study, the prevalence of PAPVR was 0.1% and its frequency in CHDs was 0.2%.

Egbe et al.[11] found that pulmonary stenoses constituted 6.6% of all CHDs. The prevalence of pulmonary stenosis was 1.1% in our study, since only selected individuals were included. In addition, pulmonary stenoses constituted 3.9% of the CHDs.

In a study by Ivanov et al.[21] conducted in 2020, it was reported that 72.7% of the patients with aortic stenosis were males. In our study, 77.8% of the patients with aortic stenosis were males.

Egbe et al.[11] reported that the frequency of coarctation of the aorta in CHDs was 2.6%. In our study, coarctation of the aorta constituted 0.8% of all CHDs.

In a study conducted by Güven et al.[22] in 2006, 15.7% of the patients admitted to the neonatal unit had cyanotic CHDs. In our study, 0.4% of the subjects had cyanotic CHD and 1.6% of all CHDs were constituted by cyanotic CHDs. CHD surgery is not performed in our hospital. These patients are generally diagnosed before birth and their birth takes place in hospitals that is suitable for this surgery. This is the reason why the frequency of cyanotic heart diseases is low in our study.

There was some limitations in our study. First of all this is a single-center and a retrospective study. The reason of the high prevalence of CHDs in our study compared to the literature is that the study individuals were selected. In addition, it is often difficult to differentiate ASD and PFO in echocardiography at early stages of life because they cry a lot. Further studies are needed to determine the prevalence of CHDs in the population.

CONCLUSION

In conclusion; in the present study, nearly one-fourth of the subjects who underwent echocardiographic examination at the pediatric cardiology outpatient clinic had mild to severe CHDs. Most of the subjects with CHD were 0–1 month old. Conducting detailed echocardiographic examination on new-borns referred to the pediatric cardiology department within the first month of life would enable detecting particularly CHDs with left-to-right shunt and cyanotic CHD. The early detection of these patients enables a more accurate route in follow-up and treatment.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was obtained from the Ethics Committee of Necmettin Erbakan University Meram Faculty of Medicine with decision no. 2015/224.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Status of Peer-review: Externally peer-reviewed.

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Orjinal Araştırma / Original Article

Physical Therapist's Prescription Regarding Benefits of Active Life Style of Patients

Fizyoterapistlerin Hastalarda Aktif Yaşam Tarzının Yararlarına İlişkin Reçetesi

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Abstract

Background: Physical activity is advantageous for several diseases like heart problem, diabetes & cancer as well. The complete load of diseases depends upon the physical inactivity. The significance of physical life style is to reduce the risk of coronary heart disease, diabetes as well as hypertension.

Aim: The aim of the study was to determine the physical therapist's prescription regarding benefits of active life style among patients.

Methods: A cross sectional study with 150 male and female physical therapist working at different hospitals located in Karachi. Practicing Physical therapists were included by convenient sampling to fill the consent form. The modified and adopted questionnaire physical activity Promotion in the Physical Therapy Setting was used to collect data to examine the prescription of active life style among patients. Data was analyzed through SPSS 20 version, frequency and percentage was calculated.

Results: The result of this study showed that majority physical therapist agreed with the prescription of short time exercises on most of the day is good for patient's health and prescribe the benefits of active life style among patients.

Conclusion: This study concluded that majority of physical therapist agreed for the implementation of benefits of active life style among patients. The further result of this study concluded that physical therapist agreed to prescribe the short time exercises on most of the day is better for patient's health. The recommendation of this study is that the governing body of physical therapy should be organized different programs like workshops and seminars regarding fitness training.

Keywords: Prescription, active lifestyle, benefits, physical fitness, physical therapist physical activity.

Öz

Arkaplan: Fiziksel aktivite, kalp problemi, diyabet ve kanser gibi çeşitli hastalıklar için de avantajlıdır. Hastalıkların tam yükü fiziksel hareketsizliğe bağlıdır. Fiziksel yaşam tarzının önemi, koroner kalp hastalığı, diyabet ve hipertansiyon riskini azaltmaktır.

Amaç: Çalışmanın amacı fizik tedavi uzmanının hastalar arasında aktif yaşam tarzının yararlarına ilişkin reçetesini belirlemekti.

Yöntemler: Karaçi'deki farklı hastanelerde çalışan 150 erkek ve kadın fizyoterapist ile kesitsel bir çalışma. Pratik Fizik terapistler, onay formunu doldurmak için uygun örnekleme yoluyla dahil edilmiştir. Değiştirilmiş ve benimsenen anket fiziksel aktivite Fizik Tedavi Ortamında Tanıtım, hastalar arasında aktif yaşam tarzının reçetesini incelemek için veri toplamak amacıyla kullanılmıştır. Veriler SPSS 20 versiyonu ile analiz edildi, frekans ve yüzde hesaplandı.

Bulgular: Bu çalışmanın sonucu, günün çoğunda kısa süreli egzersizlerin reçetesi ile kabul edilen çoğunluk fizyoterapistinin hastanın sağlığı için iyi olduğunu ve hastalar arasında aktif yaşam tarzının faydalarını reçete ettiğini göstermiştir.

Sonuç: Bu çalışma fizyoterapistin çoğunluğunun hastalar arasında aktif yaşam tarzının faydalarını uygulamayı kabul ettiği sonucuna varmıştır. Bu çalışmanın bir sonraki sonucu, fizyoterapistin günün çoğu zaman kısa süreli egzersizler reçete etmeyi kabul etmesinin hastanın sağlığı için daha iyi olduğu sonucuna varmıştır. Bu çalışmanın önerisi, fizik tedavinin yönetim organının fitness eğitimi ile ilgili atölye çalışmaları ve seminerler gibi farklı programlar organize etmesi gerektiğidir.

Anahtar Kelimeler: Reçete, aktif yaşam tarzı, yararları, fiziksel uygunluk, fizyoterapist fiziksel aktivite.

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INTRODUCTION

Physical therapists are responsible for the promotion of physical activity because they are basically primary care practitioners. They tell about posture and give guidance about exercises mostly in musculoskeletal cases which require rehabilitation. At this moment, physical therapists are included in the list of tertiary prevention discipline due to their skills.[1] Currently, health problems are rapidly growing day by day due to less physical activity which is harmful to public health. Better treatment provides to regain movements, behaviors and functional capacity, which enhances lifestyle and increasing in ability to do work.[2] The significance of active life style is to reduce the risk of cardiovascular disease, obesity and diabetes. As a result, they give a message for health promotion that every adult must do physical activity at least half an hour per day a week. Majority adults of United States and Britain go to clinic at least 1 times within 2 years for taking the guidance of general practitioners.[3] Physical activity is advantageous for several diseases like heart problem, diabetes & Cancer as well. The complete load of diseases depends upon the physical inactivity. For the Promotion of physical activity, good general practice is required due to numerous reasons. In Australia, due to the doctor's visit of adult once in a year, general practitioners have a power to reach huge population, source of information and other advices which they give to the patients on physical activity. There is a long-lasting follow-up of patients because they have older relation with patients which effects on better counseling as well. After all reviews it is described that patients can adopted physical activity because of GP advice and communication as well as behavior.[4] For social marketing and promotion of health, a use of internet and differential internet growth has been parallel by study. Advantages of behavioral change, health promotion and social marketing evaluated with a physical activities interruption. There was harmony that in the behavioral changes low degree of interactivity was not more effective than with high degree interactivity.[5] Feasibility and approval of physical activity promotion is the significant measure to determine the research from public health.[6] There are three main points on which Primary Care has been based. It includes: (a) Factors which influenced characteristics of patient. (b) Consultation by Primary Health Care staff members. (c) Rules & regulations, agreements as well as manner and attitude.

All these factors are related with a professional who shows their behavior, perception and knowledge as well.[7] In this study they go on the results of those patients who come in physiotherapy clinic for the performance of physical activity which indicates behavioral education and skills. Basically this study is based on the improvement of physiotherapist's perception, knowledge and behavior.[8-10] Life hope have gained as well as decreased the risk factors of trouble creating disease likewise, diabetes, heart problems, osteoporosis and fracture of hip by performing physical activity on daily basis. In many industrialized countries, there are the combinations of exercise skill, managed teaching sessions, health care clinics in the form of routine consultations advices by primary care intercession. Furthermore, daily consultation is more effective to any adult as compared to comprehensive intervention because regular advices from consultants increases the support of active physical life style and covers a large proportion of population.[11] In all developing countries, it is assumed that there is gaining significance of non-communicable chronic diseases among adult population. General practitioners are responsible for teaching the patient and giving advices for the promotion of physical active life style.[12] It is highly complicated process that there is always need a proper assessment about physical active lifestyle for the management of physical inactivity in the patient's lifestyle. General practitioners should assess properly in stepwise pattern of treatment process and try to get information of every individual's health problem. On the other hand GP's also give focus on the environmental factors of adults.[13]

Physical therapist works as health care professionals also who are responsible for the promotion of physical activity, wellness and fitness by the help of exercises which can reduce obesity as well. They can play a vital role in the management and prevention of overweight. The complications which occurred due to over body weight can be decreased by increasing the ratio of physical activity daily. Physical therapist must have an ability to treat their patients on different categories to contrive the patient's health problem and physical fitness. As a result patient's can work independently. There are 2 things which effect on physical active lifestyle of patient .These are behavior and knowledge.[14-15] Most of the medical comorbid can be reduced by increasing physical activity in the daily routine of patients.[16] The quantity of exercises rises by performing aerobic physical activity on daily basis. As a result, adults can prevent from chronic several chronic diseases such as Cardio vascular disease. Adult population must be performing physical exercises in their daily routine for the promotion of health program according to their demand and interest. There are many physical activities such as running, walking, jogging on track, cycling, swimming, rolling and sports activities are also included in it.[17]

The Guide to Physical Therapist prefers that there is involvement of physical therapist in all the three categories that is primary, secondary or tertiary. For instance, familial risk factors, psychological performance (memory, depression, anger and reasoning capability), behavioral factors (smoking drug intake abuse), health fitness level and supportive systems as well. Physical therapists are responsible to address the promotion of health problems. On the other hand patients do such physical activities which are essential for them by the assistance of physical therapist.[18] A patient's health influence

by all healthcare interactions as well as brief interventions also plays a significant role. Due to daily healthcare consultations brief interventions for PA can be provided in; they have the potential to reach a large proportion of the adult population.[19-20] Physical therapists are health professionals who are perfectly appropriate for delivering health education to patients. In the comparison with other well-known health professionals, their practice pattern typically requires expanded time of patient and prolonged visits.[21] In daily practice there are sort of strategies which have been implemented with proper counseling sessions.[22] Physical activity plays a great role in other health problems and outcomes likewise, cardiovascular disease, depression, Type II diabetes, cardiovascular disease and malignancies.[23] Inspite of the overpowering proof on the benefits of physical activity in the prevention, rehabilitation and management of chronic health diseases, physical activity levels persist low in all over the world and variable across people of society. In this study, in most of the countries there are policy interventions that can bring about population wide change in physical activity participation. However in all developing countries it is essential to assist with policy and standard program, health professionals with necessary knowledge and expertise are required to participate in effecting adaptations in physical activity attitude.[24] An advice into action should be translated by patients. They have to follow advice appropriately, for suitable time and with proper intensity to improve all problems and function. Patients may undertake exercise independently from other healthcare practitioners' advice and encouraged patients may exercise with little or no benefit without any command.[25] Objective of the study was to observe the physical therapist's prescription regarding benefits of active life style of patients.

MATERIAL AND METHOD

The sample consisted of 150 male and female physical therapist of different hospitals located in Karachi. It was a cross-sectional study. The sample size was calculated by epi sample size calculator. This study approved by Institutional Ethical Review committee of Isra University. The duration of study was six months from April, 2019 to September 2019. Practicing Physical therapists were included by convenient sampling to fill the consent form. Diploma Holders and undergraduate students were excluded. The modified and adopted questionnaire physical activity Promotion in the Physical Therapy Setting (Shirley D et al.[1] 2010). Data was analyzed by the use of software Statistical Packages of Social Sciences (SPSS) version 20. Frequency, percentage was applied to examine the physical therapist's prescription regarding benefits of active life style of patients. It was also assured to the participant that the information was completely confidential.

RESULT

Response rate of this study was 100%. **Table 1** shows that mean age is 29.13 years, the working experience mean is 5.37 years, the mean of number of patients in a week are 39.94 and the mean of working hours of physical therapist are 39.05 hours. **Figure 1** shows that when prescribe the patient for more active each day, 28.7% participants were strongly agree, 39.3% participants were agree and remaining 32% participants were disagree. **Figure 2** shows that when prescribe half an hour or walking on most day is all the exercise that is needed for good health, 78.6% participants were agree and 13.3% respondents were not sure,8% participants were disagree. **Figure 3** shows that when prescribing the benefits of a physically active life style with patients is part of the physical therapists role, 71.3% participants were strongly agree, 28% were agree and remaining 0.7% participants were not sure.

Table 1. Demographic details

Variables	N	Mean	Std. Deviation
Age in years	150	29.13	4.393
Working experience in years	150	5.37	3.977
Average number of patients you see each week	150	39.94	15.825
Working hours per week	150	39.05	12.111

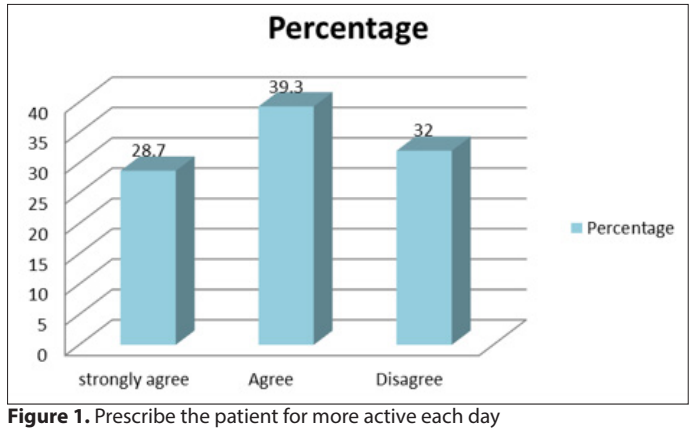

Figure 1. Prescribe the patient for more active each day

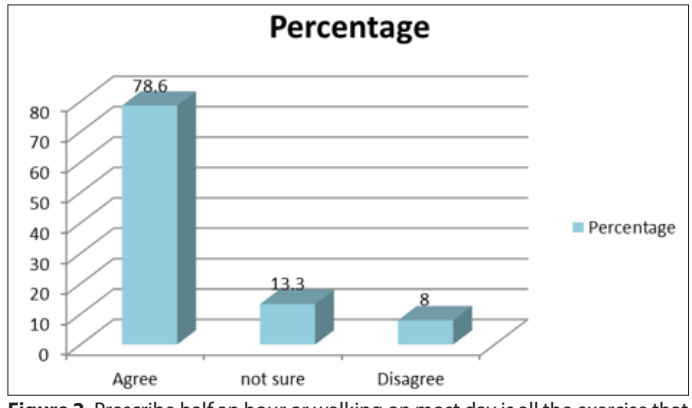

Figure 2. Prescribe half an hour or walking on most day is all the exercise that is needed for good health

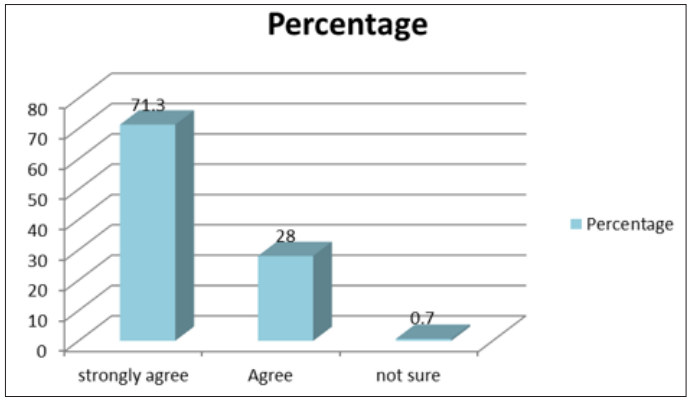

Figure 3. Prescribing the benefits of a physically active life style with patients is part of the physical therapists role.

DISCUSSION

The current study indicates that physical therapists believe on suggestions for health promotion about physical activity and active life style plays a major part in population. On the other hand they feel fear to promote proper knowledge about physical activity due to some obstacles. Mostly, physiotherapists prefer brief counseling into their treatment sessions was thought to be the most feasible form of physical activity promotion in physical therapist practice, by the help of different styles likewise, brochures. Moreover compare results of our study with the American study in which physical therapists of America showed significant believed promotion of physical activity is the part of physical therapist while our findings showed same significant believed that active life style promotion in patient is the part of physical therapist. In the previous study, mostly physicians that participated in the research work believed that physicians play a vital role in physical activity promotion.[15] Similarly, in this study mostly participants were strongly agree for suggesting to patients ways to increase daily physical activity in life.

Rea BL et al.[18] has done the study on the role of health promotion among physical therapist in California, New York and Tennessee to investigate the perception of practice patterns. As a result, the most common practice setting was related to orthopedics same as the result of our study in which majority physical therapist worked in musculoskeletal practice area.

Lowe A et al.[19] has done the study on the Physiotherapy and physical activity: a cross-sectional survey exploring physical activity promotion, knowledge of physical activity guidelines and the physical activity habits of UK physiotherapists this study was to explore PA promotion in routine physiotherapy practice in the UK. As study showed that

Seventy-seven per cent of respondents routinely discussed physical activity with patients and 68% routinely delivered brief interventions. Assessment of physical activity status was not routine practice, neither was signposting to further sources of physical activity support. Despite the promising finding that some form of physical activity promotion is integrated into most respondents' practice, we report a poor understanding of brief interventions and poor knowledge of the physical activity guidelines. Additionally, the majority of respondents were not sufficiently active to meet current physical activity recommendations which is not similar with our study in which mostly respondents were strongly agreed in discussing the benefits of a physically active life style with patients is part of the physical therapists role.[19]

CONCLUSION

Mostly physical therapists prescribed the benefits of active life style of their patients. The further result of this study concluded that physical therapist agreed to prescribe the short time exercises on most of the day is better for patient's health. The outcomes of this study recommended that the governing body of physical therapy profession to organized different programs like workshops and seminars regarding fitness training.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Isra University Institutional Ethical Review Committee.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Original Article / Orjinal Araştırma

Assessment of the Results of Blood Cultures Taken in the Pediatric Clinic of a Training and Research Hospital in Mogadishu, Somalia

Somali Mogadişu'da Bir Eğitim ve Araştırma Hastanesinin Çocuk Kliniğinde Alınan Kan Kültürlerinin Sonuçlarının Değerlendirilmesi

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Abstract

Aim: The aim of this study is to determine the distribution of microorganisms isolated in blood culture and their antibiotic susceptibility retrospectively.

Materials and Methods: This study was conducted at the Mogadishu Somalia Türkiye Recep Tayyip Erdogan Training and Research Hospital. A total of 76 patients who were hospitalized to the pediatric clinic between the years of 2016 and 2018, who had significant reproduction in their culture tests and whose samples was performed antibiogram test were included. Demographic datas, microorganism strains and antibiogram results of these patients were recorded.

Results: The subjects of this study were 37 females (48.7%) and 39 males (51.3%). The mean age of the subjects was 4.68 ±4.74 (1 month-18 years) years. 57 (75%) of the reproduced microorganisms were Gram-positive bacteria, and 19 (25%) were Gram-negative bacteria. The most commonly isolated bacteria was coagulase-negative staphylococci (CoNS) by 36.8%. It was followed by Staphylococcus aureus by 19.7%. The most commonly isolated Gram-negative bacteria was Escherichia coli by 6.6%. The antibiotic resistance of CoNS was highest against penicillin G by 85.7%, ampicillin-sulbactam by 78.6% and trimethoprim sulfamethoxazole by 75%. The antibiotic resistance of Staphylococcus aureus was also highest against penicillin G (86.7%), ampicillin-sulbactam (80%) and trimethoprim sulfamethoxazole (73.3%).

Conclusion: It was thought that necessary that determining the microorganisms reproduced in blood culture and their antibiotic susceptibility as periodic and that taking the results of such studies into account while designing appropriate empirical therapy.

Keywords: Somalia; child; bloodstream infection; blood culture; antibiotic susceptibility.

Öz

Amaç: Bu çalışmada, kan kültüründe üreyen mikroorganizmaların dağılımının ve antibiyotik duyarlılığının geriye dönük olarak belirlenmesi amaçlandı.

Gereç ve Yöntem: Bu çalışma Mogadishu Somali Türkiye Recep Tayyip Erdoğan Eğitim ve Araştırma Hastanesinde yapıldı. 2016-2018 yılları arasında çocuk servisine yatırılan, kan kültüründe anlamlı üreme olan ve antibiyogram testi yapılan 76 hasta dahil edildi. Bu hastaların demografik verileri, mikroorganizma türleri ve antibiyogram sonuçları kaydedildi.

Bulgular: Hastaların 37'i kız (%48,7), 39'ü erkek (%51,3) idi. Hastaların yaş ortalaması 4,68 ± 4,74 yıl olup, yaş aralığı 1 ay - 18 yıl idi. Üreyen mikroorganizmaların 57'si (%75) gram pozitif bakteri, 19'u (%25) gram negatif bakteri idi. En sık izole edilen etken %36,8 ile koagülaz negatif stafilokok (KNS) idi. Bunu %19,7 ile Staphylococcus aureus takip etmekte idi. Gram negatif bakteriler içinde en sık izole edilen ise %6,6 ile Escherchia coli idi. KNS'da antibiyotik direnci en fazla %85,7 ile penisilin G, %78,6 ile ampisilin-sulbactam ve %75 ile trimetoprim-sulfametoksazol'a karşı idi, Staphylococcus aureus"ta ise antibiyotik direnci en fazla %86,7 ile penisilin G, %80 ile ampisilin-sulbactam ve %73,3 ile trimetoprim-sulfametoksazol'a karşı idi.

Sonuç: Belli aralıklarla kan kültüründe üreyen mikroorganizmaları ve bunların antibiyotik duyarlılığını belirlemenin ve uygun ampirik antibiyotik şeçiminde bu çalışmaların sonuçlarını dikkate almanın gerekli olduğu düşünüldü.

Anahtar Kelimeler: Somali; çocuk; kan doiaşımı enfeksiyonu; kan kültürü; antibiyotik duyarlılığı.

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INTRODUCTION

Bloodstream infections (BSIs) are medical condition with high morbidity and mortality despite antimicrobial treatments. They extend hospitalization periods, increase resistance to antibiotics and cause increase in healty spendings.[1-2] The epidemiology of pediatric BSI is affected by various factors such as age, nutritional condition, vaccination coverage and geographical location.[3] Infections related to medical care in developing countries have a very limited coverage in the scientific literature.[4] Pediatric BSI in Sub-Saharan Africa constitutes as a major medical burden.[5-9]

Microorganisms causing BSIs have a wide range. Gram-positive cocci (staphylococci, streptococci and enterococci) and Gram-negative bacilli (Pseudomonas Aeruginosa, Escherichia Coli, Acinetobacter, Klebsiella strains) are the most frequently encountered causes. Besides bacteria, fungi such as Candida strains are also responsible for causing BSIs.[1,10]

Blood culture tests are widely used for isolation of BSI-causing microorganisms. Correct identification of infection factors and their antibiotic susceptibilty holds the utmost importance in designing a successful treatment plan and decreasing mortality. Distribution and antibiotic susceptibilty of BSI-causing microorganisms vary based on years and regions. For these reasons, every hospital needs to monitor the distribution of these microorganisms and the their antibiotic susceptibilty in terms of guiding an empirical treatment.[11,12]

The purpose of this study is to identify distribution of the microorganisms isolated in blood culture and their antibiotic susceptibilty together with the demographic characteristics of the subjects. Because there are no prior studies on this subject that were conducted in this region in the scientific literature. With this study, it is hoped to offer appropriate empirical treatment options and prevent antibiotics resistance, from forming by identifying the most common microorganisms in this region and their antibiotic susceptibility.

MATERIAL AND METHOD

This study was conducted at the Mogadishu Somalia Türkiye Recep Tayyip Erdogan Training and Research Hospital. The study was carried out by retrospective analysis of the blood culture test records kept in the automation system of the pediatric clinic between the years of 2016 and 2018. Patients who were between 1 month old and 18 years old that significant reproduction in their culture tests and whose samples received antibiogram were included in this study. Duplicate samples of the same subjects and samples thought to be contaminated with skin flora were excluded from this study. 93 patients were included in the study. 11 of them because of contamination and 6 of them because of double samples were excluded from this study. The demographic datas, the strains of reproducing microorganism and the results for antibiogram tests of 76 patients whose samples met the criteria of this study were registered.

Culture samples were incubated using the BACTEC 9050 (Becton Dickinson, ABD) blood incubation system. Vials with positive signals were passaged into blood agar, chocolate agar and ethylene blue media. Identifications performed by conventional practices were verified with the Analytical Profile Index (BioMerieux, France) when needed. Antibiograms of the reproduced microorganisms were conducted in accordance with the Kirby-Bauer Disk Diffusion method and the criteria of the Clinical and Laboratory Standards Institute.[13]

Approval was obtained from the ethics committee in the hospital where the study was conducted. The study was also conducted in accordance with the Declaration of Helsinki.

Supplementary statistical analyses were used. The categorical variables were signified with frequency (n) and percentage (%) values. For the comparison of the categorical variables, chi-squared test was utilized. For every statistical analysis, the Statistical Package for the Social Sciences Windows Software (ver. 22; IBM SPSS, Chicago, USA) was used.

RESULTS

The subjects of this study were 37 females (48.7%) and 39 males (51.3%). The mean age of the subjects was 4.68±4.74 years, and the subjects were between 1 month and 18 years of age. 57 (75%) of the reproduced microorganisms were Gram-positive bacteria and 19 (25%) were Gram-negative bacteria. The most commonly isolated bacteria was coagulase-negative staphylococci (CoNS) by 36.8%. It was followed by Staphylococcus aureus (S. aureus) by 19.7%. The most commonly isolated Gram-negative bacteria was Escherichia coli (E. coli) by 6.6%. Strains of the reproduced microorganisms and their frequency are shown in **Table 1**.

Table 1. Strains and frequency of the reproduced microorganisms

Microorganisms	n	%
Gram-positive bacteria		
CoNS	28	36.8
Staphylococcus aureus	15	19.7
Staphylococcus intermedius	4	5.3
Enterococcus faecium	3	3.9
Streptococcus pyogenes	1	1.3
Streptococcus pneumoniae	1	1.3
Kocuria kristinae	5	6.6
Gram-negative bacteria		
Escherchia coli	5	6.6
Pseudomonas aeruginosa	4	5.3
Klebsiella pneumoniae	3	3.9
Acinetobacter baumannii	2	2.6
Acinetobacter twoffii	1	1.3
Burkholderia cepacia	1	1.3
Moraxella lacunata	1	1.3
Stenotrophomonas maltophilia	1	1.3
Yersinia pseudotuberculosis	1	1.3
Total	76	100

CoNS: Coagulase negative staphylococci

The antibiotic resistance of CoNS was highest against penicillin G by 85.7%, ampicillin-sulbactam (SAM) by 78.6% and trimethoprim sulfamethoxazole (TMP-SMX) by 75%. The antibiotic resistance of S. aureus was also highest against penicillin G (86.7%), SAM (80%) and TMP-SMX (73.3%). The antibiotic resistance of Gram-positive bacteria is shown in **Table 2.**

The antibiotic resistance of E. coli was the highest against TMP-SMX by 80% and against ampicillin, amoxicillin clavulanate (ACA), ceftriaxone and cefoxitin by 60%. The antibiotic resistance of Gram-negative bacteria is shown in **Table 3**.

DISCUSSION

Bloodstream infections in children, if not treated with appropriate antibiotics, may result in complications and mortality and cause antibiotic resistance to develop.[1,11,14] Thus, assessment of the distribution of isolated microorganisms and their antibiotic susceptibility as periodic for every region and hospital is important in selecting appropriate treatment. This study show that the appropriate antibiotics for treatment of BSIs in this region to be, linezolid, vancomycin and clindamycin for Gram-positive bacteria, and imipenem, amikacin and gentamicin for Gram-negative bacteria. In

Table 2. Antibiotic resistance rates of gram-positive bacteria

	CoNS n = 28	Staphylococcus aureus n = 15	Staphylococcus intermedius n = 4	Enterococcus faecium n = 3	Streptococcus pyogenes n = 1	Streptococcus pneumoniae n = 1	Kocuria kristinae n = 5
Antibiotics	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Ampicillin-sulbactam	22 (78.6)	12 (80)	3 (75)	1 (33.3)	0 (0)	0 (0)	2 (40)
Penicillin G	24 (85.7)	13 (86.7)	3 (75)	1 (33.3)	1 (100)	0 (0)	4 (80)
Vancomycin	0 (0)	2 (13.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Linezolid	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Clindamycin	4 (14.3)	4 (26.7)	0 (0)	1 (33.3)	0 (0)	0 (0)	1 (20)
Ciproflokxacin	8 (28.6)	7 (46.7)	1 (25)	1 (33.3)	1 (100)	0 (0)	2 (40)
TMP-SMX	21 (75)	11 (73.3)	3 (75)	3 (100)	1 (100)	0 (0)	3 (60)

TMP-SMX: Trimethoprim-sulfamethoxazole, **CoNS**: Coagulase negative staphylococci

Table 3. Antibiotic resistance rates of gram-negative bacteria

	Escherchia coli n = 5	Pseudo-monas aeruginosa n = 4	Klebsiella pneumoniae n = 3	Acineto-bacter baumannii n = 2	Acineto-bacter twoffii n = 1	Burkhol-deria cepacia n = 1	Moraxella lacunata n = 1	Stenotro-phomonas maltophilia n = 1	Yersinia pseudo-tuberculosis n = 1
Antibiotics	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Ampicillin	3 (60)	4 (100)	3 (100)	2 (100)	1 (100)	1 (100)	1 (100)	1 (100)	0 (0)
Amoxicillin-clavulanate	3 (60)	4 (100)	0 (0)	2 (100)	1 (100)	1 (100)	1 (100)	0 (0)	0 (0)
Amikacin	1 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Gentamicin	1 (20)	1 (25)	1 (33.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
TMP-SMX	4 (80)	4 (100)	3 (100)	1 (50)	1 (100)	1 (100)	1 (100)	1 (100)	0 (0)
Cefuroxim	2 (40)	1 (25)	3 (100)	1 (50)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)
Cefoxitin	3 (60)	1 (25)	1 (33.3)	1 (50)	1 (100)	1 (100)	0 (0)	0 (0)	0 (0)
Ceftriaxone	3 (60)	1 (25)	3 (100)	0 (0)	1 (100)	0 (0)	0 (0)	1 (100)	0 (0)
Ciprofloxacin	1 (20)	0 (0)	3 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
İmipenem	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

empirical treatment, combination of effective an antibiotic to Gram-positive bacteria with, and effective an antibiotic to Gram-negative bacteria will be more suitable.

When prior studies on BSI were examined, it was established that while Gram-negative bacteria were prevalent in the 1960s and 1970s, in 1980s, an increase in the frequency of Gram-positive bacteria was observed.[15,16] In current studies, the most commonly isolated bacteria were reported to be Gram-positive bacteria at a detection rate between 59.8% and 80%.[11,17-19] Furthermore, the most commonly isolated microorganism was reported to be CoNS.[1,17-20] Moreover, in this study, the most commonly isolated bacteria were Gram-positive bacteria (75%), and the most commonly isolated microorganism was CoNS.

In the study conducted by Karlowsky et al.[20] in United States, they reported that CoNS had the highest antibiotic resistance against penicillin (68.3%) and erythromycin (40.8%).In the study conducted by Reynolds et al.[21] in UK and Ireland, they reported that oxacillin-sensitive CoNS had the highest resistance against penicillin (75.5%) and TMP-SMX (52%). In the study conducted by Kim et al.[15] in Korea, they found that the highest resistance was against penicillin (96.8%), oxacillin (84.7%) and erythromycin (71.3%). In the study conducted by Kaya et al.[18] in Turkey, they determined that the highest resistance was against penicillin (70.4%) and erythromycin (68.1%). In this study, the highest antibiotic resistance was found against penicillin G (85.7%), SAM (78.6%) and TMP-SMX (75%). These results show that CoNS has the highest resistance against penicillin-group antibiotics, erythromycin and TMP-SMX.

Karlowsky et al.[20] reported that S. aureus had the highest antibiotic resistance against penicillin (85.7%) and erythromycin (30.9%).Reynolds et al.[21] reported that oxacillin-sensitive S. aureus had the highest resistance against penicillin (82.5%) and TMP-SMX (31.4%). Kim et al.[15] found that the highest resistance was against penicillin (95.4%) and oxacillin (69.8%). In the study conducted by Hill et al.[7] in Gambia, they reported that the highest resistance was against penicillin (71.4%), tetracycline (66.6%) and TMP-SMX (33.3%). In a meta-analysis study related with Africa conducted by Reddy et al.[22] they reported that the highest resistance was against ampicillin (90.9%), tetracycline (56.5%) and erythromycin (43.5%). In the study conducted by Blomberg et al.[23] in Tanzania, they found that the highest resistance was against penicillin (100%), doxycycline (65%) and ACA (50%). Kaya et al.[18] reported that the highest resistance was against penicillin (95.8%) and erythromycin (83.3%). In this study, the highest antibiotic resistance was found against penicillin G (86.7%), SAM (80%) and TMP-SMX (73.3%). In accordance with these results, S. aureus has the highest resistance against penicillin- and tetracycline-group antibiotics, erythromycin and TMP-SMX.

Karlowsky et al.[20] reported that the highest antibiotic resistance in E. coli was against ampicillin (47.8%) and cephalothin (35.5%). Reynolds et al.[21] determined that the highest resistance was against tigecycline (89.2%), minocycline (88.4%) and ACA (56.2%). Kim et al.[15] reported that the highest resistance was against ampicillin (63.4%), piperacillin (44.2%) and TMP-SMX (37%). Hill et al.[7] that reported the highest resistance was against ampicillin (100%), and TMP-SMX (77.8%). Reddy et al.[22] found that the highest resistance was against ampicillin (91.9%), tetracycline (91.9%) and TMP-SMX (83.1%). Blomberg et al.[23] stated that the highest resistance was against ampicillin (85%), TMP-SMX (77%) and doxycycline (77%). Kaya et al.[18] reported that the highest resistance was against ampicillin (91.6%) and ACA (60%).In this study, the highest antibiotic resistance was found against TMP-SMX with 80% and ampicillin, ACA, ceftriaxone and cefoxitin with 60%. Thus, these results show that E. coli has the highest resistance against penicillin, tetracycline- and cephalosporin-group antibiotics and TMP-SMX.

CONCLUSION

In conclusion, distribution of sepsis-causing microorganisms and their antibiotic susceptibilty vary over time and between different geographical locations. Therefore, it is necessary that conducting studies on this subject and that taking the results of such studies into account while designing an appropriate empirical therapy. In this wise, it was concluded that morbidity and mortality may be reduced and development of antibiotic resistance may be prevented.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Mogadishu, Somalia Turkey Recep Tayyip Erdogan Training and Research Hospital Ethics Committee (Decision dated 25.12.2018/96 and numbered MSTH/5395). The study was also conducted in accordance with the Declaration of Helsinki.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Original Article / Orjinal Araştırma

Characteristics of Psychiatry Consultations Requested from the Neurology Clinic, Diagnostic Congruence Rates between Psychiatrists and Neurologists

Nöroloji Kliniğinden İstenen Psikiyatri Konsültasyonlarının Özellikleri, Psikiyatrist ve Nörologların Tanı Benzerlik Oranları

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Abstract

Introduction: Psychiatry and neurology are concerned with central nervous system dysfunctions; therefore, a common approach to said diseases is required. The aim of this study was to investigate the characteristics of psychiatric consultations, diagnostic congruence rates of psychiatric disorders, and the diagnostic accuracy between psychiatrist and neurologists in a neurology clinic of a training hospital.

Material and Method: Psychiatric consultations requested between 01.01.2017 and 01.07.2019 were evaluated retrospectively. The accuracy rate between the final psychiatric diagnosis made by the consulting psychiatrist and the initial psychiatric diagnosis made by the neurologist as well as the diagnostic congruence rate between two departments were examined.

Results: The most common reasons for consultation were agitation (36.5%), depressive symptoms (23.9%), and history of psychiatric treatment (18.9%), respectively. The most common diagnoses made by psychiatrists were depressive disorders (29.7%), anxiety disorders (18.9%), and cognitive disorders (11.7%). Accurate diagnosis rates were found to be high for psychotic disorders (100%), bipolar disorder (90.9%), alcohol/substance use disorders (A/SUD) (83.3%) and cognitive disorders (73.7%), and low for somatization disorders (50%).and anxiety disorders (29.2%). The diagnostic congruence between the two physicians was high (kappa=0.62) for A/SUD and moderate for cognitive and depressive disorders (kappa=0.57, kappa=0.42).

Discussion and Conclusion: This study showed that A/SUD is well recognized by neurologists, but anxiety disorder and somatization disorder, which are commonly seen in inpatients, are poorly recognized. Due to the limited number of studies in this field, our study is valuable in emphasizing the importance of recognizing psychiatric comorbidities in the neurological patient population.

Keywords: Psychiatric consultation, psychiatric disorders, neurology, psychiatric comorbidity, inpatient

Öz

Amaç: Psikiyatri ve nöroloji merkezi sinir sistemine ait işlev bozukluklarıyla ilgilenmeleri nedeniyle ilgili hastalıklara yönelik ortak yaklaşım gerekmektedir. Bu araştırmada bir eğitim hastanesinin nöroloji kliniğinde yatarak tedavi gören hastalara istenen psikiyatri konsültasyonlarının özellikleri, psikiyatrik hastalıkların tanı benzerlik oranları ve psikiyatri hekimi ile nöroloji hekimi arasındaki psikiyatrik tanı uyumunun araştırılması amaçlanmıştır.

Gereç ve Yöntem: Ocak 2017-Temmuz 2019 tarihleri arasında istenen tüm psikiyatri konsültasyonları geriye dönük olarak değerlendirilmiş, konsültan psikiyatristin belirlediği son psikiyatrik tanı ile nöroloğun belirlediği ilk psikiyatrik tanı arasındaki doğruluk oranı ve iki branş arasındaki tanı uyumu incelenmiştir.

Bulgular: En sık konsültasyon istenme nedenleri sırasıyla ajitasyon (%36,5), depresyon belirtileri (%23,9) ve geçmişte psikiyatrik tedavi öyküsü (%18,9) olarak bulunmuştur. Psikiyatristler tarafından en sık konulan tanılar depresif bozukluklar (%29,7), anksiyete bozuklukları (%18,9) ve kognitif bozukluklardır (%11,2). Doğru tanınma oranları alkol/madde kullanım bozuklukları (A/MKB) (%83,3) ve kognitif bozukluklar (%73,7) için yüksek saptanırken, somatizasyon bozukluğu (%50) ve anksiyete bozuklukları (%29,2) için düşük saptanmıştır. A/MKB için iki hekim arasındaki tanı uyumu yüksek (kappa=0,62), kognitif bozukluklar ve depresif bozukluklar için orta düzeydedir (kappa=0,57, kappa=0,42).

Sonuç ve Tartışma: Bu çalışma A/MKB'nun nörologlar tarafından iyi tanındığını, ancak yatan hastalarda sıklıkla görülen anksiyete bozukluğu ve somatizasyon bozukluğunun tanısında yanılgıların yaşandığını göstermiştir. Bu alanda yapılan araştırma sayısının az olması nedeniyle araştırmamız nörolojik hasta popülasyonunda psikiyatrik eş tanıların tanınmasının önemini vurgulaması açısından değerlidir.

Anahtar Kelimeler: Psikiyatri konsültasyonu, psikiyatrik hastalıklar, nöroloji, psikiyatrik eş tanı, yatan hasta

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INTRODUCTION

The presence of mental disorder is often overlooked in inpatients admitted to general hospitals.[1-4] Similar results have been reported in patients admitted to neurology clinics using standardized psychiatric clinical assessment scales.[5,6] 39% of the patients have psychiatric symptoms, but 72% of them are not recognized by neurologists.[5] In a study including 56 separate consultation-liaison (CL) units, the referral rate for psychiatric opinion was 1.4% despite high comorbidity rates of 30–40%.[7] In other words, approximately 97% of patients in a general hospital with a psychiatric diagnosis are not treated by CL psychiatrists.[1,3,8]

Epidemiological studies have shown that psychiatric comorbidity rates in hospitalized patients range from 41.3% to 46.5%.[9,10] In a study conducted in Turkey, the rate of psychiatric disorders was found to be 23.4% in inpatients treated in internal and surgical wards.[11] The most common diagnoses in inpatients were organic mental disorder, depressive disorder, and alcohol-substance abuse.[9] Although the rates and prevalence of comorbid psychiatric disorders vary in different studies, the presence of psychiatric comorbidity has been associated with prolonged hospital stay, increased morbidity and mortality.[12-14] Psychiatry and neurology are concerned with central nervous system (CNS) dysfunctions and it is important that both branches collaborate for these diseases.[15] Majority of inpatients in the neurology wards of general hospitals have psychiatric comorbidities.[16,17] Therefore, it is important for neurologists to be able to recognize the signs and symptoms of the patient and to come up with an idea for the diagnosis and treatment while evaluating patients with a psychiatric disorder. In cerebrovascular disorder, which is the most common neurological disease, depressive disorder (DD) is reported to accompany approximately 50% of individuals.[18-20] In addition, mood disorders are commonly seen with epilepsy and are the most important psychiatric comorbidity affecting quality of life and prognosis.[21] In Parkinson's disease (PD), 60% of the patients have psychiatric complaints, while depressive and anxiety disorder are the most common psychiatric disorders in PD.[22,23] In some studies, symptoms of DD and anxiety have been reported approximately 5 years before the onset of PD.[24] Studies report that psychiatric disorders are seen at a varying rate between 15 and 90% in patients diagnosed with multiple sclerosis (MS), and during the course of the disease a range of manifestations from depressive mood to euphoria or psychotic disorder appear.[25-27] There are limited studies in Turkey investigating the distribution of psychiatric diagnoses in neurology wards. However, in one study investigating the psychiatric consultations requested in a general hospital, the rates of DD, conversion disorder, and psychotic symptoms were reported to be 18.5%, 14.8%, and 14.8%, respectively.[28] Diagnostic rate of DD among patients living in nursing homes and consultations requested with a preliminary diagnosis of DD were evaluated in a study, and it was found that DD was not sufficiently recognized by health professionals.[29] In many studies, accurate diagnostic rates of DD[29-32], delirium[33,34] and conversion symptoms[35] by non-psychiatric physicians or non-physician healthcare workers were investigated. Dilts et al. investigated the accuracy of psychiatric diagnoses in the CL service for the first time in the literature.[36] They found that cognitive and SUD were correctly recognized by non-psychiatric physicians to a large extent, but only half of the depressive patients were diagnosed.[36] Although there are many studies on psychiatric comorbidity and outcomes in inpatients, the number of studies investigating accurate diagnostic rates by non-psychiatric physicians is limited.[4,37,38] In two studies in Turkey, the accurate diagnostic rates of psychiatric diseases by non-psychiatric physicians were investigated in the CL services of university hospitals.[13,39] To the best of our knowledge, there is no study investigating the accurate diagnostic rate of psychiatric diseases by neurologists in neurology patients admitted to a general hospital.

In this study, all psychiatry consultations requested for on-site evaluation of patients hospitalized in the neurology ward within a period of 2.5 years were evaluated retrospectively, and the aim of the study was to investigate the characteristics of the consultations, accurate diagnosis rate of the neurologist responsible for the patient's primary care, and the congruence with the psychiatric diagnosis made by the consultant psychiatrist.

MATERIAL AND METHOD

In this study, all on-site psychiatric consultations requested by the Neurology Clinic of Izmir Bozyaka Training and Research Hospital between 01.01.2017 and 07.01.2019 were evaluated retrospectively by reviewing the data on the hospital information management system (HIMS). To screen the files retrospectively, written consent was obtained from the head physician of the hospital's comittee within the scope of good clinical practice (07.08.2019/124-4). Demographic information, reason for requesting consultation, neurological diagnosis and clinical characteristics, psychiatric diagnosis according to DSM-IV diagnostic criteria were filled out by reviewing patient records. The primary neurological diagnosis of patients for whom psychiatric consultation was requested was made by neurologists using the World Health Organization's Classification System (ICD 10), which was registered in the HIMS database.

As in a previous similar study, after consultation and evaluation of the cases by the psychiatrist, all patients who were diagnosed as unipolar depressive disorder, bipolar depressive disorder, dysthymic disorder, depressive disorder due to general medical condition or drug use were included in the DD group.[13] Delirium, all dementia types, organic mental disorders and amnestic disorders were classified as cognitive disorders. The general psychiatric diagnoses made by the neurologists were matched with DSM-IV diagnoses. For example, the consultation request of the neurologists to evaluate a patient with depressive mood led us to conclude

that the neurology physician was suspicious of DD, and the preliminary diagnoses such as depressive mood, pessimism, and depression were considered as depressive disorders.

SPSS 22 statistical package program was used for data analysis. Descriptive statistics such as mean, standard deviation and percentage distributions, as well as parametric tests such as Student's t test and Chi-square test for categorical variables were used to evaluate the data. Diagnostic accuracy in psychiatric consultations was calculated by the ratio of the diagnoses confirmed by psychiatrists to all consultations requested by neurologists for that diagnosis. For each psychiatric diagnosis category, whether there was a statistically significant difference between the psychiatric diagnoses of the two branches was examined by chi-square test and Kappa statistic was used to evaluate the diagnostic congruence between the two branches. $P<0.05$ was considered statistically significant.

RESULTS

There were 222 patients over the age of 18 who were requested to be consulted for mental health and diseases within a 2.5-year period. In the same period, the total number of patients admitted to the neurology unit was 3675. Psychiatric consultation was requested for 6.4% of all patients hospitalized in the neurology unit. The mean age of the patients was 55.44±1.71 (female:54.82±1.85, male:53.27±1.61). Other sociodemographic characteristics of the patients are given in **Table 1**.

Table 1. Sociodemographic characteristics of patients

Age (mean±sd)	55.44±1.71	
Education (mean±sd)	5.74±3.82	
Sex		
Female	n=110	(49.5%)
Male	n=112	(50.5%)
Marital Status		
Single	n=48	(21.6%)
Married	n=125	(56.3%)
Widowed/divorced	n=49	(22.1%)
Employment Status		
Unemployed	n=182	(82%)
Employed	n=40	(18%)
Socioeconomic Status		
Low	n=72	(32.4%)
Middle	n=145	(65.3%)
High	n=5	(2.3%)

32.9% (n=73) of the patients for whom consultation was requested had previously received psychiatric treatment. Four patients were found to have attempted suicide during hospitalization to the neurology unit. The mean duration of hospitalization in the neurology unit was 8.95±7.21 (1-45) days, the mean number of hospitalizations was 1.77±1.75 (1-14) times, the mean time until psychiatric consultation requested was 3.91±4.62 (0-38) days, and the number of psychiatric consultations requested during hospitalization was 1.12±0.37 (1-3).

"Agitation" was the most common reason for psychiatric consultation by neurology physicians (n=81, 36.5%). Depressive symptoms (n=53, 23.9%) and past psychiatric disorder/treatment history (n=42, 18.9%) were among the leading reasons for consultation. The other stated reasons for consultation are given in **Table 2**.

Table 2. Distribution of reasons for psychiatric consultation for patients

	n	%
Agitation	81	36.5
Depressive symptoms	53	23.9
History of past psychiatric treatment	42	18.9
Application to Health Board	27	12.2
Not specified	7	3.2
Considering delirium	4	1.8
Conversion	3	1.4
Insomnia	2	0.9
Smoking cessation	1	0.5
Suicide attempt	1	0.5
Presence of self-destructive thinking	1	0.5

Ischemic cerebrovascular event (n=72, 32.4%), MS (n=37, 16.7%), epilepsy (n=27, 12.2%) and PD (n=25, 11.3%) were the most common diagnoses for hospitalization in the neurology clinic. When the distribution of psychiatric diagnoses of the patients after evaluation of the psychiatric consultation team were examined, most common diagnoses were depressive disorders (29.7%), anxiety disorders (18.9%), and cognitive disorders (11.2%). The distribution of the diagnosis of psychiatric disorders is shown in **Table 3**.

Table 3. Diagnostic distribution of psychiatric disorders in inpatients after consultation (n=222)

	n	%
Depressive Disorders	66	29.7
Anxiety Disorders	42	18.9
No Active Psychopathology	26	11.7
Cognitive Disorders	25	11.2
Alcohol-Substance Use Disorders	13	5.9
Conversion-Somatoform Disorders	13	5.9
Bipolar Disorder	12	5.4
Psychotic Disorders	12	5.4
Others	8	3.6
Adjustment Disorder	5	2.3

Cognitive Disorders: Delirium, organic mental disorder, dementia
Others: Mental retardation, sleep disorder, simulation

According to the results of this study, accurate diagnosis rate of depressive disorders was found to be 63.0%. Alcohol/substance use disorders (A/SUD) were accurately diagnosed by neurology physicians at a rate of 83.3%. Congruence rate between the neurologist and the consultant psychiatrist was

50% for conversion and somatoform disorders and 29.2% for anxiety disorders. In 83 (36%) patients, psychiatric pre-diagnosis was not indicated in the consultation request. Diagnostic congruence rates between the neurologist and consultant psychiatrist for other diagnoses are shown in **Table 4.**

For five categories of psychiatric disorders, the diagnostic agreement between the two branches was investigated with the kappa statistics. Psychotic disorders and bipolar disorders are not analysed due to the low number of cases. It was found that there was a statistically significant difference in depressive disorders between the initial diagnosis (DD diagnosed by neurologist) and the final diagnosis (DD diagnosed by psychiatrist) ($p<0.001$) and the diagnostic agreement between the two physicians was moderate (kappa value=0.424). There was a statistically significant difference between the initial and final diagnoses in anxiety disorders and somatoform disorders ($p=0.027$, $p=0.024$), and the congruence between the two physicians was poor (kappa=0.25; kappa=0.28) for both groups. Congruence rates between the two physicians for other diagnoses are given in **Table 5**.

Table 4. Preliminary diagnoses indicated by the neurologist, and similarity and difference rates of these diagnoses after the evaluation of patients

Prediagnosis specified by neurology	Rate of first diagnosis confirmed by psychiatrist	Diagnosis distribution of patients diagnosed differently by psychiatrist
Depressive Disorders (n=54)	n=34 (63.0%)	Anxiety Disorders (n=8, 14.8%) Cognitive Disorders (n=3, 5.6%) Adjustment Disorders (n=2, 3.7%) No Active Psychopathology (n=2, 3.7%) Acute Stress Reaction (n=1, 1.9%) Obsessive Compulsive Disorder (n=1, 1.9%) Bipolar Disorder (n=1, 1.9%) Psychosis (n=1, 1.9%) Conversion (n=1, 1.9%)
Anxiety Disorders (n=24)	n=7 (29.2%)	No Active Psychopathology (n=6, 25.0%) Depressive Disorder (n=5, 20.8%) Adjustment Disorders (n=3, 12.5%) Bipolar Disorder (n=1, 4.2%) Alcohol-Substance Use Disorders (n=1, 4.2%) Cognitive Disorders (n=1, 4.2%)
Psychotic Disorders (n=5)	n=5 (100%)	-
Cognitive Disorders (n=19)	n=14 (73.7%)	Anxiety Disorders (n=2, 10.5%) Depressive Disorder (n=2, 10.5%) Psychosis (n=1, 5.3%)
Bipolar Disorders (n=11)	n=10 (90.9%)	No Active Psychopathology (n=1, 9.1%)
Alcohol-Substance Use Disorders (n=12)	n=10 (83.3%)	No Active Psychopathology (n=2, 16.7%)
Conversion-Somatoform Disorders (n=14)	n=7 (50%)	No Active Psychopathology (n=4, 20.8%) Anxiety Disorders (n=2, 14.3%) Simulation (n=1, 7.1%)
Patients With Psychiatric Diagnosis Not Specified (n=83)	-	Depressive Disorder (n=25, 30.1%) Anxiety Disorders (n=23, 27.7%) No Active Psychopathology (n=11, %13.3) Cognitive Disorders (n=7, 8.4%) Conversion (n=5, 6.0%) Psychosis (n=5, 6.0%) Sleep disorder (n=3, 3.6%) Alcohol-Substance Use Disorders (n=2, 2.4%) Mental Retardation (n=2, 2.4%)

Table 5. Diagnostic accuracy between the two branches in terms of psychiatric disorders

Psychiatric Disorders	Positive Expected Value	Ki-square test	Kappa Value
Depressive Disorders	63% (34/54)	<0.001	0.424
Anxiety Disorders	29.2% (7/24)	0.027	0.25
Cognitive Disorders	73.7% (14/19)	0.280	0.57
Alcohol-Substance Use Disorders	83.3% (10/12)	0.523	0.62
Conversion-Somatoform Disorders	50.1% (6/12)	0.024	0.28

p<0.05 statistically significant
Value of Kappa Level of Agreement
0.01 — 0.20 None
0.21 — 0.40 Minimal
0.41 — 0.60 Moderate
0.61 — 0.80 Moderate-Strong

DISCUSSION

The frequency and clinical characteristics of psychiatric consultations requested for inpatients in the neurology clinic of a training hospital and the congruence rates of psychiatric diagnoses between the two branches were investigated over a 2.5-year period. In previous studies conducted in Turkey consultation rate from the psychiatric department varies between 1.37 and 2.80%.[40-42] In the present study, psychiatric consultation was requested for 6.4% of neurology patients. This is slightly higher than the rates reported in the literature.[7,17,43] Studies in Turkey have shown that consultation rate is higher in internal medicine branches.[43,44] The fact that neurology and psychiatry are concerned with closely related disorders may explain the need for higher rates of consultation observed in this study.[15,17]

In the present study, 32.9% of the patients for whom psychiatric consultation was requested stated that they had received psychiatric treatment before. This result is consistent with other studies in the literature.[40,45] Neurology patients needing the support of another person to provide daily functionality is among the factors that create a predisposition in individuals for the development of mental disorders.[7,46] The majority of the cases (80.6%) needed support for self-care. The mean duration of hospitalization was 8.95 days, and psychiatric consultation was requested in the early period of hospitalization on average 1.12 times and within 3.91 days. Because of the high rate of psychiatric comorbidity in neurology patients, if treatment planning is not performed, the course of primary disease and treatment outcomes are affected.[7,15] It is known that early diagnosis of psychiatric comorbidities, and initiation of treatment contribute to the treatment process of the primary disease. As a result of psychiatric consultation, psychiatric treatment was initiated in the majority of the patients (75.1%).

Agitation (36.5%), depressive symptoms (23.9%) and history of psychiatric treatment (18.9%) were the main reasons for consultation. In previous studies, the reasons for consultation were 12.8-54.4% for agitation, 13.0-24.5% for depressive signs and symptoms, and 10.1% for previous psychiatric diagnosis and treatment.[28,42,45,47-50] The results obtained in the present study are consistent with the literature, except for history of psychiatric treatment. The varying rates obtained in different studies can be due to reasons such as study populations (general hospital sample, internal/surgical clinics, etc.), physicians not being able to recognize psychiatric disorders correctly or not using the appropriate terminology when requesting consultation, and neurologists having more information about psychiatric diseases compared to other branches.[48]

The results of our study showed that psychotic disorders, bipolar disorders, A/SUD and cognitive disorders were well recognized by neurologists, but anxiety disorders and conversion-somatoform disorders, which are frequently seen in inpatients, were poorly recognized. This finding was not consistent with the results of Dilts et al.[36] It is seen that although the prevalence of SUD is high in inpatients, there are difficulties in diagnosis.[51-53] The rate of accurate diagnosis for SUD ranges from 7% to 89% in different studies.[52] Similar to our study, Sertöz et al. also reported that A/SUD was well recognized by non-psychiatric physicians and anxiety disorder was poorly recognized.[13] In another study, the diagnostic accuracy of psychiatric disorders in internal and surgical units of a university hospital was evaluated as 60% for cognitive disorders, 50% for depressive disorder, 46% for anxiety disorders, and 0% for the diagnosis of psychosis.[54] In the present study, active psychopathology was not detected after psychiatric evaluation in two of the patients who were requested for consultation with the diagnosis of A/SUD. The reason why A/SUD are well recognized by neurologists may be due to diligently receiving clinical history from the patients, may be related to their experience in neuropsychiatric pathologies resulting from alcohol/substance use, or due to the fact that these patients are often hospitalized because of physical illnesses that develop due to alcohol consumption.

In the patients requested consultations for evaluation of cognitive disorders; two had DD, two patients had anxiety disorder and one patient had psychotic disorder. Symptoms such as negativistic attitudes, somatic complaints, difficulty in maintaining attention and concentration, and forgetfulness, which are among the clinical signs of DD and anxiety, should be considered especially in patients who are evaluated with a preliminary diagnosis of delirium or dementia by neurologists.[29,55] Similarly, apathy and psychomotor deceleration, which

are common symptoms in both DD and hypoactive delirium, may have led neurologists to decide in favor of delirium or dementia. Also, disorganized speech and failure to maintain purpose-oriented activities seen in psychotic disorders should be considered in congitive evaluation.

DD were correctly recognized by neurologists at a rate of 63%, and moderate agreement was found between the two branches. In terms of DDs, anxiety disorder (14.8%), cognitive disorder (5.6%), and adjustment disorder (3.7%) were the most common changing diagnoses after psychiatric evaluation. The results showed that neurology physicians particularly had difficulty in recognizing the symptoms of anxiety disorder. In the literature, it has been reported that DDs are often confused with cognitive disorders.[36,56] Ekmekçi et al. reported in their study that delirium, anxiety disorders and alcohol-substance use disorders were the diseases with the highest rates of confirmation by psychiatry.[39]

In our study, accurate diagnosis rates of anxiety disorders and somatoform disorders were lower than other disease groups. DD was found in 20.8% and adjustment disorder was found in 12.5% of the patients who were consulted by neurologists with a preliminary diagnosis of anxiety disorder. Active psychopathology was not detected in 25% of these cases. Anxiety that occurs in patients with a medical illness is generally interpreted by non-psychiatric physicians as a normal response associated with physical illness or uncertainty about treatment.[57] Since anxiety can also be a symptom of a mood disorder or other psychiatric disorder, it is important to recognize it and evaluate for treatment.[30]

Medically unexplained physical symptoms sometimes lead physicians to consider cases as somatization disorder. There are studies in the literature reporting that conversion and somatization symptoms are recognized by non-psychiatric physicians at a rate of 96-100%.[36,58] Psychiatric diagnoses of patients referred by neurologists differ from other branches especially in terms of the diagnosis frequency of somatoform and dissociative disorders. When the relationship between neurological and psychiatric disorders is examined, most of these cases may also exhibit somatization disorder, since an organic basis for symptoms cannot be found in approximately 30% of neurological patients.[59,60] Ewald et al. reported that 14 of 100 neurological inpatients had a diagnosis of somatization disorder without organic medical disease, and 26 had both an organic disease and non-organic symptoms.[59] In addition, somatic complaints may also be a symptom of DD or anxiety.[61] Consistent with this data, active psychopathology was not detected in 20.8% of the patients with a pre-diagnosis of somatoform disorder, and 14.3% were diagnosed with anxiety disorder. 50% of 12 patients with a pre-diagnosis of somatoform disorder were also diagnosed as somatoform disorder by psychiatrists.

In this study, 37% of the consultations requested could not be classified in any diagnostic category by neurologists. The majority of these cases were diagnosed with DD and anxiety disorder by a psychiatrist. In an other study examining all hospital consultations, this rate was reported to be 72%.[39] In our opinion, this may have led to a decrease in the accurate diagnosis rate of psychiatric disorders. These results are consistent with the literature indicating that DD and anxiety disorders are not sufficiently recognized by non-psychiatric physicians.[56,62,63] For this reason, this study has led us to realize that the frequency of the disorders in the spectrum of DD and anxiety seen in neurological diseases is quite high, and that we gain awareness that neurologists and psychiatrists will work together in order to plan joint trainings in order to recognize their clinical symptoms more easily.

Some of the significant limitations encountered during the study are the retrospective design of the study, its inclusion of a single center, the lack of face-to-face interviews with the physician requesting consultation on a case by case basis, neurologists not classifying the diagnoses based on DSM and the exclusion of personality disorders.

CONCLUSION

This study showed that A/SUD and cognitive disorders were well recognized by neurologists, but the recognition rate of anxiety and somatization disorders was low. Psychiatric education within the scope of medical and specialty education mainly focuses on psychiatric morbidity in the population included in the field of mental health. This affects health professionals' recognition of psychiatric disorders in general hospitals and subsequent psychiatric referral. Considering the effect of the presence of psychiatric comorbidity on mortality, morbidity and length of hospital stay, we believe that the results of our study are valuable in terms of emphasizing the importance of recognizing psychiatric comorbidities in the neurological patient population.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Neurology Clinic of Izmir Bozyaka Training and Research Hospital Ethics Committee within the scope of good clinical practice (Permission granted: 07.08.2019, Decision no: 124-4).

To screen the files retrospectively, written consent was obtained from the head physician of the hospital's comittee within the scope of good clinical practice (07.08.2019/124-4).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Orjinal Araştırma / Original Article

Comparison of Two Different Scales of Consciousness Assessment in the Intensive Care Unit

Yoğun Bakım Ünitesinde İki Farklı Bilinç Durumu Değerlendirme Ölçeğinin Karşılaştırılması

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Abstract

Aim: To compare two different consciousness assessment scales used in intensive care units.

Material and Method: The prospective observational study was conducted with a total of 29 patients who were followed up in intensive care units. GCS (Glasgow Coma Scale) and FOUR (Full Outline of UnResponsiveness) Scores and modified Rankin Scale (mRS) scores of the patients who were monitored by the same observer for 10 days in the intensive care units were measured and recorded. Mean±standard deviation was used for the values regarding total scale score means. Pearson's correlation analysis was used for comparing total score means.

Results: GCS and FOUR scores and the mean total mRS scored of the patients on the first day were 6.95±2.25 (range, 3-11), 8.65±2.45 (range, 4-13), and 4.93±0.25 (range, 4-5) respectively. The mean total scale scores on the 10th day were 6.62±3.27 (range, 3-12), 8.13±3.44 (range, 4-13), and 4.89±0.30 (range, 4-5). A statistically significant high-degree relationship was found between the mean total scores of the patients' GCS and FOUR scores ($p<0.001$).

Conclusion: FOUR can be confidently used instead of GCS for the assessment of consciousness. Comparisons of GCS and FOUR score may be conducted with different patient groups and larger samples. Differences between observers should also be evaluated when comparing the scoring systems.

Keywords: Consciousness assessment, full outline of unresponsiveness score, glasgow coma scale, follow-up, nursing

Öz

Amaç: Yoğun bakım ünitesinde kullanılan iki farklı bilinç değerlendirme aracını karşılaştırmaktır.

Gereç ve Yöntem: Prospektif gözlemsel tipteki çalışma yoğun bakım ünitesinde izlenen 29 hasta ile yürütüldü. Yoğun bakım ünitesinde 10 gün süre ile aynı gözlemci tarafından izlenen hastaların GKS (Glasgow Koma Skalası) ve FOUR (Full Outline of Unresponsiveness) Skoru ile Modifiye Rankin Skalası (mRS) ölçülerek kayıt edildi. Ölçek toplam puan ortalamalarına ilişkin değerlerde Ortalama±Standart Sapma; toplam puan ortalamalarının karşılaştırılmasında Pearson Corelasyon Analizi kullanıldı.

Bulgular: Hastaların izlenen 1. günde GKS, FOUR Skoru ve mRS toplam puan ortalamaları sırasıyla 6,95±2,25 (3-11), 8,65±2,45 (4-13) ve 4,93±0,25 (4-5); 10.günde ölçek toplam puan ortalamaları sırasıyla 6,62±3,27 (3-12), 8,13±3,44 (4-13) ve 4,89±0,30 (4-5) olarak ölçüldü. Bilinç değerlendirmesinde, hastaların GCS ile FOUR Skoru toplam puan ortalamaları arasında istatistiksel olarak ileri derecede anlamlı bir ilişki olduğu saptandı ($p<0,001$).

Sonuç: Hastaların bilinç değerlendirilmesinde FOUR Skoru, GKS yerine güvenle kullanılabilir. GKS ve FOUR Skorunun karşılaştırılması farklı hasta grupları ile daha büyük örneklem ile yürütülebilir. Skorlama sistemlerinin karşılaştırılmasında gözlemciler arasındaki farklılıklar da ölçülebilir.

Anahtar Kelimeler: Bilinç değerlendirmesi, full outline of unresponsiveness skoru, glasgow koma skalası, izlem, hemşirelik

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INTRODUCTION

Assessment of consciousness is the best and most practical way of distinguishing brain dysfunction. For this purpose, the Glasgow Coma Scale (GCS) was developed by Teasdale and Jennett in 1974.[1,2] The GCS is a commonly used international scale for the assessment of comatose patients and allows rapid identification of changes in patients' consciousness.[2-4]

The GCS, which includes "eye aperture", "motor response," and "verbal response" parameters, is commonly used for assessing consciousness for diseases such as head trauma, central nervous system diseases, and concussion.[5] However, the GCS remains incapable of identifying certain neurologic examinations. It is not designed for detecting different details of neurologic examinations such as brain stem reflexes and eye movements. In this sense, it is not adequate for predicting the patients' condition, especially concerning the verbal component.[1,6,7]

In this direction, Wijdicks et al. developed the Full Outline of UnResponsiveness Score (FOUR Score), which includes detailed examinations of abnormal respiratory rhythm, brain stem reflexes, eye opening and blink reflexes, and motor responses.[1,8,9] Studies state that FOUR is more effective than the GCS, it provides knowledge about important details such as brain stem reflexes, eye movement, and respiratory rhythm, and more studies on this matter are needed.[10-15] Furthermore, FOUR is applicable for patients who are intubated or aphasic and can be used to identify the severity of coma (abnormal brain stem reflexes, fluctuant respiratory rate and mechanic ventilation rate).[16,17] FOUR is composed of "eye response," "motor response," "brain stem reflexes," and "respiration" parameters. It is thought that it is easier to remember FOUR than the GCS because each parameter is calculated on a 4-point scale.[10] The studies conducted to date also emphasize that FOUR is easily applicable by nurses.[10,15,18]

In this direction, the aim of the study was to compare the GCS and FOUR by using these scales for assessing the consciousness of patients in the intensive care unit (ICU).

MATERIAL AND METHOD

Design; A prospective observational study.

Place and sample of the study

In the research, the sample width determination method was chosen for the relationship between the scale scores. For the sample size, a value of 0.70 and higher was assumed to be high and a one-way hypothesis test was performed. Other parameters required for the calculation of the sample size are Type I error and Type II error amount. In order to make a reliable decision of 95% for type error and 80% for type II error, the software is entered as α error 0.5 and β error 0.20. G*Power 3.1.9.4 software[19] was used in the calculation. According to the results of the analysis, the expected sample size was calculated as 11 people. Accordingly, a sample of 29 patients seems to be sufficient. The study was conducted with a total of 29 patients hospitalized in a 6-bed adult ICU of a training and research hospital in Sakarya, between February and May, 2019. Patients aged over 18 years who were intubated, sedated, and monitored in the ICU for at least 10 days and examined neurologically using the GCS were included in the research. Patients with spinal cord injury, head trauma, and those who were discharged before 10 days or who were exitus (total of 12 patients) were excluded.

Data collection scales

Data of the research were collected using a Patient Information Form, the GCS, FOUR, and the modified Rankin Scale.

Patient Information Form: This form questioned diagnostic and operational parameters such as length of ICU stay, duration of intubation, and duration of mechanic ventilation, as well as socio-demographic characteristics such as age and sex (10 items).

Glasgow Coma Scale (GCS): The GCS was developed as a practical scale in 1974 by Teasdale and Jennett to evaluate the level of consciousness of patients following acute or traumatic brain damage.[20] Although its validity is frequently questioned, it is still the most commonly used scoring system. It is a simple and practical scale, especially for admission to the ICU and monitoring clinical course. A GCS score of 8 or less indicates severe damage, 9-12 points indicate moderate damage, and 13-15 points indicate minor trauma. The scale is composed of three different parameters: eye opening, verbal response, and motor response. The GCS is calculated by adding up the patient's scores from each parameter. This score ranges between 3-15 points. A GCS total score of 13-15 means that the patient is conscious, a score of 8-12 indicates pre-coma, and scores less than 8 indicate coma. In this study, the break point of the GCS was a score less than or equal to five (GCS≤5). The Cronbach alpha coefficient was 0.96 in the study.

Full Outline of UnResponsiveness (FOUR) Score: The scale, which was developed by Wijdicks et al.[8] as an alternative to the GCS, was adapted to Turkish by Örken et al.[16] The score is composed of four parameters: eye response, motor response, brain stem reflexes, and respiration. Scores of 0-4 can be obtained from each parameter. "0 points" indicate deep coma, "4 points" indicate full wakefulness and awareness. The maximum score that can be obtained is 16. This score outclasses the GCS because it is applicable for patients who are intubated or aphasic. Moreover, it is easier to remember and use compared with the GCS because each parameter is evaluated out of four. Nurses can easily use this score following training on its use.[10,15,18] The Cronbach alpha coefficient was 0.95 in the study.

Modified Rankin Scale (mRS): This scale was first introduced by Dr. John Rankin[21] modified by Warlow et al.[22] and used for the first time by van Swieten et al.[23] The scale is used to measure the degree of disability and dependency of patients with stroke or other neurologic problems. It is evaluated between 0-6 points; 0 points mean no symptoms, 1 point indicates no significant disability despite symptoms (able to carry out all

usual activities), 2 points indicate slight disability (unable to perform some previous activities but able to carry out own activities without assistance), 3 points indicate moderate disability (requiring some help but able to walk without assistance), 4 points indicate moderate-severe disability (not able to walk and attend to bodily needs without assistance), 5 points indicate severe disability (bedridden, incontinent and require constant care), and 6 points mean that the patient is dead.[24,25] In the mRS, 0-2 points means good prognosis and 3-6 points mean poor prognosis.[26] In this study, this scale was used to monitor the prognosis of patients. The Cronbach alpha coefficient of the study was 0.97.

Data Collection Process

Socio-demographic characteristics were questioned during the first encounter with the patients who were admitted to the ICU. The GCS, FOUR, and mRS scores of the patients were recorded. Patients were monitored in the ICU for 10 days. Data were collected by a researcher with ICU experience of more than one year and who is knowledgeable about GCS and FOUR scoring. Data were collected by the same researcher at the same time intervals in order to achieve an objective evaluation. GCS and FOUR scoring was tested on some patients prior to the study and these patients were not included in the study. Scales were calculated by using the original formulae.

Study ethics: The Declaration of Helsinki was abided by throughout the research. Ethics committee approval was obtained in writing from Sakarya Unıversity Medical Faculty (Permission No. 12.12.2018/06). Written consent was obtained from the patients/patients' relatives.

Data analysis: Data were analyzed using the Statistical Package for the Social Science for Windows Version 21.0 (SPSS, IBM). Ordinal variables were evaluated as the arithmetic mean and standard deviation, minimum, maximum. The results of total scale score means are given as Mean±Standard Deviation (SD). Pearson' correlation analysis was used to compare total scale score means. Reliability analyses of the GCS and FOUR are given using Cronbach's alpha. The significance level was accepted as $p<0.05$.

RESULTS

In the research, the mean age of the patients was 76.82+15.55 years, 37.9% were male and 62.1% were female. The patients' mean length of stay in the ICU was 25 days and the mean duration of intubation was 24 days. When the medical diagnoses of the patients were examined, it was seen that majority of the patients was monitored in the ICU due to cerebrovascular accident (31.0%) and pneumonia (24.1%) (**Table 1**).

When invasive procedures that were performed on the patients were examined, it was detected that all patients had urethral catheters inserted (n=29), the majority had nasogastric catheters (n=22, 75.9%), and none was under analgesia treatment (**Table 2**).

Table 1. Medical diagnosis groups of the patients

Diagnosis	n	(%)
Acute renal failure	2	(6.9)
Cancer	1	(3.4)
Gastrointestinal hemorrhage	3	(10.3)
Chronic heart failure	5	(17.2)
Pneumonia	7	(24.1)
Sepsis	2	(6.9)
Cerebrovascular accident	9	(31.0)

Table 2. Distribution of treatment attempts for patients

Treatments		n	%
Arterial catheter	Yes	0	0.0
	No	29	100.0
Central catheter	Yes	4	13.8
	No	25	86.2
Urethral catheter	Yes	29	100.0
	No	0	0.0
Nasogastric catheter	Yes	22	75.9
	No	7	24.1
Analgesic treatment	Yes	0	0.0
	No	29	100.0

The total score means for the routinely used GCS and concurrently applied FOUR and mRS on the patients in the ICU are shown in **Table 3.** The mean GCS total scores were under 8 for the 10 days of monitoring, and the patients were evaluated as being in a coma. The total mean FOUR scores was 8-9 points, also indicating coma. The mean mRS total score of all patients was >2 in the prognosis evaluation. For the consciousness assessment of patients included in the research, a statistically significant high-degree relationship was detected between the GCS and FOUR ($p<0.001$) (**Table 3**).

Table 3. Relationship between the results of FOUR, the GCS, and the modified Rankin Scale

Follow-up Days	[a]GCS 3-15 x±sd (min-max)	[a]FOUR 0-16 x±sd (min-max)	[b]r, p	mRS 0-5 x±sd (min-max)
Day 1	6.95±2.25 (3-11)	8.65±2.45 (4-13)	0.887, 0.001	4.93±0.25 (4-5)
Day 2	7.03±2.22 (3-11)	8.82±2.26 (4-13)	0.920, 0.001	4.93±0.25 (4-5)
Day 3	6.96±2.32 (3-11)	8.75±2.53 (4-13)	0.953, 0.001	4.89±0.30 (4-5)
Day 4	7.48±2.54 (3-11)	9.37±2.71 (4-13)	0.969, 0.001	4.89±0.30 (4-5)
Day 5	7.10±2.60 (3-11)	8.89±2.85 (4-13)	0.969, 0.001	4.89±0.30 (4-5)
Day 6	7.06±2.53 (3-11)	8.75±2.82 (4-13)	0.965, 0.001	4.93±0.25 (4-5)
Day 7	7.06±2.84 (3-12)	8.89±3.01 (4-13)	0.964, 0.001	4.89±0.30 (4-5)
Day 8	6.82±2.91 (3-12)	8.48±2.97 (4-13)	0.966, 0.001	4.86±0.35 (4-5)
Day 9	6.65±3.01 (3-12)	8.27±3.09 (4-13)	0.964, 0.001	4.89±0.30 (4-5)
Day 10	6.62±3.27 (3-12)	8.13±3.44 (4-13)	0.974, 0.001	4.89±0.30 (4-5)

[a]Values regarding scale total scores are given as Mean±SD.
[b]Pearson correlation analysis was used for comparing scale total scores.

DISCUSSION

In the study, in which we aimed to compare the GCS and FOUR in the assessment of consciousness of patients in the ICU, the correlation between the GCS and FOUR was found significant at a high degree. FOUR was found to be as effective as the GCS in assessing the degree of consciousness. In other a study, the significant relationships were existed between GCS and FOUR scores with mortality and poor outcomes.[27] There are other studies indicating good correlations between GCS and FOUR scores.[28,29] On the other hand, it is reported that FOUR Score have better sensitivity, specificity, and predictive ability compared to GCS in patients with endotracheal tube intubation.[30] Despite all disadvantages, GCS is affirmed as the gold standard for evaluating the consciousness and comatose level of patients.[31] The GCS is limited, especially for assessing verbal response of patients who are intubated and aphasic.[31,32] In this sense, FOUR eliminates these limitations and allows the assessment of respiratory parameters and brain stem reflexes of patients. FOUR is as good as the GCS for predicting mortality.[33] FOUR can easily be used by nurses who receive training on the subject.[13]

Similar studies have compared the GCS and FOUR in different patient groups. A study by Jalali and Rezaei found that FOUR was a better and more comprehensive scale for neurologic assessment as compared with the GCS.[13] FOUR has been reported as being more effective in predicting the mortality and discharge of patients in pediatric ICUs.[34] On the other hand, a study by Şahin et al.[15] found no significant difference between the GCS and FOUR or implementers. No statistically significant difference was detected between the GCS and FOUR in predicting mortality of patients in the ICU with traumatic brain damage.[35] Similarly, in another study, it was found that FOUR had no distinct advantage over the GCS in predicting morbidity and mortality of pediatric patients with head trauma.[32]

In our study, the GCS and FOUR were compared in terms of mean total scores; sub-parameters of the scoring systems were not examined individually. However, when the mean total scores of both scores were examined, it was observed that patients were at the level of coma. This shows that the scores are consistent. Different studies that individually compare the sub-parameters of the scores with different patient groups (e.g. intubated and non-intubated) should be conducted. Furthermore, this study was conducted in a single ICU with a single observer. Similar research should be conducted in different clinics such as emergency units, neurosurgery wards, and stroke units, and comparisons should be performed between different observers.

FOUR, which was developed as an alternative to the GCS, is an easily applicable and valid scale. However, it is not a sufficient scale to perform full neurologic examinations for patients with coma.[36] This scale also assesses neurological status of patients with greater accuracy. High sensitivity of FOUR scale in clinical assessment has eased treatment and monitoring of patients for the medical team. Using brain stem reflexes and respiratory pattern, this scale provides an accurate and correct assessment of patients in coma, and has the ability to assess minor changes in neurological status of patient. Therefore, FOUR is recommended as a tool for assessment of neurological patients with changes in consciousness levels.[37]

Limitations of the study: The main limitations of the research are that the research was conducted in a single ICU with only 29 patients, and the patients were evaluated by a single observer.

CONCLUSION

The study showed that the GCS and FOUR are in a significant relationship in assessing the state of consciousness of patients. FOUR is a scale for consciousness assessment that can be substituted for the GCS. However, it is suggested that studies comparing FOUR and the GCS with larger samples and different samples should be conducted. In addition, scales for assessing consciousness for patients in the ICU that can be used easily by nurses should be developed.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Sakarya Unıversity Medical Faculty Ethics Committee (Permission No. 12.12.2018/06).
Informed Consent: Written informed consent was obtained from all participants who participated in this study.
Status of Peer-review: Externally peer-reviewed.
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Original Article / Orjinal Araştırma

Comparison Of The Clinical Outcomes Of Primary Closure And Patch Plasty Techniques In Carotid Endarterectomy

Karotis Endarterektomisinde Primer Kapanma ve Yama Plastiği Tekniklerinin Klinik Sonuçlarının Karşılaştırılması

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Abstract

Background: In this study, patients undergoing carotid endarterectomy with primary closure or patch angioplasty for carotid artery disease were evaluated retrospectively and our early results were presented.

Methods: In our clinic, fifty-five patients who performed carotid endarterectomy for carotid artery disease between November 2013 and May 2017 were enrolled in the study. The files of patients were reviewed retrospectively. These patients were divided into two groups as Group 1 (primer closure group, n =32) and Group 2 (patch angioplasty group, n = 23). Both groups were compared in terms of demographic data, surgical technique, complications, and early results.

Results: There were no statistically significant differences in terms of intensive care unit stay and hospitalization, postoperative neck hematoma/exploration, postoperative renal failure, and the other demographic data, symptomatology, surgical technique, ≥30-day stroke, ≥30-day restenosis, ≥30-day death between both groups.

Conclusion: Our study results have shown that the closure of arteriotomy with primary or patch angioplasty after carotid endarterectomy is a safe method in terms of early results.

Keywords: Carotid endarterectomy, angioplasty, carotid artery stenosis, mortality

Öz

Amaç: Bu çalışmada karotis arter hastalığı için primer kapama veya yama anjiyoplasti ile karotis endarterektomi uygulanan hastalar retrospektif olarak değerlendirildi ve erken sonuçlarımız sunuldu.

Yöntemler: Kliniğimizde Kasım 2013-Mayıs 2017 tarihleri arasında karotis arter hastalığı için karotis endarterektomi uygulanan elli beş hasta çalışmaya dahil edildi. Hasta dosyaları retrospektif olarak incelendi. Bu hastalar Grup 1 (primer kapatma grubu, n = 32) ve Grup 2 (yama anjiyoplasti grubu, n = 23) olarak iki gruba ayrıldı. Her iki grup demografik veriler, cerrahi teknik, komplikasyonlar ve erken sonuçlar açısından karşılaştırıldı.

Bulgular: İki gurup arasında yoğun bakımda kalış ve hastaneye yatış, postoperatif boyun hematomu / eksplorasyonu, postoperatif böbrek yetmezliği, semptomatoloji, 30 günlük inme, 30 günlük restenoz , 30 günlük ölüm açısından anlamlı fark tespit edilmedi.

Sonuç: Arteriyotominin karotis endarterektomi sonrası primer veya yama anjiyoplasti ile kapatılmasının erken sonuçlar açısından güvenli bir yöntem olduğunu göstermiştir.

Anahtar Kelimeler: Karotis endarterektomi, anjiyoplasti, karotis arter stenozu, mortalite

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INTRODUCTION

Carotid artery disease (CAD) is one of the most important causes of stroke. Currently, carotid endarterectomy (CEA) is accepted as the gold standard treatment option for severe carotid artery stenosis (CAS).[1] A number of studies demonstrated that CEA can reduce the rates of stroke and death in patients with internal carotid artery stenosis independent of symptom status.[2]

Eastcott and colleagues [3] reported the first case of successful surgical intervention to CAS in 1954. Several studies suggested that surgical treatment of the carotid stenosis is superior to medical treatment with respect to preventing cerebrovascular complications and increasing quality of life in patients with severe CAS.[2,4]

A number of techniques are proposed to patch up the arteriotomy after CEA operation, and they are primer closure, prosthetic patch angioplasty, venous patch angioplasty, or biomaterial patch angioplasty.[5] Of these techniques, the patch angioplasty is commonly performed after carotid endarterectomy. In fact, patch angioplasty is standard practice due to its relation to lower rates of carotid restenosis and stroke. [5-7] Although there are a number of different approaches, currently, there is no consensus about the optimal method of arteriotomy closure after the carotid endarterectomy.

In the present study, we aimed to compare the clinical outcomes of the primer closure and the patch angioplasty for the carotid endarterectomy.

MATERIAL AND METHOD

A total of 55 patients (37 males and 18 females; the mean age was 70.9 years) data, who underwent the carotid endarterectomy between November 2013 and May 2017 at Kayseri City Training and Educational Hospital were evaluated retrospectively. The Local Clinical Research Ethical Committee approved the protocol of the current study. Due to the retrospective nature of the current study, the requirement for written informed consent was waived by the committee.

Demographic data and comorbid conditions of each patient were recorded. The patients included in the current study were divided into two groups: Group 1 (primer closure (PC) group, n=32), and Group 2 (patch angioplasty (PA) group, n=23). The 15 patients (27.3%) were neurologically asymptomatic, whereas the 40 (72.7%) patients had neurologic symptoms related to carotid stenosis before the surgery. The neurologic symptoms were defined as TIA or stroke within six months before the surgery. All the patients were examined by means of carotid artery ultrasound and computed tomographic angiography (CTA) or magnetic resonance angiography (MRA) or conventional digital subtraction angiography (DSA) to assess the degree of carotid stenosis. The carotid endarterectomy was performed when the carotid artery stenosis was ≥60% in asymptomatic patients and ≥50% in symptomatic patients. The patch angioplasty was performed with a Dacron patch or bovine pericardial patch in Group 2. We used the processed bovine pericardial patch for the patients, who underwent CEA with the biological patch (Lemaitre Vascular, Inc, Burlington MA 01803, USA). The patch was washed with sterile saline solution, following the manufacturer's instructions prior to use. The Dacron patch used almost exclusively was the Hemashield Platinum Finesse (Maquet Cardiovascular, Inc, Wayne, NJ, USA). Standard dual antiplatelet therapy (acetylsalicylic acid 100 mg/day and clopidogrel 75 mg/day) was routinely ordered following the carotid endarterectomy on postoperative day one. Postoperative neck hematoma/exploration, acute kidney injury, length of hospital stay (days), ICU stay (day), duration of surgical procedure (minutes), rates of 30-day stroke, and 30-day mortality were assessed for each surgical procedure performed. Postoperative stroke was described as any major neurologic deficit confirmed by the clinical judgment of the attending physician and/or results of a brain CT. The restenosis was described as the presence of significant stenosis in the operated carotid artery (≥50% stenosis at the endarterectomy site with Doppler ultrasound study).

Surgical Procedure

All the patients included in this study underwent a standard carotid endarterectomy surgery under general anesthesia. In some cases, coronary artery bypass grafting (CABG) was carried out along with CEA, which was performed before CABG. After the longitudinal incision was made along the anterior border of the sternocleidomastoid muscle, the subcutaneous tissues were passed, and then the carotid sheath was reached. After the carotid sheath was opened, the common carotid artery, internal and external carotid arteries, and superior thyroid artery were exposed and isolated. The carotid bulb was injected with 1% lidocaine hydrochloride, which affects the carotid baroreceptor and prevents reflex sympathetic bradycardia. A bolus of 5000 IU heparin was administered intravenously for systemic anticoagulation before clamping the carotid arteries. A longitudinal arteriotomy was performed after systemic heparinization. Afterward, the carotid endarterectomy was performed. The arterial wall was irrigated with a heparinized saline solution. After the atheromatous plaque was completely removed, tacking sutures were placed proximally and distally unless no ledge was evident at either end of termination of the endarterectomy. We measured the pressure of the carotid stump in all the patients. The carotid stump pressure was maintained above 40 mmHg and an inotropic drug was administrated, if necessary. Cerebral Oximeter was not used to evaluate cerebral oxygenation in all the patients. The CEA procedures were performed without shunting. The arteriotomy was closed either as primary or with a patch including Dacron or bovine pericardial patch. Primer arterial closure or prosthetic patch angioplasty were performed regardless of the size of the ICA in all cases.

Statistical analysis

Descriptive data derived from the results of the present study were presented as mean±standard deviation or median-

interquartile range depending on the distribution type of the continuous variables. Categorical variables were summarized as number and percentage. Kolmogorov-Smirnov test was used to check the normality of the numeric variables. Depending on the patient groups studied, Fisher Exact test was utilized for comparisons of categorical variables, whereas independent samples t-test and Mann Whitney U test were used to compare continuous variables when data are normally and non-normally distributed, respectively. Jamovi (jamovi project (2018). jamovi (Version 1.0.7) [Computer Software]) retrieved from https://www.jamovi.org) and JASP Team (2018, Version 0.10.2 [Computer Software]) were used to perform statistical analyses. A p value (<0.05) was considered statistically significant.

RESULTS

The study aims to compare the clinical outcomes of surgical techniques, primer closure, and patch angioplasty with different patch materials, performed after CEA. The demographic characteristics of the patients were summarized in **Table 1**. There was no significant difference between the patient groups in terms of demographic characteristics, frequencies of chronic coexisting disorders, stroke, and transient ischemic attacks (TIA).

Table 1. Baseline demographic characteristics of whole study population and primary closure and patch angioplasty groups

Variables	Whole Group (n=55)	PC group (n= 3)	PA group (n=32)	p value
Age (years), Mean±SD	70.93±9.16	70.61±8.59	71.16±9.67	0.829
Gender, male, n (%)	37 (67.3)	14 (60.9)	23 (71.9)	0.561
Hyperlipedemia, n (%)	21(38.2)	6 (26.1)	15 (46.9)	0.162
Diabetes mellitus, n (%)	38 (69.1)	18 (78.3)	20 (62.5)	0.25
Hypertension, n (%)	2 (3.6)	0 (0)	2 (6.3)	0.504
COPD, n (%)	11 (20)	4 (17.4)	7 (21.9)	0.745
Smoking, n (%)	14 (25.5)	7 (30.4)	7 (21.9)	0.472
CKD history, n (%)	4 (7.3)	1 (4.3)	3 (9.4)	0.479
ASO, n (%)	1 (1.8)	0 (0)	1 (3.1)	0.392
CAD, n (%)	29 (52.7)	15 (65.2)	14 (43.7)	0.116
TIA, n (%)	18 (32.7)	5 (21.7)	13 (40.6)	0.141
Stroke, n (%)	23 (41.8)	11 (47.8)	12 (37.5)	0.444

ASO: arteriosclerosis obliterans; **CAD:** coronary artery disease; **CKD:** chronic kidney disease; **COPD:** chronic obstructive pulmonary disease; **SD:** Standart Deviation; **TIA:** transient ishemic attack.
Descriptive statistics for normally distributed variables were given as mean±SD and Independent Samples t test was used for comparison. Descriptive statistics for categorical variables were given as number (%) and Fisher Exact test was used for comparison.

Right-sided CEA was performed in 22 cases (40%), while left-sided CEA was performed in 33 cases (60%). In group 2, the bovine pericardial patch was used in 11 patients and the Dacron patch was used in 12 patients for patch angioplasty. Of all the patients, 15 patients (86.5%) were asymptomatic and 40 patients (72.7%) had neurologic symptoms.

A total of five patients developed several complications related to CEA. One patient underwent postoperative neck exploration due to surgical site hematoma, one patient developed acute kidney injury, and three patients had stroke over 30 days after CEA. There was no difference between PC and PA groups with regard to the developed complications. In general, restenosis was detected in three patients, and in this respect, the repeat groups did not show any meaningful difference. The carotid stenosis was determined to be 50% in three patients with restenosis. Therefore, these patients were followed up with medical treatment. None of the operated patients had contralateral severe carotid artery stenosis. Over 30 days postoperation, the mortality rate was 5.5% and there was no difference between the groups. Perioperative patient characteristics and complication rates were presented in **Table 2**.

Table 2. Perioperative characteristics and complication rates of primary closure and patch angioplasty groups

Complication rates and perioperative characteristics	Whole group (n=55)	PA (n = 23)	PC (n =32)	p-value
Asymptomatic, n (%)	15 (27.3)	8(34.8)	7 (21.9)	0.289
Symptomatic, n (%)	40 (72.7)	15(65.2)	25 (78.1)	0.363
30-Day Death, n (%)	3 (5.5)	1(4.3)	2 (6.2)	0.759
Preoperative LMWH Therapy, n (%)	6 (10.9)	1(4.3)	5 (15.6)	0.186
Preoperative Statin Therapy, n (%)	16 (29.1)	7 (30.4)	9 (28.1)	0.852
Preoperative β-Blocker Therapy, n (%)	20 (36.4)	10 (43.5)	10 (31.2)	0.352
Preoperative Antiplatelet Therapy, n (%)	7 (12.7)	3 (13)	4 (12.5)	0.952
Preoperative Myocardial Infarction, n (%)	8 (14.5)	5(21.7)	3(9.4)	0.200
Length of Hospital Stay (days), n (%)	9.15±3.88	9.30±3.85	9.03±3.85	0.800
Length of ICU Stay (days), Median [IQR]	1 [1-3]	1 [1-3]	1 [1-2.5]	0.743
Duration of operation (minutes), Mean, SD	92.78±24.49	95.74±25.70	90.66±23.76	0.453
CABG + CEA, n (%)	13 (23.6)	6 (26.1)	7 (21.9)	0.717
Right CEA, n (%)	22 (40)	10 (43.5)	12 (37.5)	0.655
Left CEA, n (%)	33 (60)	13 (56.5)	20 (62.5)	0.782
ASA classification, n (%)				
I	2 (3.6)	1 (4.3)	1 (3.1)	0.078
II	15 (27.3)	3 (13)	12 (37.5)	
III	37 (67.3)	19 (82.6)	18 (56.3)	
IV	1 (1.8)	0 (0)	1 (3.1)	
Postoperative neck hematoma/exploration, n (%)	1 (1.8)	0 (0)	1 (3.1)	0.392
≥30-day stroke, n (%)	3 (5.5)	1 (4.3)	2 (6.3)	0.759
Postoperative acute kidney injury, n (%)	1 (1.8)	0 (0)	1 (3.1)	0.295
≥30-day restenosis, n (%)	3 (5.5)	1 (4.3)	2 (6.3)	0.905
≥30-day death, n (%)	3 (5.5)	1 (4.3)	2 (6.3)	0.905

ASA: American Society of Anesthesiologists; **ASO:** arteriosclerosis obliterans; **CABG:** coronary artery bypass grafting; **CEA:** carotid endarterectomy; **ICU:** intensive care unit; **IQR:** Interquartile Range; **SD:** Standart Deviation.
Descriptive statistics for normally distributed variables were given as mean±SD verilip and Independent Samples t test was used for comparison. Descriptive statistics for variables that didn't have normal distribution were given as median [IQR] and Mann Whitney U test was used for comparison. Descriptive statistics for categorical variables were given as number (%) and Fisher Exact test was used for comparison.

DISCUSSION

This study compared retrospectively the rates of restenosis and stroke as well as other surgical complications in patients, who had undergone CEA either with primary closure or with patch angioplasty. The main finding of the current study was that there was no significant difference between the groups in terms of the restenosis, the stroke, or the other surgery-related complications. In contrast to the literature, the primary closure was not associated with increased perioperative stroke and restenosis rates in the current study.

Several studies indicated that the carotid endarterectomy reduces the risk of stroke and related mortality in patients with both the symptomatic and the asymptomatic CAS.[8,9] Indications of treatment for carotid artery disease are determined by factors associated with the neurological symptoms, the degree of carotid stenosis, the presence of coexisting chronic diseases, the vascular and local anatomical features, and the carotid plaque morphology.[4]

The exact characterization of CAS with the appropriate imaging modalities is of crucial importance before the CEA performed. We used DUS as the first-line imaging modality for diagnosis. After deciding on the carotid endarterectomy, the CAS was confirmed by either CTA or MRA. The main advantage of the CTA or MRA compared to DUS is their ability to evaluate the aortic arch as well as the extra- and intracranial circulation.[10]

According to the 2017 guidelines of the European Society for Vascular Surgery (ESVS), the CAS is defined as 'symptomatic' if the patient had related symptoms in the preceding 6 months and 'asymptomatic' if no prior symptoms are seen or when symptoms have occurred >6 months before diagnosis. The CEA should be considered in patients with an asymptomatic 60-99% stenosis if the perioperative stroke/death rates are below 3%, and the patient's life expectancy is greater than five years (Class IIa, Level B). In the symptomatic patients, who have 70-99% carotid stenosis, the documented procedural death/stroke rate is below 6% and the CEA is recommended (Class I, Level A).[10]

The CEA has remained the standard management strategy for severe carotid artery stenosis. In the present study, we preferred the conventional CEA rather than eversion endarterectomy for all the patients due to technical ease. When compared to the primary arterial closure, patch angioplasty is associated with fewer strokes and lower restenosis rates.[11,12] Therefore, the patchplasty is now considered to be the standard of practice for the patients undergoing conventional CEA. Although a previous meta-analysis revealed that the patch angioplasty was associated with lower restenosis and perioperative stroke rates,[13] a recent retrospective study performed by Huizing E et al.[14] questioned this assumption. These authors suggested that, in patients with symptomatic CAS, there was no difference in PA and PC groups in terms of restenosis, stroke, or death rates.[14] After this study, Huizing E et al.[14] performed a meta-analysis based on moderate-quality trial data, and they found that perioperative stroke and restenosis rates were lower in the patients undergoing PA when compared to those undergoing PC.[15] The meta-analysis of Huizing E et al.[14] confirmed the results of previous meta-analyses, in which the PA was deemed safer when compared to the PC technique. As we could not detect a difference regarding to restenosis and stroke rates between the two procedures, the results of the current study were not in agreement with the meta-analysis results of Huizing E et al.[14] The lack of this difference might be due to the retrospective nature of the present study and a relatively small sample size.

The primary closure or the patch angioplasty decision is based in part on the anatomical features of the carotid artery. However, there is still no unanimous agreement in regarding to the selection of the closure method. The recent reports suggested that a patch angioplasty is indicated for the patients, whose internal carotid artery diameters are smaller than 4-5 mm to prevent perioperative stroke and occlusion.[16] Clagett and colleagues[17] reported that the primer closure method could be safely chosen in the anatomically appropriate patient groups due to their lower restenosis rates. The CEA operations were performed regardless of the size of the ICA at our Institution/Hospital.

The arteriotomy closure can be performed either with an autologous venous patch or synthetic materials such as Dacron, polytetrafluoroethylene (PTFE), bovine pericardium, and polyester urethane.[6,18] When compared to prosthetic patches, bovine pericardial patches have several advantages, which are more biocompatible, easy to handle, associated with less suture line bleeding, and possibly have reduced infection risk.[19]These advantages of bovine pericardium lead to its widespread use during the CEA. In this context, we also used a Dacron patch and a bovine pericardial patch and obtained similar results.

The use of shunting during the carotid endarterectomy (CEA) to prevent the development of stroke is still controversial. Although some studies supported the use of shunting, others suggested that there was no additional advantage when using a shunting procedure.[9,20]Calligaro and colleagues[21,22] reported that adequate carotid perfusion is provided if the carotid stump pressure is above 40 mmHg, whereas some authors stated that the stump pressure above 25 mmHg is sufficient. Bicer et al.[23] emphasized that the carotid endarterectomy could be performed with low morbidity and mortality without shunting by providing normocapnia, controlled backflow from the internal carotid artery, and controlled hypertension. We noted that the stump pressure was above 40 mmHg and no shunting was required in our cases.

It was reported that almost half of the patients, who undergo carotid endarterectomy, have coronary artery disease. In the previous studies, synchronous surgery for the carotid endarterectomy, and the coronary bypass was recommended in these patients.[24,25] The CAS causes nearly one-third of the post-CABG stroke cases. Postoperative stroke is a major source of morbidity and mortality in patients undergoing CABG.[24] Our results indicated that no difference existed concerning major complications of surgery between the patients undergoing simultaneous CEA/CABG and those undergoing only CEA.

In the current study, we may have some limitations since we have performed a retrospective analysis, and therefore, we could make a clear conclusion regarding which surgical method is safer. Moreover, we had a relatively small case number, which made it hard to detect the subtle differences in complication rates. Indeed, adverse event rates were quite small in this study. On the other hand, we did our best to evaluate the complete picture of the perioperative phase of these patients, who underwent the CEA. We also presented a detailed report regarding surgical methods, some aspects of which are still debatable.

In conclusion, based on the retrospective analysis of the CEA, our results verified comparable safety of the CEA either with PA or with the PC method in contrast to the previous studies. Moreover, the restenosis, perioperative stroke, and mortality rates did not differ between the patient groups. Further studies are needed to end the ongoing debates on technically choose of better procedures.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Kayseri City Training and Educational Hospital Clinical Research Ethical Committee.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Orjinal Araştırma / Original Article

Age as the Important Independent Risk Factor of Atrial Fibrillation in Isolated Rheumatic Mitral Stenosis

Yaşın Önemi: İzole Mitral Darlıkta Atriyal Fibrilasyon İçin Bağımsız Risk Faktörü

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Abstract

Aim: Atrial fibrillation is frequent in patients with rheumatic mitral stenosis. Numerous factors have been proposed to support the pathogenesis of atrial fibrillation in mitral stenosis. Because of the most leading rhythm disorder for morbidity and mortality, the identification of its independent risk factors is very important for the prevention, and treatment of atrial fibrillation. The present study investigated the risk factors for atrial fibrillations in patients with moderate to severe mitral stenosis.

Material and Method: This retrospective study included 307 patients (217 female, 90 male) with isolated moderate to severe rheumatic mitral stenosis. The patients were divided into two groups according to the existence of atrial fibrillation. Group 1 included patients with atrial fibrillation (188 patients) and Group II without atrial fibrillation (119 patients). A comparison of two groups was made according to demographical like age and echocardiographic parameters including MVA, MVG, SPAP, left atrium diameter and mean valve score.

Results: In comparison of Group I and Group II, left atrium diameter was 4.60±0.61 vs. 4.73±0.71; respectively, p=0.132, MVA was 1.09±0.18 vs. 1.20±0.85; respectively, p=0.360), MVG was 11.31±3.86 vs. 10.78±3.32; respectively, p=0.251, SPAP was 48.41± 14.83 vs. 47.80±13,45; respectively, p=0.813, and mean mitral valve score was 7.60±1.77 vs. 7.72±1.66; respectively, p=0.613. All of them were similar in both groups. Only age was significantly higher in patients with atrial fibrillation (42.45±12.37 vs. 34.77±10.50; p<0.001, respectively)

Conclusion: This study presented that the age is an important factor for development of Atrial fibrillation in isolated rheumatic mitral stenosis.

Keywords: Age, atrial fibrillation, mitral stenosis

Öz

Amaç: Atriyal fibrilasyon ritmi romatizmal mitral darlıklı hastalarda sık görülür. Mitral darlıkta atriyal fibrilasyonnun oluşumunda pek çok faktörün etkili olduğu öne sürülmüştür. En önde gelen ölümcül ritim bozukluğu olması nedeniyle, bağımsız risk faktörlerinin bilinmesi atriyal fibrilasyonun tedavisi ve önlenmesi için çok önemlidir. Mevcut çalışmada orta ve ileri mitral darlıklı hastalar için atriyal fibrilasyon yönünden risk faktörlerini araştırılmıştır.

Gereç ve Yöntem: Bu çalışma geriye dönük olarak orta ve ileri romatizmal mitral darlık tanılı 307 hastayı (217 kadın, 90 erkek) içerir. Çalışma grupları atriyal fibrilasyon varlığına göre sınıflandırılmıştır. Hastalar iki gruba ayrılmışlardır, grup 1 (atriyal fibrilasyonlu hastalar, 188 hasta), grup 2 (atriyal fibrilasyon olmayan hastalar, 119 hasta). İki grubun karşılaştırılması yaş, ortalama kapak alanı (MVA), ortalama kapak gradiyent (MVG), sistolik pulmoner arter basıncı (SPAP), sol atriyum çapı ve ortalama kapak skora göre yapıldı.

Bulgular: Sol atriyum çapı 4,60±0,61 cm ve 4,73±0,71 cm; p=0,132) idi. MVA 1,09±0,18 cm^2 ve 1,20±0,85 cm^2; p=0,360 idi. MVG 11,31±3,86 mmHg ve 10,78±3,32 mmHg; p=0,251 idi. SPAP 48,41±14,83 mmHg ve 47,80±13,45 mmHg; p=0,813 idi. Ortalama kapak skor 7,60±1,77 ve 7,72±1,66; p=0,613 idi. Yaş ise atriyal fibrilasyonlu hastalarda belirgin olarak daha yüksekti (42,45±12,37 ve 34,77±10,50; p<0,001).

Sonuç: Bu çalışma atriyal fibrilasyonun oluşumunda yaşın önemli bir etken olduğunu göstermiştir.

Anahtar Kelimeler: Yaş, atriyal fibrilasyon, mitral darlık

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INTRODUCTION

Atrial fibrillation (AF) is common in patients with rheumatic mitral stenosis (MS) and association with increase the risk of systemic embolization and mortality.[1-4] Moreover, prevalence of systemic emboli at autopsy in MS patients with AF has been founded 41%.[5] The pathogenesis of AF in MS have been proposed many factors, including mitral valve area, valvular calcification, greater mitral valve score, right atrial pressure, increasing age, duration of mitral valve disease, left atrial dilatation, and fibrosis.[6,7] Therefore, the recognition of risk factors is important for the prevention, and treatment of AF because of high morbidity and mortality. The aim of this study was to investigate the risk factors for AF in patients with moderate to severe MS.

MATERIAL AND METHOD

This retrospective study included 307 patients (217 female, 90 male) with isolated moderate to severe rheumatic mitral stenosis. The Atılım University Medicana International ethics committee approved the study protocol (Ethics Committee-2020/2). The populations were categorized according to the existence of atrial fibrillation. The patients separated into two groups; as Group 1 with atrial fibrillation (188 patients), as Group II without atrial fibrillation (119 patients). A comparison of two groups was made according to age, mean valve area (MVA), mean valve gradient (MVG), systolic pulmonary artery pressure (SPAP), left atrium diameter (LA) and mean valve score (MVS).

Exclusion Criteria

Additional high grade valve disease (moderate or severe mitral regurgitation, aortic stenosis, and aortic regurgitation), valve prosthesis,severe coronary artery disease, left ventricular hypertrophy, left ventricular systolic dysfunction, thyroid disease, diabetes mellitus, chronic obstructive lung disease, primary pulmonary hypertension, systemic arterial hypertension, collagen tissue disease, any type of cardiac surgery.

Echocardiography

Transthoracic echocardiography was done using a 2.5 MHz transducer. All measurements were made following the American Society of Echocardiography's recommendations.[8] The size of the left atrium was calculated in the parasternal long-axis view by M-Mode echocardiography. Mean transmitral valve gradients (MVG) were measured by continuous-wave Doppler echocardiography. The diastolic pressure half-time method was used for calculating mitral valve area (MVA) and tricuspidregurgitate velocity was used to measure systolic pulmonary artery pressure (SPAP).

The mitral valve score was evaluated using by Wilkins scoring system.[9] The Wilkins score involves a semi quantitative grading of mitral leaflet thickening, mobility, calcification, and subvalvular thickening, each on a scale of 1 to 4.

Statistical Analysis

Kolmogorov-Smirnov test was used to evaluating with regard to normal distribution of continuous variables. The two independent sample t-test was used to comparison of continuous variables. Multivariate models for age were constructed with Standard regression techniques and considered only variables univariate significant. Comparisons of categorical variables for the two groups were analyzedby Chi-Square test. Relations among study parameters were evaluated using Spearman's test. The effects of age on occurrence of AF were assessed with logistic regression analysis. All continuous variables are presented as mean±SD and all categorical variables are presented as count and percentage. P values <0.05 were considered to indicate statistical significance. This was done using the software program for Windows (SPSS, Inc., Chicago, Illinois).

RESULTS

The study populations was classified according to the existence of atrial fibrillation in electrocardiography: patient who had atrial fibrillation were classified as Group 1 (188 patients; 136 females, 52 males), and those without atrial fibrillation were classified as Group 2 (119 patients; 81 females, 38 males). A comparison of two groups was made according to age, MVA, MVG, SPAP and left atrium diameter and mean valve score.

Left atrium diameter (4.60±0.61 vs. 4.73±0.71; p=0.132), MVA (1.09:Ł0.18 vs. 1.20=0.85; p=0.360), MVG (11.31±3.86 vs. 10.7843.32; p=0.251), SPAP (48.41±14.83 vs. 47.80±13,45; p=0.813), and mean mitral valve score (7.60±1.77 vs. 7.72±1.66; p=0.613) were similar in both groups. Age was significantly higher in patients with atrial fibrillation (group 2) than in patients without atrial fibrillation (group 1) (42.45±12.37 vs. 34.77±10.50; p<0.001, respectively) (**Table 1**).

Table 1. Comparison of patients with atrial fibrillation and without atrial fibrillation.

	Group I (n=188)	Group II (n=119)	t	p
Age	34.77±10.50	42.42±12.37	5.828	<0.001
MVA (cm^2)	1.09±0.18	1.20±0.85	1.423	0.157
Valve score	7.60±1.77	7.72±1.66	0.628	0.530
MVG (mmHg)	11.31±3.86	10.78±3.32	1.241	0.216
SPAP (mmHg)	48.41±14.83	47.80±13.45	0.332	0.740
LA diameter (cm)	4.60±0.61	4.73±0.71	1.634	0.103

MVG was a significant different between groups after study parameters adjusted for age (**Table 2**). MVG was lower in group 2 than group 1. In Spearman correlation test, significant correlation was found in comparison MVG, and age (r=-0.260, p<0.001)

There was a significant correlation between AF and age in correlation analysis (**Table 3**)

Table 2. Multivariate analysis results of patients with atrial fibrillation and without atrial fibrillation (adjusted for age)

	F	p
MVA (cm^2)	2.424	0.090
Valve score	1.559	0.212
MVG (mmHg)	11.012	<0.001
SPAP (mmHg)	2.132	0.120
LA diameter (cm)	1.589	0.206

Table 3. Correlation analysis results of atrial fibrillation and risk factors for AF

	Age	MVA	Valve score	MVG	SPAP	LA diameter
Atrial fibrillation	0.326*	0.053	0.029	-0.066	-0.013	0.086

The relation of AF and age was assessed using Logistic regression analysis that age is important factor on occurrence of AF (Odds ratio=1.061, 95% CI=1.038 -1.085, p<0.001).

The differences between groups and mitral valve calcification score were not statistically significant (x2=0.946, p=0.814 vs. 32=2.730, p=0.435, respectively).

There was no significant difference in gender (x=0.642, p=0.423) and RBBB (2=3.726, p=0.054). Left atrial thrombus existence in transesophageal echocardiography was statistically more common in group 2 (15.1%) than group1 (2.1%) (x2=18.508, p<0.001).

DISCUSSION

Atrial fibrillation is the most frequent persistent arrhythmia seen in clinic observation. The prevalence of AF has been reported 0.4% in general population.[10] In another study, the prevalence has established from 0.1% in individuals <55 years old to 9% in >80 years old.[11] Moreover, Diker E et al.[12] stated that the frequency of AF was 29% in patients with isolated mitral stenosis. The frequency of persistent AF increases with age. AF seems even more frequent in paroxysmal, asymptomatic cases.[1]

Structural, inflammatory and fibrotic changes in left atrium have been found to be important in the genesis of atrial fibrillation.[13-15] Chronic inflammation in the atrial myocardium effects an significant role in the progress of atrial fibrosis in patients with AF. Histological signs of chronic inflammation have been shown powerfully associated with AF.[16]

Kabukcu M et al.[7] stated that older patients with AF had a longer disease development and more serious symptoms. The authors claimed that MVA and MVG didn't change in patients with mitral stenosis with and without AF. Another study stated that the age showed to be the only independent factor correlated with the presence of fine subtype of AF in this population.[17] The presence of mitral annular calcification was predictor for responsible to genesis AF in with mitral stenosis.[18] We established no association among AF and valve calcification. We found that MVA and MVG were similar and no differences between groups. However, we establish important relationship between age and AF in patients with mitral stenosis. We detected that the frequency of AF was 38.7% and age was only significant factor on occurrence of AF and more common in older patients with MS. AF and aging have relationships. Both the prevalence and incidence of AF increase sharply above 65 aging.[19] Unlike, our study population age was younger than many epidemiological studies.

CONCLUSION

This study has revealed that AF is common in patients with MS. The age is a significant factor for genesis of AF.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The Atılım University Medicana International ethics committee approved the study protocol (Ethics Committee-2020/2).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Orjinal Araştırma / Original Article

A Short Educational Program for The Working Staff of a University Hospital: An Intriguing Implementation Strategy for Palliative Care

Bir Üniversite Hastanesinin Personeli İçin "Kısa Eğitim Programı": Palyatif Bakım İçin İlgi Çekici Bir Uygulama Stratejisi

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Abstract

Background: Palliative care practice, aimed at improving psychosocial and physical quality of life without the aim of providing medical cure, is under development in our country. We aimed to reveal the implementation strategy and success of a short palliative care education program organized for health workers in our institution.
Method: This descriptive and cross-sectional study was conducted at the Palliative Care Research and Application Centre of Gaziosmanpaşa University in Tokat. As part of implementation strategy, an educational program for all nurses, technicians and other hospital staff (office personnel and etc.) was organised. A test was applied to measure the knowledge levels of the participants in the education program about palliative care before and after the training. The same test was given to hospital personnel who did not participate in the education program after 4 weeks, and pre- and post-test results of attending staff and the test results of non-attending staff were compared and analysed via SPSS Statistic 20 program.
Findings: There were 120 women (63.2%), 70 men (36.8%) participants in attending group and 42 women (45.2%), 51 men (54.8%) participants in non-attending group. Rate of correct response to 'Which of the following is not suitable for the definition of palliative care?' question, increased 14.7% and reached 55.8% in attending group. The non-attending group expressed that they have learned palliative care from attending group with 73.7%.
Conclusions: This study showed that there is a high level of lack of knowledge about palliative care among healthcare workers and that a statistically significant level of awareness can be achieved via a brief education program.

Keywords: Palliative Care, awareness, education program, hospital staff

Öz

Giriş: Tıbbi sağaltım amacı olmadan psikososyal ve fiziksel yaşam kalitesini iyileştirmeyi amaçlayan palyatif bakım uygulaması, ülkemizde gelişme aşamasındadır. Çalışmamızda kurumumuzdaki sağlık çalışanları için düzenlenen kısa palyatif bakım eğitim programının uygulama stratejisini ve başarısını ortaya koymayı amaçladık.
Yöntem: Tanımlayıcı ve kesitsel tipteki bu çalışma Tokat Gaziosmanpaşa Üniversitesi Palyatif Bakım Araştırma ve Uygulama Merkezinde gerçekleştirilmiştir. Uygulama stratejisinin bir parçası olarak, tüm hemşireler, teknisyenler ve diğer hastane personeli için bir eğitim programı düzenlenmiştir. Eğitim programına katılanların eğitim öncesi ve sonrası palyatif bakıma dair bilgi düzeylerinin ölçülmesi için bir test uygulanmıştır. Aynı test 4 hafta sonra eğitim programına katılmayan hastane personeline de verilmiş, katılan personelin test öncesi ve sonrası sonuçları ile katılmayan personelin test sonuçları SPSS İstatistik 20 programı ile karşılaştırılmış ve analiz edilmiştir.
Bulgular: Eğitim programına katılan grupta 120 kadın (%63,2), 70 erkek (%36,8) ve katılmayan grupta 42 kadın (%45,2), 51 erkek (%54,8) bulunmaktaydı. "Aşağıdakilerden hangisi palyatif bakımın tanımı için uygun değildir?" sorusuna doğru yanıt oranı katılan grupta eğitim programı sonrasında %14,7 artmış, %55,8'e ulaşmıştır. Eğitim programına katılmayan gruptaki çalışanların %73,7'si palyatif bakıma dair bilgileri eğitim programına katılan arkadaşlarından öğrendiklerini ifade etmiştir.
Sonuç: Bu çalışma, sağlık çalışanları arasında palyatif bakım konusunda yüksek düzeyde bilgi eksikliğinin olduğunu ve kısa bir eğitim programı ile istatistiksel olarak anlamlı bir farkındalık düzeyine ulaşılabileceğini göstermiştir.

Anahtar Kelimeler: Palyatif bakım, farkındalık, eğitim programı, hastane personeli

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INTRODUCTION

Palliative care practice, which can be defined as a holistic health service aimed at improving psychosocial and physical quality of life without the aim of providing medical cure, is under development in our country.[1,2] In Turkey, palliative care, which is considered as 'terminal stage patient care', 'supportive care' and 'pain management', has not been fully understood yet.[3] It has been implemented into the healthcare system by the Ministry of health authorities within a framed context and was supported by authorised institutions. In recent years, palliative care units have been opened in many health institutions, especially in tertiary healthcare centres.[4] Palliative care is a holistic, active, and individualised care with family support led by an interdiciplinary team. It is a cloaked form of a form of treatment that has been going on for many years, even though it has come up more frequently in recent years.[5,6] Due to the lack of palliative care competence and curriculum deficiency in traditional education programs, deficiency of health workers about this topic have been emphasied in various studies.[7-9]

The palliative care education is not included in the standard medical and nursery curriculum programs. However, palliative care requires knowledge, experience and skills in communication, spirituality, culture and psychosocial issues of patients and their families. Without appropriate information to healthcare personnel, the implementation of palliative care could be quite difficult. Studies have shown that healthcare professionals in palliative care units had problems in communication and decision-making due to lack of knowledge.[10] Palliative care was considered one of the most important topics between 2010-2015 in the agenda of national cancer control program, as PALLIA-TURK project was developed by the Ministry of Health[4] As of 2019, palliative care is provided in 384 centers in 81 provinces.[11,12] However, considering health care workers, patients and their relatives, the level of knowledge and awareness of palliative care is not at the intended point in Turkey. The putative reasons could be the social structure of Turkish society, lack of palliative care in medical curriculum, and lack of awareness in the society and healthcare professionals.[11] As palliative care units open in Turkey, the information requirements of healthcare professional and other staff in hospital increase.

The hospitals are multidiciplinary units functioning as a big and cooperative team. It includes healthcare personal, supporting personal and administrative staff. The harmony among each profession makes the healthcare facility work as a successful and single unit. We decided to inform and train the supporting personal along with healthcare personal about palliative care unit.

Therefore, our study aimed to reveal the results of the palliative care awareness education program organised for hospital staff and healthcare professionals in an university hospital during the implementation of palliative care unit.

MATERIAL AND METHOD

This descriptive and cross-sectional study was conducted at the Palliative Care Research and Application Centre of Gaziosmanpaşa University in Tokat between 15.10.2015 and 15.02.2016. Our palliative care center started to provide outpatient services as of November 2015 and inpatient services as of November 2017. In order to overcome the lack of information of the both healthcare and hospital staff about palliative care and to introduce our newly opened center, an education program including working principles, target patient groups, multidiciplinary nature of palliative care etc. was organized. The introductory material used for education was prepared by the palliative care working group consisting of surgical oncology, anesthesia, family medicine, emergency medicine, public health, faculty of health sciences academics, volunteer nurse, dietitian, psychologist, social worker and students. Education presentations were made by two responsible physicians. The announcement of the education program was made verbally to the hospital staff through the department supervisors. After the presentation lasting approximately 40 minutes, a discussion of 20 minutes was held. Groups called by partition. A total of 5 education sessions were organized. A test to evaluate the information level of attendants about basic principles of palliative care was prepared by palliative care study group. This test was applied to participants as both pre- (before the presentation) and post- (after the presentation). Four to 6 weeks later from education date, the other personnel who cannot attend education program for different reasons, and working in same departments, were asked to undergo the same test along with a survey which contain 'Do you know palliative care?' and 'Who did you learn palliative care from, how?' questions. Six of these surveys excluded from the study because of missing answers and totally 93 personnel were included in the study as control group.

Acquired data were analyzed via SPSS Statistic 20 program. Descriptive data are indicated by number (n), percentage (%), Chi-square test was used to test the differences. $p<0.05$ value is accepted statistically meaningful.

RESULTS

Demographic Data

In our study, there were 120 women (63.2%), 70 men (36.8%) and mean age of participants was 31.8 in attending group while 42 women (45.2%), 51 men (54.8 %) and mean age was 34 in non-attending group. Other data are stated on **Table 1**.

The effect of palliative care education on awareness

Rate of correct response to 'Which of the following is not suitable for the definition of palliative care?' question, increased 14.7% and reached 55.8% in attending group. This ratio is statistically meaningful higher than correct response ratio which is 34.4% in non-attending group. ($p<0.05$) About correct response ratio of this question, there was no meaningful difference between control group and pretest of attending group ($p>0.05$).

Table 1. Demographic data about participants

	Attending Group		Control Group	
	n	%	n	%
Gender				
Male	70	36.8	51	54.8
Female	120	63.2	42	45.2
Age				
20-29	79	41.6	19	21.4
30-39	84	44.2	60	64.5
40 and over	27	14.2	14	15.1
Working years				
Less 5 years	94	49.5	24	25.8
5-9 years	37	19.5	33	35.5
10 years and more	59	31	36	38.7
Job				
Nurse	81	42.6	60	64.5
Technician	85	44.7	17	18.3
Auxiliary hospital staff	24	12.6	16	17.1

Thinking about 'Palliative care serves to whom' question, ratio of correct response in posttest of attending group is statistically meaningful higher than non-attending group ($p<0.05$). Similarly about 'definition of ideal palliative care team' question, correct response ratio is statistically meaningful higher in posttest of attending group than non-attending group ($p<0.05$) (**Table 2**). Similarly in evaluation of these 2 questions there was no meaningful difference between control group and pretest of attending group ($p>0.05$).

Table 2. Distribution of correct response rates to questions aimed at defining palliative care

Question	Pretest		Posttest		Control Group	
	Correct (%)	Wrong (%)	Correct (%)	Wrong (%)	Correct (%)	Wrong (%)
Which is not suitable for the definition of palliative care?	41.1	58.9	55.8	44.2	34.4	65.6
Palliative care serves to whom'	25.8	74.2	56.3	43.7	15.1	84.9
Which defines the ideal palliative team?	63.2	36.8	88.9	11.1	47.3	52.7

Peer education in palliative care

Personnel in non-attending group answered "Do you know palliative care?" question as 'yes' 40.9% and 'no' 51.9%. About 'Who did you learn palliative care from, how?' questions, it was answered as 'from my friends who participate palliative care education program' 73.7 % and 'other' 26.3 % among participant who express knowing palliative care. 'Do you know palliative care?' question was answered as 'yes' 40.9% and 'no' 51.9% by control group. About 'Who did you learn palliative care from, how?' questions, it was answered as 'from my friends who participate palliative care education program' 73.7% and 'other' 26.3% among participant who express knowing palliative care.

Thinking of question which valuation of six sentences about palliative care as true or false, five sentences these 1-'Palliative care only deals with the care of terminal stage patients.', 2-'Palliative care is only the duty of physicians interested in this specialty.', 3-'This team should have support after the patient's death.', 4-'Palliative care should be carried out with the concepts of foundation and volunteering.' and 5-'Palliative care aims to evaluate the patient with a holistic approach.' are valuated correctly statistically meaningful higher in posttest of attending group than non-attending group ($p<0.05$) while there is no statistically meaningful difference in valuation about 'Palliative care should be conducted with a multidiciplinary and interprofessional approach' sentence. ($p>0.05$) About this question when compared of pretest of attending group and control group, it is detected statistically meaningful differences in only 'Palliative care is only the duty of physicians interested in this specialty' and 'Palliative care aims to evaluate the patient with a holistic approach.' sentences. ($p<0.05$) (**Table 3**)

Table 3. Evaluation of the expressions about palliative care

Expressions	Pretest		Posttest		ControlGroup	
	Correct (%)	Wrong (%)	Correct (%)	Wrong (%)	Correct (%)	Wrong (%)
Palliative care only deals with the care of terminal stage patients	23.7	76.3	47.9	52.1	12.9	87.1
Palliative care is only the duty of physicians interested in this specialty	65.8	34.2	78.9	21.1	40.9	59.1
This team should have support after the patient's death	93.2	6.8	95.3	4.7	86	14
Palliative care should be conducted with a multidiciplinary and interprofessional approach.	91.6	8.4	94.2	5.8	88.2	11.8
Palliative care should be carried out with the concepts of foundation and volunteering.	81.6	18.4	97.4	2.6	86	14
This team should have support after the patient's death.	74.2	25.8	93.7	6.3	69.9	30.1
Who should give palliative care first?	41.1	58.9	55.8	44.2	34.4	65.6
Where is it better for palliative care patients to spend their final stages?	25.8	74.2	56.3	43.7	15.1	84.9

There was no significant difference between the attending and control groups in the responses to the questions of support to palliative care due to the philanthropic culture felt in many

areas in our society. The question 'What is your opinion about supporting palliative care centers?, which was asked to the participants, was highly answered in both groups. (**Table 4**).

Table 4. Distribution of thoughts about supporting palliative care

What is your opinion on supporting palliative care centers?	Pretest		Posttest		Control Group	
	number	%	number	%	number	%
I cannot support	4	2.1	1	.5	8	8.6
I do not support	4	2.1	1	.5	0	0
Economic support	6	3.2	7	3.7	16	17.2
I want to be a volunteer support	47	24.7	51	26.8	10	10.8
I want to work part-time	51	26.8	50	26.3	23	24.7
Social support	20	10.5	22	11.6	36	38.7
Total	190	100.0	190	100.0	93	100.0

DISCUSSION

Education program of palliative care was successful in terms of awareness-building for hospital personnel in our institution. Comparing posttest and pretest in education group, recognition of palliative care was higher about questions of target patient population and palliative care team. Similarly comparing posttest education group and control group correct respond rate statistically meaningful higher. Palliative care is defined by World Health Organisation as 'to improve the quality of life of patients and their families through early identification, accurate evaluation and appropriate treatment of pain and many other physical, psychological, social and psychological problems associated with life-threatening diseases.'[13] Regarding 'definition of palliative care' question, the fact that rate of correct answer of post-test in attending group is higher and absence of statistically meaningful difference between control group and education group pretest data emphasises importance of education program. In study of Bahçecioğlu et al. with senior students in nursing department, it was seen that participants identified palliative care as 'to improve the quality of life of the individual in the terminal period'.[14] In study of Wechter et al. it was reported that experience in end-of life care in medical education significant contributions for students.[15] In study of Billings et al. in USA it is detected that 35% of medical students did not encounter any terminal patients.[16]

Thinking 'palliative care team' question which examine multi-diciplinary feature, was answered correctly higher in post-test according to non-attending group. In the studies multi-dicipliner feature of palliative care highlighted and emphasied importance of communication and cooperation in coordination for enclosing the patient with a support network. Palliative care team is identified as doctor, nurse, assistant health personnel, volunteers, social worker, religious official and others.[6] Considering cooperation with other related departments and principles of comprehensive and holistic clinic approach, we believe that family physician should be team leader/coordinator of the multidisciplinary palliative team.

Considering the opinions of healthcare workers about expressions with palliative care, rate of correct valuation about sentences which determine palliative care is not only given to end-patients, palliative care is not only the duty of physicians interested in this specialty, palliative care aims to evaluate the patient with a holistic approach, palliative care should be carried out together with the concepts of charity (foundation etc.) and volunteering and this team should have support after the patient's death, is higher in posttest in education group than control group. This result shows that the subjects mentioned in the education are conveyed to the participants.

Similarly considering 'Who should give palliative care first?' question which was prepared for the purpose of to emphasize importance of patient's relatives and 'Where is it best for palliative patients to spend their final stages?' which was prepared for the purpose of to state eligibility to spend the last period at patient's own home, rate of correct answer was statistically meaningful higher in posttest education group than control group. ($p<0.05$) Literature review show that it is known that many terminal patients, especially cancer patients, want to spend the last stages of their lives at home. Modern medicine approach also suggests that the last period of care at home. In the study of Çıtıl et al.[13] with medical faculty students, it was reported that the majority of the participants expressed their opinion that patients should spend their last period at home. In another study, the coordination of palliative care services and home care units was emphasied in order to achieve this.[17] In the study of Yıldızer et al, about 'Where can palliative care be provided?' question 43.7% of the participants responded as 'in the oncology centers', while only 2.8% responded as 'at home'.[18] In the study of Gültekin et al with nurse department students it is detected that 42.5% of the participants think palliative care is appropriate in special palliative care center and 68.3% of the participants think palliative care which is at home is deficient.[19]

Feedbacks about our education program, which was approximately 1 hour, indicated the lack of palliative care education in healthcare workers. In many studies, it was emphasied that one of the problem of the palliative care is the lack of education and training of health workers about symptom management and palliative care skills.[7,8] In the studies, it is detected that when medical students can follow cancer patients or get communication skills education, they are more willingful and well-informed about discussion diffucult topics and helping deciding of patients. However in order to generalize and to be sustainable more education

programs are needed in longer terms.[9,20] In the study of Çıtıl et al.[13] with students of Tokat Gaziosmanpaşa University medical faculty, it is seen that 75.7% of participants want to get education about palliative care and 44.8% of want to work in palliative care clinics after graduate. Despite these thoughts of students, awareness of them about palliative care was not at the desired level. In the study of Yıldızer et al.[18] answers of participants against to 'What are the trainings you will need if you have to work in a palliative care center?' are pain management (67%), pulmoner rehabilitation training (53.4%), invasive care training (51.7%), wound care training (22.7%), feeding tube training (20.4%), mouth care training (11.3%) and all of these (5.7%), respectively.

Palliative care, an area where health workers are often lacking in education and experience, has positive provisions on a voluntary basis in society. In spite of all the problems in the above mentioned about education, the main dynamic of the rapid expansion of palliative care in our country is the high level of volunteering on the subject in society. We have experienced the synergistic effect of our volunteers many times in our own clinic. In our study, in question about supporting the palliative care, the participants stated that they wanted to support the palliative care regardless of the participation in the education program. In the education group, we found that 3 out of 4 people who pointed out that they do not / cannot support choices in the pre-test, changed their answers after education in the direction they wanted to support.

Positive change in the attitudes of the participants about the palliative care practice is more effective than the success of informing for employees in our education program

Limitations: The fact that our study was conducted only in Tokat Gaziosmanpaşa University Health Research and Application Center and inadequate education hours for employees with heavy workloads limited our access to employees.

CONCLUSIONS

Our study is guiding to show that there is a high level of lack of knowledge about palliative care among healthcare workers (nurses, technicians and auxiliary hospital staff) who provide service to palliative care patients, frequently encountered in a tertiary health care facility, and that a statistically significant level of awareness can be achieved via a brief information education program. We would like to emphasize the importance of supporting healthcare professionals with both licence education and in-service training programs in order to maintain palliative care services that are gaining importance day by day. Many studies have done about palliative care intended for doctors and nurses. High point of our study is targeting to educate not only nurses but also other hospital staff. For effectiveness of these education programs we pay attention to togetherness and work place harmony. Further studies are needed and it should be supplied that palliative care practices can be included in the education curricula of health workers.

ETHICAL DECLARATIONS

Ethics Comittee Approval: In this research, the data before 2020 was used and the research was concluded before 2020. According to the Regulation on Clinical Researches published in the Official Gazette of the Republic of Turkey with the number 28617 dated 3 November 2015, the ethics committee approval was not obtained in accordance with the article "Retrospective studies are outside the scope of the regulation (article 2- (2))". This study was prepared in accordance with the Law on Protection of Personal Data, by anonymizing patient data and in accordance with the 2013 Brazil revision of the Helsinki Declaration and guidelines for Good Clinical Practice.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Orjinal Araştırma / Original Article

Retrospective Analysis of Patients With Immune Thrombocytopenic Purpura

İmmün Trombositopenik Purpura Hastalarının Retrospektif Analizi

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Abstract

Aim: We evaluated the clinical feature and the responses to treatments in patients diagnosed and/or followed as chronic immune thrombocytopenic purpura.

Method: Medical charts of 150 patients diagnosed and/or followed as immune thrombocytopenic purpura at Ondokuz Mayıs Medical Faculty between 2003 and 2011 were analyzed retrospectively. As first-line treatments, steroids-based treatment and intravenous immunoglobulin were used as medical therapy. In patients, who had no response to first and second courses treatments, splenectomy, danazole, rituximab and other immunosuppresive drug were performed.

Results: The median follow-up of 150 patients was 15 months (range 2-83 months). Thrombocytopenia was incidentally detected in 51 (34%) of the cases. During the study period, 21 (14%) the patients were followed up without treatment. First line medical therapy were given to 129 (86%) patients. Of them, complete response were seen in 93 (72%) patients, partial response in 14 (11%) patients and none response in 22 (17%) patients. There was no significant benefit of high dose steroid therapy over the standard dose therapy (p=0.59). Of the 107 patients who had response to the treatment, relapse were observed in 48 (45%) within 2,5 years. Of 40 patients, there were complete response in 15 (38%) patients, partial response in 9 (22%) patients and none response in 16 (40%) patients. Splenectomy was performed in 38 patients. Of the 48 patients, complete response was achieved in 32 (84%) patients, partial response in 2 (%5) patients and none response in 4 (16%) patients. Relapse was observed in 12 (35%) patients.

Conclusion: This study showed that steroids-based treatment and splenectomy are very effective treatment in immune thrombocytopenic purpura patients. Only 13 (8.6%) patients in our study needed further treatment.

Keywords: Immune thrombocytopenic purpura, bleeding, corticosteroid, splenectomy

Öz

Amaç: Kronik immün trombositopenik purpura tanısı konan ve/veya izlenen hastaların klinik özellikleri ve tedavi yanıtları değerlendirdik.

Yöntem: Ondokuz Mayıs Tıp Fakültesi'nde 2003-2011 yılları arasında immün trombositopenik purpura tanısı konan ve/veya takibi yapılan 150 hastanın tıbbi kayıtları geriyedönük incelendi. Birinci basamak tedavi olarak steroid bazlı tedavi ve intravenöz immünglobulin kullanıldı. Birinci ve ikinci basamak tedavilerine cevap vermeyen hastalara splenektomi danazol, rituksimab ve diğer immünsüpresif ilaçlar uygulandı.

Bulgular: 150 hastanın ortanca takip süresi 15 ay (aralık 2-83 ay) idi. Olguların 51'inde (%34) trombositopeni tesadüfen saptanmıştı. Çalışma süresi boyunca 21 (%14) hasta tedavisiz takip edildi. 129 hastaya (%86) birinci basamak tıbbi tedavi verildi. Bunlardan 93'ünde (%72) tam yanıt, 14'ünde (%11) kısmi yanıt ve 22 (%17) hastada herhangi bir yanıt görülmedi. Yüksek doz steroid tedavisinin standart doz tedavisine göre anlamlı bir faydası yoktu (p=0,59). Tedaviye yanıt veren 107 hastanın 2,5'inde 48 (%45) nüks görüldü. 40 hastanın 15'inde (%38) tam yanıt, 9'unda (%22) kısmi yanıt ve 16'sında (%40) yanıt görülmedi. 38 hastaya splenektomi uygulandı. 48 hastadan 32'sinde (%84) tam yanıt, 2'sinde (%5) kısmi yanıt ve 4'ünde (%16) yanıt görülmedi elde edildi. On iki hastada (%35) nüks görüldü.

Sonuç: Bu çalışma immün trombositopenik purpura hastalarında steroid bazlı tedavi ve splenektominin çok etkili bir tedavi olduğunu göstermiştir. Çalışmamızda sadece 13 (%8,6) hasta daha ileri tedaviye ihtiyaç duydu.

Anahtar Kelimeler: İmmün trombositopenik purpura, kanama, kortikosteroid, splenektomi

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INTRODUCTION

Immune thrombocytopenic purpura (ITP) is an acquired and autoimmune disease characterized by low platelet count and generally mucocutaneous bleedings, which is diagnosed with the exclusion of the other causes of thrombocytopenia. ITP is classified as acute and chronic according to duration of thrombocytopenia. Acute form usually seen in children, which most often resolves spontaneously or after a short course of steroids. Chronic ITP, which occurs frequently in adults, is defined as a low platelet count which persists more than 3 months. In adults, the annual incidence of ITP is 5/100,000. It is commonly seen between 30-40 ages. In the physiopathology of the disease, the recognition of the antibody-coated platelets binding the macrophages of reticuloendothelial system through Fc receptors, primarily in the spleen, and their removal by phagocytosis plays a role.[1-3] Steroids, intravenous immunoglobulin (IVIg) and anti-D therapies are generally considered as first-line therapy in patients with ITP. The patients who fail to respond to those therapies undergo splenectomy. For the patients who don't respond or are not eligible for those therapies, although rituximab and thrombopoietin receptor agonists (TPO-RAs) have been usually preferred nowadays, immunosuppressive therapy and/or danazole are the other treatment alternatives.[3,4]

In this study, we retrospectively evaluated the initial clinical features, the therapeutic response and the clinical course in 150 patients with chronic ITP at our center.

MATERIAL AND METHOD

In this study, we retrospectively reviewed the medical charts of 150 patients diagnosed and/or followed as ITP at Ondokuz Mayıs Medical Faculty, Department of Internal Diseases, Division of Hematology between 2003 and 2011. All patients had chronic ITP, which was defined as a platelet count <150,000/mm^3 that had been present for at least 3 months with no clinical or laboratory findings that could account for it. In addition to a detailed physical examination and drug history, the whole blood count, evaluation of the stained peripheral blood smear, biochemical profile, routine tests of hemostasis, serological tests for HIV and hepatitis B (HBV) and C (HCV) viruses, and antinuclear antibody (ANA) and anti-double-stranded DNA (anti-ds-DNA) for collagen vascular diseases were studied.

Treatment was given to patients with a platelet count below 30,000/mm^3 and/or bleeding. As first-line treatments, steroids based treatment including standard dose steroids (SDS) (1 mg/kg/day), high dose steroids (HDS) (30 mg/kg/day steroids for 3 days) or high dose dexametazon (HDD) (40 mg for 4 days), intravenous immunoglobulin (IVIg)(1gr/kg for 2 days) or combination treatments (HDS followed by SDS or IVIg + SDS) were used as medical therapy. A second course of steroids treatment was given to relapsed patients. When platelet count >150,000/mm^3 was reached, steroids was gradually tapered off within several weeks. For patients who were refractory to first-line treatment or for relapsed patients who had no response to a second course steroids treatment, splenectomy was as second- or third-line therapy. Immunosuppressive therapy (azathioprine and cyclosporine) and/or danazole were given to patients refractory to splenectomy and steroids based treatment. During the study period, TPO-RAs were not available in our country and rituximab was used for the treatment of 2 patients in the last 2 years of the study. Post-treatment response was considered as complete response (CR) with a platelet count 150,000/mm^3 lasting ≥4 weeks, partial response (PR) with a platelet count of 50,000–150,000/mm^3 lasting ≥4 weeks and no response (NR) with a platelet count <50,000/mm^3.

Data obtained in the study were evaluated by using SPSS 15.0 software for statistical analysis. Mann-Whitney U and Chi square tests were used for the statistical difference and the statistical significance level was considered as $p<0.05$.

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RESULTS

Twenty-five of 150 patients had diagnosed with ITP in another health center, but their treatments and clinical follow-ups were done in our center. Of 150 patients with ITP, 108 (72%) were female and 42 (28%) male. The mean age was 44±18 years (range 18-91). At the time of admission, 92 (61.3%) patients had cutaneous bleeding, 22 (14.7%) patients gingival bleeding, 10 (6.7%) patients had epistaxis and 6 (4%) patients had vaginal bleeding. In the follow-ups, hematuria was seen in 2 (1.3%) patients, upper gastrointestinal tract bleeding in 2 (1.3%) patients, and intracranial hemorrhage in 2 (1.3%) patients. Fifty-one (34%) patients had no sign and symptom of bleeding. Two (1.3%) patients had leucopenia (<4x109/l). Fifty-six (49 female and 7 male) (37.3%) patients had anemia. All anemic patients had iron deficiency anemia. ANA and anti-ds-DNA was determined in 84 (56%) patients. ANA was positive in 16 patients. No patient had positive for anti-ds-DNA. HBV surface antigen was positive in 2 patients who were carrier. Anti-HCV was positive in 2 patients, but PCR HCV RNA was negative in both.

The median follow-up of all 150 ITP patients was 15 months (2 months-83 months). In 36 (24%) patients, there was no therapeutic indication at the diagnosis. During followed-up, only 21 patients did not receive any treatment because they had a platelet count above 30,000/mm^3, and no signs and symptoms of bleeding. One hundred-twenty-nine were received medical treatment (**Table 1**). CR were seen in 93 (72%) patients, PR in 14 (11%) patients and NR 22 (17%) patients. High dose steroids therapy had no significant benefit over the standard dose therapy ($p=0.59$). There was no statistically difference between male and female individuals in terms of response to first-line therapy ($p=0.42$).

Table 1. The first-line treatment modalities and response to therapy in ITP patients

Therapy	Number of patient	Complete response	Partial response	No response
SDS	68 (52.7%)	49 (72%)	6 (8.8%)	13 (19.2%)
HDS	17 (13.2%)	13 (76%)	1 (5.8%)	3 (18.2%)
IVIg	7 (5.4%)	5 (71%)	2 (29%)	-
HDT	4 (3.1%)	4 (100%)	0 (0.0%)	-
HDS+SDS	21 (16.3%)	14 (66.6%)	3 (14.2%)	4 (19.2%)
IVIg+SDS	12 (9.3%)	8 (66.6%)	2 (16.6%)	2 (16.6%)
Total	129 (100%)	93 (72.1%)	14 (10.8%)	22 (17.1%)

SDS: standard dose steroids, HDS: high dose steroids, IVIg: intravenous immunoglobulin, HDD; high dose dexametazon

Of the 107 patients who had response to the first line treatment, relapse were observed in 48 (45%) patients in 2.5 years. Twenty-seven (56%) patients had relapse in one year. Of them eight patients had platelet counts >30,000/mm^3 and no signs and symptoms of bleeding, and was followed up without treatment. A second course of medical treatment was given to 40 relapsed patients. Of them, CR was seen in 15 (38%) patients, PR in 9 (22%) patients and NR in 16 (40%) patients (**Table 2**).

Table 2. The second course medical treatments and response to therapy in ITP patients relapsing after the first-line treatments

Therapy	Number of patient	Complete response	Partial response	No response
SDS	26 (65%)	10 (38.5%)	5 (19.2%)	11 (42.3%)
HDS	4 (10%)	-	2 (50%)	2 (50%)
IVIg	1 (2.5%)	-	1 (100%)	-
HDD	3 (7.5%)	1 (33.4%)	-	2 (66.6%)
HDD+SDS	3 (7.5%)	2 (66.6%)	1 (33.4%)	-
IVIg+SDS	3 (7.5%)	2 (66.6%)	-	1 (33.4%)
Total	40 (100%)	15 (38%)	9 (22%)	16 (40%)

SDS: standard dose steroids, HDS: high dose steroids, IVIg: intravenous immunoglobulin, HDD; high dose dexametazon

Splenectomy was undertaken in 38 patients. In 22 patients splenectomy was performed as the second-line therapy and in 16 as third-line therapy. CR was achieved in 32 (84.1%) patients, PR in 2 (%5.3) patients and NR in 4 (%10.6) patients. Relapse was observed in 12 (35.3%) patients of 34 patients responding to splenectomy. Of 12 patients, 2 patients had achieved CR after steroids treatment and 1 patient was followed up without treatment because this patient had platelet count >30,000/mm^3, and no signs and symptoms of bleeding.

Despite therapies including splenectomy, steroids and IVIg, severe thrombocytopenia persisted in 13 patients. Eleven of 13 patients received azathioprine and remaining 2 patients take cyclosporine. Response to azathioprine treatment was seen in 6 patients. Three of those 6 patients had platelet count >100,000/mm^3, platelet count >50,000/mm^3 in 1 patient and platelet counts >30,000/mm^3 in 2 patients. Two of 5 patients, who had no response to azathioprine, achieved PR after cyclosporine plus danazole treatment and other one patient had platelet count >30,000/mm^3 after rituximab treatment. The other 2 patients died from intracranial bleeding.

DISCUSSION

Immune thrombocytopenia is an autoimmune hematological disorder characterized by persistently low circulating platelets due peripheral causes. Although the etiopathogenesis of ITP is not known clearly, it is mostly recognized that the low platelet count observed in ITP patients is due to disregulation between platelet production and destruction. As the disease affects platelets, the main complaints of patients are bleeding and complications related to bleeding. Therefore, it is very important for patients to be diagnosed quickly and to start treatment early.

At the time of diagnosis, most of ITP patient has bleeding.[5-7] Platelet counts of patients newly diagnosed with ITP are an important indicator of bleeding risk, while many of them require only observation, patients with very low platelet counts have high bleeding risks. The most common bleeding types are purpura, epistaxis and gingival bleeding. Hematuria, gastrointestinal and intracranial bleeding are less common. There was no therapeutic indication in 36 (24%) patients at the diagnosis in our study. During the follow-up 15 months (2-83 months), 21 (14%) patients did not receive any therapy. In their study, Cortelazzo et al.[8] documented that the percentage of the patients who did not receive the therapy was 41.8%. In our study, a total of 98 (66%) patients had findings of bleeding. During the follow-up, it was developed hematuria in 2 patients, gastrointestinal bleeding in 2 patients and intracranial hemorrhage in 2 patients.

There are three main goals of the ITP treatment: to rapid increase of platelet count for reduce bleeding risk, to maintain a stable, hemostatic platelet count, or remission of the disease.[9,10] A stepwise approach is recommended in the disease according to the treatment response. The first line treatment option is corticosteroids. Approximately 80% of patients are expected to respond to steroid treatment, but recurrence rates are high during the reduction and discontinuation of steroids. Differences in steroid therapy application can affect the response of patients.[11] A prospective study showed that while initial response rates between prednisone and dexamethasone were both 100%, long-term remission was significantly more frequent with pulsed dexamethasone at 77% vs. 22% with daily prednisone.[12] In our study, 110 patients received steroids based treatments and the respond to the treatments was seen in 90 (81.7%) (CR 72.7% and PR

9%), which was consistent with literature.[13-15] Although there were conflict data in the literature, high dose steroids therapy had no significant benefit over the standard dose therapy in our study (p=0.59).[15-18] There are some studies that showed the rate of complete response with steroid therapy was higher in women.[19,20] In our study, similar success rate was found in term of gender (p=0.42). As the first-line treatment 7 patients received only IVIg and 12 patients IVIg+SDS. CR rates were around 70%. After the first-line treatment, relapse were observed in 48 (45%) patients within 2.5 years. Twenty-seven (56%) patients had relapse in one year. A second course of medical treatments were given to 40 relapsed patients. Although the response rates were not good as in the first-line treatment, CR was seen in 15 (38%) patients, PR in 9 (22%) patients (**Table 2**). Thus, we conclude that steroids are an effective treatment modality both as first-line and second-line therapies.

In addition to the production of antiplatelet antibodies, the spleen plays an important role in this disease as it indicates platelet destructions. Splenectomy in adults can be perform in patients who fail to respond to steroids, develop thrombocytopenia after taper, or develop steroid toxicity.[21] Depre et al.[22] found that 60% of ITP patients had sustained remission after splenectomy. Although the results of splenectomy are satisfactory, relapses are reported. It was shown in the study of Guan colleagues[23] that while %88 of 174 patients have good success after splenectomy, %20 of them relapsed. In our study splenectomy was performed in 38 patients. CR was achieved in 32 (84.1%) patients, PR in 2 (%5.3) patients, which was consistent with literature.[24,25] Relapse was observed in 12 (35.3%) patients. During follow-up 22 (57.9%) patients were still in remission. Despite splenectomy, steroids and IVIg therapies, severe thrombocytopenia persisted in 13 (%8.6) patients in our study. Nine of 13 patients still had response to azathioprine, cyclosporine and danazole or combination of them. During the study period, TPO-RAs was not available in our country and rituximab was used for only 2 patients resistant to all the treatments and the platelets levels of those patients raised >30,000/mm^3.

As a result, this study showed that steroids-based treatment and splenectomy are very effective in treatment of ITP patients.

ETHICAL CONSIDERATIONS

Ethics: This manuscript derived form Dr Şengül Aksakal's doctorate thesis 2011/ 281701 Ondokuz Mayıs University School of Medicine Internal Medicine.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Orjinal Araştırma / Original Article

Evaluation of Hepatitis B, Hepatitis A, Measles, Rubella, Mumps and Varicella Antibody Seroprevalences in Vocational School of Health Students

Sağlık Meslek Lisesi Öğrencilerinin Hepatit B, Hepatit A, Kızamık, Kızamıkçık, Kabakulak ve Suçiçeği Antikor Seroprevalanslarının Değerlendirilmesi

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Abstract

Objective: In the present study, we investigated the seroprevalence of antibodies against hepatitis B, hepatitis A, measles, mumps, rubella and varicella viruses in adolescent students of a Vocational School of Health and aimed to contribute to the future studies intended to increase the vaccination rates of adolescent and health care workers in our country.

Material and Method: Ninety-five students of the Vocational School of Health screened for hepatitis B, hepatitis A, measles, mumps, rubella and varicella who were referred to the vaccination unit of our hospital were included in this study.

Results: The mean age of the students was 16.4±0.7 years (14-18 years), 63.2% are girls, 36.8% are boys. None of the students received hepatitis A vaccine and varicella vaccine before. Of all the students, 16.9% tested positive for hepatitis B surface antibody, 8.4% tested positive for hepatitis A IgG, 77.9% tested positive for measles IgG, 92.3% tested positive for mumps IgG, 93% tested positive for rubella IgG and 88.5% tested positive for varicella IgG.

Conclusion: In the present study, it was concluded that catch-up vaccination seems necessary for hepatitis A and varicella because contracting these two infections in this age group increases the complication risk caused by the high seronegativity of hepatitis A and the high incidence of natural varicella infection. Conducting similar studies for adolescents and healthcare providers in our country is important to determine pre-contact and post-contact strategies, assess cost-effectiveness of pre-vaccination serology and establish screening and immunization programs.

Keywords: Adolescent, health care workers, seroprevalence, vaccination

Öz

Amaç: Çalışmada; adolesan olan Sağlık Meslek Lisesi öğrencilerinin hepatit B, hepatit A, kızamık, kabakulak, kızamıkçık ve suçiçeği virüslerine karşı antikor seroprevalansları araştırılmış olup, ülkemizde adolesanlar ve sağlık çalışanlarında aşılanma oranlarının artırılması ile ilgili yapılacak olan çalışmalara katkı sağlanması amaçlanmıştır.

Gereç ve Yöntem: Çalışmada; hastanemiz Aşı Ünitesi'ne yönlendirilen hepatit B, hepatit A, kızamık, kabakulak, kızamıkçık ve suçiçeğine karşı antikor düzeyleri bakılmış 95 Sağlık Meslek Lisesi öğrencisi yer almıştır.

Bulgular: Öğrencilerin yaş ortalaması 16,4±0,7 yıldır (14-18 yıl) ve %63,2'si kız, %36,8'i erkektir. Öğrencilerin hiçbirine hepatit A aşısı ve suçiçeği aşısı yapılmamıştır. Öğrencilerin %16,9'unda hepatit B yüzey antijenine karşı antikor pozitif, %8,4'ünde hepatit A IgG pozitif, %77,9'unda kızamık IgG pozitif, %92,3'ünde kabakulak IgG pozitif, %93'ünde kızamıkçık IgG pozitif, %88,5'inde suçiçeği IgG pozitif bulunmuştur.

Sonuç: Çalışmada; hepatit A seronegatifliğinin yüksek olması, suçiçeğinin ise doğal enfeksiyon şeklinde yüksek oranda geçirilmesi nedeniyle, her 2 enfeksiyonun bu yaş grubunda geçirilmesi komplikasyon riskini artıracağından, hepatit A ve suçiçeği için yakalama aşılaması yapılması gerekli gözükmektedir. Ülkemizde adolesanlarda ve sağlık çalışanlarında benzer çalışmaların yapılması, temas öncesi ve temas sonrası stratejilerin belirlenmesi, aşılama öncesi seroloji bakılmasının maliyet-etkinliği, tarama ve bağışıklama programlarının oluşturulması için önemlidir.

Anahtar kelimeler: Adolesan, sağlık çalışanları, seroprevalans, aşılama

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INTRODUCTION

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization aims to prevent the emergence of diseases in the short term and eradicate infectious diseases globally in the long term. Childhood immunization in our country is well positioned in terms of implementation and delivering the goal. Over the years, vaccination rates have increased and reached 96%–98%.[1] However, waning of the immunity acquired by vaccination in childhood over time results in increase in morbidity of vaccine-preventable diseases in adolescents. Also, adolescents with incomplete vaccination are a source of infection for high-risk children, adults and the elderly in the community. Maintaining the importance given to immunization in infancy and early childhood also in the adolescent period plays a critical role in controlling and eliminating vaccine-preventable diseases.[1,2] In adolescents who seek to gain independence, disease mortality and morbidity are high due to risky behaviors; however, the fact that most adolescents do not accept the healthcare offered for them is a cause of the low rate of immunization in adolescents. In addition, healthcare professionals and families with insufficient knowledge about the recommended vaccines, suspicions about the efficacy and safety of vaccines, detailed and complicated vaccination recommendations, uncertainty about costs, vaccines not covered by insurance and expensive vaccines are challenging factors to set and maintain the vaccination goals in adolescents. In developed and developing countries, compared with the infancy, adolescents belong to an age group that is neglected in terms of health assessments. Lack of regulatory-legal obligations and a regular registration system are the reasons for insufficient data on adolescent vaccinations.[3,4]

In Turkey, hepatitis B vaccine in 1998, the measles–mumps–rubella (MMR) vaccine and Haemophilus influenzae type b (Hib) vaccine in 2006, the diphtheria, tetanus and acellular pertussis-inactivated poliovirus-Hib (DTaP–IPV–Hib) vaccine in 2008, DTaP–IPV vaccine instead of tetanus, diphtheria (Td) vaccine and Oral Poliovirus vaccine in 2010 for the grade 1 students at primary schools, 13-valent pneumococcal vaccine in 2011, hepatitis A vaccine in 2012, and lastly, varicella vaccine in 2013 have been added to the National Immunization Schedule.[5]

Adolescent vaccines recommended worldwide around the age of 11–12 include tetanus–adult type diphtheria-adult type acellular pertussis (Tdap) vaccine, human papillomavirus (HPV) vaccine, meningococcal vaccine and influenza vaccine. In Turkey, the National Immunization Schedule incorporates only Td for the grade 8 students at primary schools. Human papillomavirus and meningococcal vaccine are not included in our routine National Immunization Schedule.[6,7]

Today, several programs have been established to improve and increase the safety of employees and patients in health facilities. Vaccination of healthcare providers (HCPs) at risk is one of the most addressed infection control measures among these infection control programs. However, programs concerning the recommended and compulsory occupational vaccines differ from country to country and even from centre to centre.[8]

The world's leading healthcare authorities such as Centers for Disease Control and Prevention (CDC), Advisory Committee on Immunization Practices and American Academy of Pediatrics recommend that health care providers should have complete immunity against measles, mumps, rubella, varicella and pertussis agents, must be administered seasonal influenza vaccines and one of the vaccines for immunity against diphtheria–pertussis–tetanus should be administered in the form of Tdap vaccine. It is recommended that all healthcare providers who may be exposed to blood or body fluids are immune to the hepatitis B virus. All new employees should receive a prompt review of their immunization status prior to starting to care for patients; in addition, all employees should have an annual review to ensure that immunizations remain up to date. Medical students should be screened and immunized before get in contact with patients. Immunization is recommended when prior vaccine administration cannot be documented, unless the HCP has a contraindication to vaccine administration.[9,10]

In the present study, the antibody seroprevalences against hepatitis B, hepatitis A, measles, mumps, rubella and varicella viruses were evaluated in the students from Vocational School of Health who were admitted to the vaccination unit of our hospital between January 01, 2017 and December 31, 2018, before starting their internship in healthcare facilities. Students included in the study group were in the adolescent age group as well. The results of the present study are intended to contribute to the studies aimed at increasing vaccination rates in HCWs as well as to the regulations to be made concerning adolescent vaccination in our country.

MATERIAL AND METHOD

The present study was a retrospective study conducted at the University of Health Sciences, Ankara Child Health and Diseases Hematology Oncology Training and Research Hospital Vaccination Unit. The study included 95 students from Vocational School of Health who were referred to the vaccination unit in our hospital by their educational institution to have their antibody levels screened against hepatitis B, hepatitis A, measles, mumps, rubella and varicella viruses before starting their internship at the healthcare facilities, to have their immune status examined and to get a vaccination plan if needed.

Enzyme-linked immunosorbent assay (ELISA) method was used to detect hepatitis B surface antigen, antibody against hepatitis B surface antigen (anti-HBs) for hepatitis B virus

(Radim SpA, Italy). Microplate based ELISA was used for the determination of Hepatitis A virus-specific IgG type antibody (Etimax-3000, Diasorin, Italy). Measles, mumps, rubella and varicella virus-specific IgG type antibodies were also examined by ELISA method (Vircell Microbiologist, Spain) according to the manufacturer's instructions.

Information about the age, gender, presence of a chronic disease, the vaccination information, and history about infection in the students was retrieved from their files. Infection history of students is clinical diagnosis. None of the students had chronic diseases.

Childhood vaccines in the National Immunization Schedule compatible with the birth years of all students were complete. All the students received one dose of measles vaccine; 97.9% (93/95) of them received two doses of measles vaccine with the first dose at the age of 1 years and the second dose administration, given as MMR, in grade 1 of primary school. [5] None of the students had received hepatitis A vaccine and varicella vaccine before. Vaccines of students who had seronegativity were planned.

Statistical analyses

Data analysis was performed using IBM SPSS Statistics 23.0 package program. Descriptive statistics were performed. Mean and standard deviation, upper and lower values (minimum–maximum) were calculated for the quantitative data. Chi-squared test was used to assess categorical data. P<0.05 value was considered the reliability coefficient.

Ethical approval was obtained for this study numbered 2019-003 from the University of Health Sciences, Ankara Child Health and Diseases, Hematology Oncology Training and Research Hospital.

RESULTS

The mean age of the students was 16.4 ± 0.7 years (14-18 years), 63.2% are girls (60/95), 36.8% are boys (35/95). Although the mean age of girls is higher than boys, the difference is not statistically significant. All students have social security. All students were born and live in Ankara. Serology of students against infection agents is shown in **Table 1.** It was noticed in **Table 1** that the serological examination was performed mostly for hepatitis B.

Table 1. IgG serology of students hepatitis B, hepatitis A, measles, mumps, rubella and varicella.

Microorganism	IgG positive n (%)	IgG negative n (%)	Total n (%)
Hepatitis B	16 (16.9)	79 (83.1)	95 (100.0)
Hepatitis A	7 (8.4)	76 (91.6)	83 (100.0)
Measles	60 (77.9)	17 (22.1)	77 (100.0)
Rubella	67 (93.0)	5 (7.0)	72 (100.0)
Mumps	72 (92.3)	6 (7.7)	78 (100.0)
Varicella	69 (88.5)	9 (11.5)	78 (100.0)

Table 2 shows the distribution of the serology of the students create against infection agents by gender, and the differences are not statistically significant (p>0.05).

The relationship between students' infection histories and serologies is shown in **Table 3**. An infection history was found to be significant only for varicella.

Table 2. Distribution of students' hepatitis B, hepatitis A, measles, mumps, rubella and varicella IgG serology by gender.*

	Girls n (%)	Boys n (%)	Number of students undergoing serology
Hepatitis B			95
seropositive	11 (18.3)	5 (14.3)	
seronegative	49 (81.7)	30 (85.7)	
Hepatitis A			83
seropositive	4 (7.7)	3 (9.7)	
seronegative	48 (92.3)	28 (90.3)	
Measles			77
seropositive	39 (78.0)	21 (77.8)	
seronegative	11 (22.0)	6 (22.2)	
Rubella			72
seropositive	42 (93.3)	25 (92.6)	
Seronegative	3 (6.7)	2 (7.4)	
Mumps			78
Seropositive	48 (92.3)	24 (92.3)	
Seronegative	4 (7.7)	2 (7.7)	
Varicella			78
Seropositive	46 (88.5)	23 (88.5)	
Seronegative	6 (11.5)	3 (11.5)	

*p>0.05

Table 3. The relationship between students' history of infection and hepatitis B, hepatitis A, measles, mumps, rubella and varicella IgG serology.

The infection history		IgG positive n (%)	IgG negative n (%)	P value
Hepatitis A	yes	1 (14.3)	0 (0.0)	0.084
	no	6 (85.7)	76 (100.0)	
Measles	yes	2 (3.3)	0 (0.0)	1.000
	no	58 (96.7)	17 (100.0)	
Rubella	yes	8 (11.9)	1 (20.0)	0.498
	no	59 (88.1)	4 (80.0)	
Mumps	yes	5 (6.9)	0 (0.0)	1.000
	no	67 (93.1)	6 (100.0)	
Varicella	yes	46 (66.7)	0 (0.0)	*0.000
	no	23 (33.3)	9 (100.0)	

*P<0.05

DISCUSSION

In the current study, we searched the seroprevalence of antibodies against hepatitis B, hepatitis A, measles, mumps, rubella and varicella viruses in the adolescent students from Vocational School of Health who were admitted to the vaccination unit in our hospital.

Serologic screening for immunity is generally not considered cost-effective. Yet, study results on this topic differ. In a study conducted among 1255 health care workers (HCWs) in

Turkey, 94%, 90%, 97% and 98% were found to be immune to measles, mumps, rubella and varicella, respectively. The positive predictive value of histories of measles, mumps, rubella and varicella were found to be 96%, 93%, 100% and 98%, respectively. The negative predictive values of histories of measles, mumps, rubella and varicella were found to be 13%, 17%, 5% and 2%, respectively. It was reported that the cost of vaccination without screening was significantly more expensive for varicella, although vaccination without screening was inexpensive for MMR. However, it was also reported that some HCWs (2-7%) would be unprotected against these contagious illnesses because of the unreliability of their measles, mumps, rubella, and varicella history if pre-screening is not conducted, thereby concluding that the screening of HCWs before vaccination therefore continues to be advisable.[9-11] In another study conducted with 320 nursing students in Turkey; seroprevalence of students in hepatitis A, hepatitis B, measles, mumps, rubella and varicella 17%, 93%, 82.2%, 93.7%, 98.6% and 93% were found respectively. While all of these students were vaccinated against hepatitis B, measles, rubella and mumps, only 4.4% had hepatitis A vaccine.[12]

All students were tested serologically for hepatitis B virus, whereas rates of serology testing for other agents were lower. This shows the necessity of increasing the awareness of the units that provide healthcare service to these two vulnerable groups (Vocational School of Health Students and adolescents) about vaccination through periodic screening. In a French study, the vaccination coverage for obligatory vaccinations among HCPs was found to be 91.7% for hepatitis B, 95.5% for the booster dose of diphtheria–tetanus–polio (DTP) and 94.9% for BCG. For non-compulsory vaccinations, coverage was found to be 11.4% for the 10-year booster of the DTP containing vaccine, 49.7% for at least one dose of measles, 29.9% for varicella and 25.6% for influenza.[13] Although there is no hesitancy about hepatitis B vaccine being the most efficient way to prevent HBV infection, there are a few questions as to the duration of protection, the necessity of a booster dose and timing, and whether protection will continue if the anti-HBs titer fall below <10 mIU/mL.[14-16] In our study, all the students received the first three-dose series of hepatitis B vaccine. While more than 15 years have passed since vaccination in 98.9% of these students, this period was between 10 and15 years in 1.1%, and 83.1% of the students had a negative hepatitis B serology. However, the high level of anti-HBs negativity can be related to the time passed over the vaccine. However, none of these students had positive serology for hepatitis B infection. It has been shown that vaccine induces active production of anti-HBs antibody accompanied by HBsAg specific immunological memory that provide continuous protection in the absence of antibody.[15,16] Several factors have been associated with nonresponse to hepatitis B vaccine. These factors include vaccine factors (e.g., dose, schedule, injection site) and host factors. Male gender, obesity, smoking, and chronic illness have been independently associated with unresponsiveness to hepatitis B vaccine.[17] In a study of 159 HCWs who were vaccinated between the ages of 18 and 60 years, approximately 75 percent of them had protective anti-HBs levels 10 to 31 years after they received their initial vaccine series.[18] Anti-HBs positivity at protective levels was 98% in a Poland-based study and 62.7% in a study conducted in Turkey.[19,20]

The primary strategy for preventing hepatitis A infection in HCWs is strict infection control practices. Nosocomial outbreaks are rare when proper infection control practices are followed.[21] Turkey has intermediate endemic for hepatitis A virus (HAV) virus infection. The seroprevalence of HAV infection in Turkey shows significant differences according to geographical regions, age and socioeconomic status. In a study including 10 centres from Turkey, hepatitis A antibody positivity was found to be 91.1% in 2107 individuals. In this study, it has been concluded that hepatitis A antibody seronegativity was high in individuals under the age of 20 years, which is followed by the group of individuals in the age group of 21–30 years, and that the contact with HAV is shifting to older ages in our country that has intermediate endemicity.[22] In our study, none of the students were administered hepatitis A vaccine. Thus, the seronegativity of hepatitis A was quite high (91.6%). As contracting the disease at this age leads to an elevated risk for the course of disease, implementation of a catch-up vaccination program covering this vulnerable group in Turkey is required.[23]

The risk of acquiring measles in hospital personnel is estimated to be thirteen times greater than for the general population.[24] All health care providers (medical with and without patient care responsibilities, non-medical, paid, volunteer, full-time, part-time, student) should have a formal assessment of immunity to measles and mumps regardless of year of birth and those who are susceptible should be immunized. The same recommendation is made for all female health care providers with respect to rubella immunity and immunization.[25] As recommended by the CDC, HCWs without evidence of immunity should be provided with 2 doses of MMR for measles and mumps protection, one dose of MMR for rubella protection.[9] In the present study, although 98% of the students were given two doses of measles vaccine at 1 year of age and in grade 1 of primary school, it was observed that seropositivity decreased the fastest in measles (78%) among the three agents. However, studies have shown that the level of antibodies decreases slowly over the years following the administration of the measles vaccine, not leading to measles sensitivity.[26] Various studies conducted in Turkey also revealed that the seroprevalences of these agents increased with aging—similar to other countries—during the time when MMR vaccines were not included in the vaccination program.[27,29] We expect that the high rate of rubella and mumps seroprevalence (93%, 92.3%, respectively) is due to the MMR vaccination administration that was performed in 98% of the 1st graders in primary school. This clearly demonstrates the benefit of incorporating the MMR vaccine into the National

Immunization Schedule. However, the outcome may also be related to the fact that the students had the infection naturally and sub-clinically or did not remember that they contracted the disease.

Rubella is a mild virus infection that occurs with fever and exanthema. Congenital rubella infection usually develops in the first trimester of pregnancy arising from the infection of the mother who does not have enough immunity against this virus, and leads to malformations of the fetus. Therefore, women in childbearing age are asked to be seropositive against rubella. In a study involving 530 non-vaccinated individuals between the ages of 1 and 29 from Turkey, rubella IgG seronegativity was found to be 23.3%. The proportions of susceptible individuals were reported to be 61.7%, 29.5%, 12.4%, 10.3% and 8.4% in the age groups of 1–4, 5–9, 10–14, 15–19 and 20–29 years, respectively. It has been noted that the history is not sufficient in evaluating rubella infection and that the disease can be manifested with nonspecific findings. In our study, it was also observed that the history was not very distinctive in seropositive and seronegative cases for rubella. [29,30]

Varicella infection is a highly contagious disease characterized by a common vesicular rash. The disease usually progresses mildly. However, serious complications such as secondary skin infection, otitis media, pneumonia and encephalitis can be seen. Complications were seen to have emerged in adults rather than in children.[31] The CDC recommends the varicella vaccine for health care providers, because of the risk of serious complications of natural disease in adults, the risk of further transmission in health care facilities, and immunization is cost-effective. HCWs with a laboratory or health care provider confirmation of prior disease or written documentation of two varicella vaccine doses can be considered immune, but all others should have serologic testing. HCWs who are seronegative should be immunized with two doses of the varicella vaccine administered at least four weeks apart. Approximately 14%–40% of HCWs are estimated to be susceptible to varicella.[32,33] Despite the fact that all the students included in the present study were unvaccinated, the high rate of seropositivity (88.5%) that was observed was associated with natural infection. In the current study, it was observed that negative and positive history related to varicella infection was significantly correlated with serology. [11] In another study, seropositivity was found in 48% of the adolescents who did not have a history of varicella infection or were not known to have the infection.[34] As varicella infection may result in more serious complications in older ages, we suggest that a catch-up vaccination program involving this vulnerable adolescent group, which had missed the varicella vaccine introduced in the National Immunization Schedule in 2013, is necessary.[5]

In conclusion, it is evident that the introduction of the hepatitis A vaccine in 2012 and the varicella vaccine in 2013 into the our National Immunization Schedule will have significant benefits in time for the protection of both adolescents and individuals who will take part in healthcare services. Until this period is completed and considering that there are vaccines not included in the National Immunization Schedule for this group, the institutions, organizations and HCPs providing services for both groups should be aware of the necessity of vaccination, and admit the presence of additional and new vaccines complementary to childhood vaccination and the need to be committed to implementation. As our results show, because the hepatitis A seronegativity is high and varicella is acquired at high rate as a natural infection, getting these infections in this age group increases the risk of complications. Although our study is not a cost-effectiveness study, we conclude that it is necessary to perform catch-up vaccination for this age group for both infection agents. We also recommend that before the vaccination, serology testing should be conducted for varicella and that serology testing is not required for hepatitis A. In addition, conducting similar studies in adolescents and HCPs in Turkey will help establish pre-contact and post-contact strategies, assess the cost-effectiveness of pre-vaccination serology and create screening and immunization programs.

ETHICAL DECLARATIONS

Ethics Comittee Approval: Ethical approval was obtained for this study numbered 2019-003 from the University of Health Sciences, Ankara Child Health and Diseases, Hematology Oncology Training and Research Hospital.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients. .

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Orjinal Araştırma / Original Article

Evaluation of The Relationship Between Neutrophil to Lymphocyte Ratio and Renal Outcomes Patients with Chronic Renal Disease

Kronik Böbrek Hastalığı Olan Hastalarda Nötrofil-Lenfosit Oranı ile Böbrek Sonuçları Arasındaki İlişkinin Değerlendirilmesi

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Abstract

Aim: Regardless of the cause of renal disease, there is strong evidence that an acute and chronic proinflammatory condition exists in adults with chronic renal disease (CRD) and End Stage Renal Disease (ESRD) and that inflammation contributes to morbidity and mortality. In this study, we aimed to investigate whether neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) are associated with poor renal outcome (ESRD + Death) in patients with CRD.

Material and Method: 194 Turkish CRD (stage 3-5) patients who were regularly came to the nephrology outpatient clinic were enrolled to study. patients records were evaluated and groupped according to the renal status and mortality at the end of four years follow up time.

Results: During the follow-up period, 15 out of 194 patients died, renal replacement treatment began to 89 patients and remaning 90 patients were still followed as non-ESRD patients. When compared the patients with ESRD and who were still followed up as non-ESRD patients there was a statistically significant difference in male gender, follow-up time, Body mass index, Systolic blood pressure, Diastolic blood pressure, baseline eGFR, albumin, Hemoglobin, Calcium, Phosphorus, NLR, PLR and spot urine creatine ratio. NLR was as an independent risk factor in CRD patients for the progression of the disease and the poor renal outcome.

Conclusion: In conclusion, we demonstrated that NLR is an independent predictor of ESRD and poor renal outcome in CRD patients. Therefore, NLR measurement may be useful in predicting the progression of kidney disease in CRD patients.

Keywords: Neutrophil to lymphocyte ratio, platelet to lymphocyte ratio, chronic renal disease, progression

Öz

Amaç: Böbrek hastalığının nedenine bakılmaksızın, kronik böbrek hastalığı (KBH) ve Son Evre Böbrek Hastalığı (SDBY) olan yetişkinlerde akut ve kronik proinflamatuar bir durumun var olduğuna ve inflamasyonun morbidite ve mortaliteye katkıda bulunduğuna dair güçlü kanıtlar vardır. Bu çalışmada, CRD hastalarında nötrofil / lenfosit oranının (NLR) ve trombosit/lenfosit oranının (PLR) kötü böbrek sonucu (ESRD + Ölüm) ile ilişkili olup olmadığını araştırmayı amaçladık.

Gereç ve Yöntem: Nefroloji polikliniğine düzenli olarak başvuran 194 Türk CRD (evre 3-5) çalışmaya alındı. Dört yıllık izlem süresi sonunda hasta kayıtları böbrek durumuna ve mortaliteye göre değerlendirildi.

Bulgular: Takip süresi boyunca 194 hastadan 15'i öldü, 89 hastaya renal replasman tedavisi başlandı ve 90 hasta halen ESRD olmayan hastalar olarak takip edilmektedir. ESRD olan hastalar ESRD olmayan hastalar ile karşılaştırıldığında erkek cinsiyet, takip süresi, Vücut kitle indeksi, Sistolik kan basıncı, Diastolik kan basıncı, başlangıç eGFR, albümin, Hemoglobin, kalsiyum, fosfor, NLR, PLR ve spot idrar kreatin oranı arasında istatistiksel olarak anlamlı bir fark vardı. NLR, CRD hastalarında hastalığın ilerlemesi ve kötü böbrek sonucu için bağımsız bir risk faktörü olarak bulundu.

Sonuç: Sonuç olarak, NLR'nin CRD hastalarında bağımsız bir ESRD ve kötü böbrek sonucu öngörücüsü olduğunu gösterdik. Bu nedenle NLR ölçümü, CRD hastalarında böbrek hastalığının ilerlemesini tahmin etmede yararlı olabilir.

Anahtar Kelimeler: Nötrofil / lenfosit oranı, trombosit / lenfosit oranı, kronik böbrek hastalığı, progresyon

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INTRODUCTION

The prevalence of chronic renal disease (CRD) is increasing as a result of the aging of the population and the increasing prevalence of diabetes mellitus (DM) and hypertension (HT). CRD is a growing health problem in the world because of its high cardiovascular event incidence. Even if the cause of kidney damage is eliminated, the risk of the cardiovascular event increases nephron loss results in adaptive hypertrophy and hyperfiltration in the surviving intact nephron. CRD progresses with glomerular sclerosis, proteinuria, hypertension, and other complex pathophysiological mechanisms up to the end-stage renal failure.[1-3]

Inflammatory processes play an important role in chronic diseases such as cardiovascular disease, cancer, chronic renal disease, type 2 diabetes and Alzheimer's disease.[4] It is well known that chronic inflammation is present at low levels during CRD.[5] The patients with CRD have higher pro-inflammatory cytokine levels and lower antioxidant and anti-inflammatory cytokine levels.[6] Regardless of the cause of kidney disease, there is strong evidence that an acute and chronic pro-inflammatory condition exists in adults with CRD and End-Stage Renal Disease (ESRD) and that inflammation contributes to morbidity and mortality.[7,8] Furthermore, cytokines are involved in strengthening the inflammatory cascade and inducing kidney damage. This inflammatory response leads to the formation of profibrotic factors and the progression of CRD.[8,9] Today it is uncertain which inflammatory marker is the best indicator of inflammation in CRD. C-reactive protein (CRP) is still the most commonly used indicator of inflammation despite many indicators such as erythrocyte sedimentation, IL-6, IL-8, IL-12, TNF-alpha, IL-33.[6,10,11]

Recently, neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) have begun to gain interest as a new marker in the assessment of inflammation. In this study, we aimed to investigate whether NLR and PLR are associated with CRD progression and poor renal outcome (ESRD and mortality) in patients with CRD.

MATERIAL AND METHOD

Study design and setting

This is a single-center observational retrospective study. The study was carried out with the permission of Sağlık Bilimleri University Konya Training and Research Hospital Medical Specialty Education Board (Approval no: 48929119/774/28-05, Date: 01.08.2019).

Selection of the participants

We reviewed the data of 233 Turkish stage 3-5 CRD patients who were admitted to the nephrology clinic between January 2015 - May 2015 and followed up until July 2019. CRD-stages were determined with eGFR according to the Kidney Disease Improving Global Outcomes (KDIGO) guidelines.[12]

Exclusion criteria

The patients who were below 18 years old and have any cardiovascular disease (cerebrovascular disease, coronary artery disease..etc), malignancy and active inflammatory or an infective disease or using anti-inflammatory drugs were excluded from the study. The patients' records were retrospectively evaluated and a total of 39 patients who didn't come to the routine controls were excluded from the study.

Data collection

At the first admission beside the demographic data, CRD etiology, additional comorbidities (presence of DM and HT), systolic (SBP) and diastolic (DBP) blood pressure readings, body mass index (BMI), waist and hip circumference, smoking status were recorded. Serum urea, creatinine, eGFR (Modification of Diet in Renal Disease), MDRD, formula used to calculate the eGFR[13] , uric acid, sodium (Na), potassium (K), calcium (Ca), phosphorus (P), albumin, ferritin, parathormone (PTH), total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglycerides (TG), C-reactive protein (CRP), hemoglobin (Hb), neutrophils (N), lymphocytes (L), platelets (PLT), spot urine protein and creatine, spot urine protein to creatine ratio, venous blood gas values were recorded. European society of hypertension guidelines was applied during clinical blood pressure measurements.[14] Waist and hip circumference were measured according to the recommendations of ''The WHO STEPwise approach to noncommunicable disease risk factor surveillance".[15]

At the end of four years follow up period the results were evaluated and patients were grouped according to renal status. The primary endpoints were end-stage renal disease requiring renal replacement treatment (renal transplantation or hemodialysis or peritoneal dialysis) and death.

Statistical analysis

The standard statistical software package was used for statistical analysis (SPSS for Windows, version 22; SPSS; Chicago, IL, USA). Kolmogorov-Smirnov test was performed to determine whether the data were normally distributed or not. Since only the hemoglobin level is normally distributed so that it was given as mean ± standard deviation. The other data were given as median (minimum-maximum). T-test was performed for normal data distributions and Man Whitney-U test for non-normal data distributions in paired comparisons. Cox-Regression (Backward Stepwise) analysis was performed to determine independent predictors of ESRD and poor renal outcome (ESRD+death).

RESULTS

During the follow-up period, 15 out of 194 patients died, renal replacement treatment began to 89 patients (72 underwent hemodialysis treatment and 17 underwent renal transplantation) and the remaining 90 patients were still followed as predialysis CRD (non-ESRD) patients. In our study, the main causes of renal diseases of the patients who completed the study were as follows; DM (58 patient, 29.9%), HT (38 patient, 19.6%), glomerulonephritis (GN) (20 patient,10.3%), polycystic kidney disease (PCKD)(20 patient, 10.3%), amyloidosis (4 patient, 2.1%), chronic tubulointerstitial nephritis (CTIN)(8 patient, 4.1%), urological problems (9 patient, 4.6%) and idiopathic(37 patient, 19.1%).

When compared the patients with ESRD and who were still followed up as non-ESRD patients there was a statistically significant difference in the male gender, follow-up time, BMI, SBP, DBP, baseline eGFR, albumin, Hb, Ca, P, PTH, DM NLR, PLR and spot urine creatine ratio (**Table 1**). The Cox-Regression analysis showed that the NLR was an independent risk factor for the progression of stage3-5 CRD patients to ESRD (**Table 2**).

There was a statistically significant difference between the patients with poor renal outcomes (ESRD+death) and non-ESRD patients in respect of male gender, follow-up time, BMI, SBP, DBP, baseline eGFR, albumin, Hb, Ca, P, NLR, PLR and spot urine protein creatine ratio (**Table 1**). NLR was an independent risk factor in CRD patients for the poor renal outcome (ESRD+Death) in Cox-Regression analysis (**Table 3**).

Table 1. Demographic and laboratory characteristics of patients according to non-ESRD and ESRD (HD+TX) and poor renal outcome (ESRD+Death)

Variables	non-ESRD (n:90)	ESRD (n:89)	Poor renal outcomes (n:104)
Age	57.5 (23-83)	57 (19-81)	57 (19-81)
Gender (M/F)	36 (40%) /54 (60%)	49 (55.1%) /40 (44,9%) A	55 (52.9%) /49 (47.1%) B
Smoking (Yes /No)	7 (7.8%) /83 (92.2%)	13 (14.6%) /76 (85.4%)	14 (13.5%) /90 (86.5%)
Follow up time (month)	49 (25-52)	19 (1-50) A	19 (1-50) B
BMI	30.4 (19.1-49.8)	28.5 (14-53) A	28.5 (13.5-53.1) B
Waist circumference	98 (70-161) cm	96 (55-165) cm	96 (55-165) cm
SBP	130 (105-172) mmHg	142 (82-209) A mmHg	142 (82-209) B mmHg
DBP	87 (47-117) mmHg	94 (52-141) A mmHg	94 (52-141) B mmHg
DM (Yes/No)	17 (18.9%) /73 (81.1%)	30 (33.7%) /59 (66.3%) A	41 (39.4%) /63 (60.6%) B
Baseline eGFR	44.4 (15.6-60.1) ml/min/1.73 m^2	22,3 (11.6-48.8) A ml/min/1.73 m^2	22.3 (11.6-48.8) B ml/min/1.73 m^2
Albumin	4.1 (1.6-4.7) g/dl	3.9 (1.8-4.5) A g/dl	3.9 (1.8-4.5) B g/dl
Hb	13.3±1.9 g/dl	12.1±0.2A g/dl	12.1±1.8B g/dl
Ürik asit	7 (2.8-11.1) mg/dl	7 (3.9-10.9) mg/dl	7 (3.9-10.9) mg/dl
Ca	9.3 (7.5-10.6) mg/dl	8.7 (4.5-9.9) A mg/dl	8.7 (4.5-9.9) B mg/dl
P	3.4 (1.9-4.9) mg/dl	3.8 (2-14) A mg/dl	3.8 (2.2-13.7) B mg/dl
PTH	113.3 (10.3-799) ng/L	219.8 (40-785) A ng/L	219.8 (40-785) B ng/L
Total cholosterol	204 (120-318) mg/dl	210 (94-415) mg/dl	210 (94-415) mg/dl
LDL	126 (52-215) mg/dl	135 (48-278) mg/dl	135 (48-278) mg/dl
HDL	41 (25-74) mg/dl	38 (22-93) mg/dl	38 (22-93) mg/dl
TG	150 (42-679) mg/dl	159 (40-634) mg/dl	159 (40-634) mg/dl
CRP	3.44 (3.28-78.2) mg/l	3.54 (3-201) mg/l	3.54 (3-201) mg/l
NLR	2.17 (0.92-7.32)	2.72 (0.84-8.81) A	2.72 (0.84-8.81) B
PLR	0.12 (0.06-0.32)	0.14 (0.05-0.38) A	0.14 (0.05-0.38) B
Spot urine protein creatine ratio	0.71 (0.07-11.1)	2.94 (0.43-13.92) A	2.94 (0.43-13.92) B

A: p<0.05 as compared with non-ESRD **B**: p<0.05 as compared with non-ESRD
LDL: low density lipoprotein **HDL**: High density lipoprotein **TG**: Trigliserit **BMI**: Body mass index
SBP: Systolic blood pressure **DBP**: Diastolic blood pressure **DM**: Diabetes Mellitus **Hb**: Hemoglobin **Ca**: Calcium **P**: Phosphorus **PTH**: Parathormone **CRP**: C-reactive protein
NLR: Neutrophil to lymphocyte ratio **PLR**: Platelet to lymphocyte ratio

Table 2. COX-Regression model according to ESRD (HD + TX) in CKD (Backward Stepwise)

Variables	Model 1		Model 7	
	P	HR (95%CI)	P	HR (95%CI)
Gender	0.012	2.043 (1.169-3.57)	0.003	2.196 (1.298-3.714)
Baseline eGFR	<0.001	0.902 (0.876-0.929)	<0.001	0.902 (0.877-0.927)
Hb	0.011	0.811 (0.689-0.954)	0.005	0.812 (0.702-0.940)
P	0.022	1.282 (1.036-1.588)	0.036	1.205 (1.012-1.435)
DBP	0.115	1.020 (0.995-1.046)	0.037	1.019 (1.001-1.037)
NLR	0.013	1.276 (1.052-1.548)	0.024	1.242 (1.029-1.498)
Spot urine protein creatine ratio	0.004	1.224 (1.067-1.405)	<0.001	1.192 (1.095-1.298)
DM	0.729	1.112 (0.610-2.028)		
Albumin	0.550	0.788 (0.361-1.721)		
BMI	0.250	0.971 (0.924-1.021)		
PTH	0.531	1.001 (0.999-1.003)		
PLR	0.067	0.004 (0.000-1.484)		
SBP	0.849	0.998 (0.982-1.015)		

SBP: Systolic blood pressure **DBP**: Diastolic blood pressure **DM**: Diabetes Mellitus **Hb**: Hemoglobin **Ca**: Calcium **P**: Phosphorus
PTH: Parathormone **CRP**: C-reactive protein **NLR**: Neutrophil to lymphocyte ratio **PLR**: Platelet to lymphocyte ratio

Table 3. COX-Regression model according to poor renal outcome (ESRD + Death) in CKD (Backward Stepwise)

Variables	Model 1		Model 8	
	P	HR (95%CI)	P	HR (95%CI)
Gender	0.022	1.825 (1.091-3.055)	0.004	2.007 (1.249-3.226)
Baseline eGFR	<0.001	0.915 (0.892-0.938)	<0.001	0.916 (0.895-0.939)
Hb	0.043	0.854 (0.732-0.995)	0.012	0.843 (0.738-0.962)
P	0.009	1.309 (1.073-1.597)	0.053	1.182 (0.998-1.400)
DBP	0.157	1.016 (0.994-1.038)	0.046	1.016 (1.000-1.032)
NLR	0.011	1.238 (1.050-1.459)	0.036	1.160 (1.010-1.333)
Spot urine protein creatine ratio	0.135	1.098 (0.971-1.240)	<0.001	1.165 (1.078-1.259)
DM	0.514	0.840 (0.498-1.417)		
Albumin	0.047	0.499 (0.251-0.992)		
BMI	0.303	0.978 (0.936-1.021)		
PTH	0.303	1.001 (0.999-1.003)		
PLR	0.174	0.032 (0.000-4.546)		
SBP	0.663	1.003 (0.989-1.018)		

SBP: Systolic blood pressure **DBP**: Diastolic blood pressure **DM**: Diabetes Mellitus **Hb**: Hemoglobin **Ca**: Calcium **P**: Phosphorus **PTH**: Parathormone **CRP**: C-reactive protein **NLR**: Neutrophil to lymphocyte ratio **PLR**: Platelet to lymphocyte ratio

Limitations

The limitations of our study are the fact that it was a single-center study, patients who left follow-up for different reasons during the 4-year follow-up period. In addition, if the number of errors followed was higher, it would have added value to our study.

DISCUSSION

There are limited studies related to the NLR and renal progression in the literature. In this study, we demonstrated that the NLR is an independent indicator of progression to end-stage renal disease (ESRD) and poor renal outcome (ESRD+death) after 4 years of follow-up in patients with predialysis CRD. Renal progression was higher in patients with NLR ≥ 2.41 than patients with NLR <2.41. In a study, with 105 patients, conducted by Koçyiğit et al.[16] the patients with a decrease in renal clearance more than 5 ml/min/year classified as progressive and those with less than 5 ml/min/year decrease in renal clearance classified as non-progressive. The reflection of the inflammation shown with increased NLR predicts the progression of CRD to ESRD as an independent risk factor. In the same study, it was found that patients with stage 4 CRD with NLR ≥3 showed a faster progression to ESRD than patients with NLR <3.

Predicting the progression of chronic renal failure is an important clinical issue. In recent years, some clinical studies have focused on identifying the predictive factors to slow down or even stop the progression of chronic renal disease. There is a common histological outcome in chronic renal disease independent from the etiology. Glomeruli, tubules and mesangial cells come into contact with plasma and interact with circulating inflammatory cells and regulate glomerular filtration rate. Neutrophils and macrophages contribute to glomerulosclerosis by producing inflammatory mediators. The mediators which were secreted from neutrophils cause the migration of more neutrophils and increase glomerular damage. As a result, glomerulosclerosis and decreased renal function are associated with the infiltration of the interstitium by inflammatory cells.[17,18]

Many studies have shown that risk factors for the progression of CRD are DM, lipid metabolism disorders, atherosclerosis, HT, smoking, the presence of inflammation indicators, obesity and male gender.[19,20] Bash et al.[21] reported that inflammation and homeostasis indicators are associated with the progression of chronic renal disease, regardless of the major traditional risk factors.

A study with 165 patients over 65 years which was conducted by Tatar et al.[22] showed that CRD patients with increased NLR values have higher mortality and RRT initiation rates. Ryota Yoshitomi et al.[23] conducted a study with 350 patients for seven years and reported that NLR level as an independent risk factor for renal disease progression in patients with CRD stages 1-4. In another study with 740 patients and 5 years follow up period showed that DM, young age and initial eGFR were independent factors in progression to ESRD in Cox-regression analysis.[24] In our study, we found that DM and baseline eGFR are independent predictors of ESRD and renal poor outcome (ESRD+mortality) in Cox-Regression analysis. In this study, we found that inflammation was associated with renal poor outcome independent of other causes. The relationship between NLR and renal progression is explained by the hypothesis that patients with higher NLR have more severe chronic inflammation.[25,26] In our study, although CRP was not associated with ESRD and poor renal outcome, high NLR value suggests increased inflammation in CRD. This finding shows us that CRD has inflammatory processes.

At present, there is no effective predictor for predicting the progression of CRD. Therefore, many researchers are trying to identify a predictive marker or find a model to assess the progress of CRD. Adiponectin, NT-proBNP, fibroblast growth factor 23, asymmetric dimethylarginine and apolipoprotein

A-IV have been studied to evaluate the progression of CRD.[27-31] Although all these parameters have been shown to be useful in predicting CRD progression after adjustment for baseline renal function and other variables they are not applicable in clinical practice. Technical factors such as advanced laboratory requirements and excessive laboratory costs make the clinical use of these predictive markers difficult. In contrast, simply calculating the peripheral blood NLR is an easily accessible and applicable parameter for assessing progression in patients with CRD in clinical practice.

CONCLUSION

In conclusion, we demonstrated that NLR is an independent predictor of ESRD and poor renal outcome (ESRD+Death) in CRD patients. Therefore, NLR measurement may be useful in predicting the progression of CRD patients.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Sağlık Bilimleri University Konya Training and Research Hospital Medical Specialty Education Board (Approval no: 48929119/774/28-05, Date: 01.08.2019).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Conflict of interest: The authors declare that there are no conflicts of interest.

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Orjinal Araştırma / Original Article

Efficacy of Intra-Arterial Nimodipine Therapy in The Treatment of Vasospasm After Subarachnoid Hemorrhage

Subaraknoid Kanama Sonrası Gelişen Vasospasmın Tedavisinde İntra Arterial Nimodipin Tedavisinin Etkinlği

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Abstract

Background: This study aims to investigate the efficacy of intra-arterial nimodipine therapy in treating patients that presented with spontaneous subarachnoid hemorrhage and developed vasospasm following aneurysm surgery.

Material and Method: The study includes 37 patients that underwent intra-arterial nimodipine therapy for the treatment of cerebral vasospasm between October 2015 and December 2019. In patients that developed vasospasm, a catheter was selectively inserted into the internal carotid artery, 1–2 mg of nimodipine was diluted with 50 ccs of saline, and was slowly infused through the catheter.

Results: In our study, we found the success rate of intra-arterial nimodipine administration to be 78.4% (neurologic findings completely improved in 29 cases). The clinical condition did not improve in 13.5% of cases and worsened in 8.1%. 86.4% of our patients were discharged with good outcomes (mRS score 0–1).

Conclusion: We conclude that intra-arterial nimodipine therapy is a cost-effective, safe, and successful method for the treatment of cerebral vasospasm, a condition that directly affects morbidity and mortality after subarachnoid hemorrhage. Prospective studies are needed to determine standard doses and application times in order to establish the efficacy of intra-arterial nimodipine therapy in treating cerebral vasospasm.

Keywords: Spontaneous subarachnoid hemorrhage, vasospasm, intra-arterial nimodipine therapy

Öz

Amaç: Bu çalışmada spontan subaraknoid kanama nedeni ile yatırılıp anevrizma cerrahisi sonrası vasospasma giren ve tedavide intra arterial nimodipin verdiğimiz hastaların sonuçları üzerinden intra arterial nimodipin tedavisinin etkinliğini incelemeyi amaçladık

Gereç ve Yöntem: Çalışmaya Ekim 2015 – Aralık 2019 tarihleri arasında Kliniğimizde serebral vasospasm saptanan ve intra – arterial nimodipine tedavisi uygulanan 37 hasta çalışmaya dahil edildi. Vasospasm saptanan hastalarda internal karotid artere selektif olarak katater yerleştirlip bu kataterden 1 – 2 mg nimodipine 50 cc serum fizyolojik ile sulandırılıp yavaş infüzyonla verildi.

Bulgular: Çalışmamızda intra – arteriyal nimodipin uygulaması sonrasında tedavi başarı oranımız %78,4 (29 olguda nörolojik muayene tamamen düzeldi) olarak saptandı. Olguların %13,5'inde klinik düzelme olmaz iken; %8,1'inde klinik kötüleşme saptandı. Olgularımızın %86.4'ü iyi skorla (mRS 0, 1) taburcu edildi.

Sonuç: Sonuç olarak subaraknoid kanama sonrası morbidite ve mortaliteyi doğrudan etkileyen serebral vazospazmda intra – arteriyal nimodipin tedavisinin ucuz, güvenli ve başarılı olduğunu gösterdik. İntra – arteriyal nimodipinin tedavisinin serebral vasopazmdaki etkinliğinin net olarak ortaya konulabilmesi için standart doz ve uygulama sürelerinin prospektik çalışmalarla gösterilmesi gerekmektedir.

Anahtar Kelimeler: Spontan subaraknoid kanama, Vasospazm, İntra arterial nimodipin tedavisi

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INTRODUCTION

Cerebral vasospasm is the most major cause behind morbidity (decreased cerebral blood flow, ischemic neurological deficits, and cerebral infarction) and mortality associated with aneurysmal subarachnoid hemorrhage.[1] Cerebral vasospasm develops within 48 hours after subarachnoid hemorrhage as a result of inflammatory response but is rarely detected with angiography within the first 3 days.[2] It is usually determined 5 to 14 days after subarachnoid hemorrhage and begins to improve within 2 to 4 weeks.[3,4] Because of its multifactorial etiopathogenesis, several treatment options have been proposed for the treatment of cerebral vasospasm. Despite the advanced treatment efforts, 15-20% of these cases result in clinical cerebral infarction.[5,6]

Pentoxifylline and facial nerve stimulation are more recent treatment options whereas common treatment options include clazosentan, balloon dilatation, intra-arterial papaverine, and nimodipine [isopropyl (2-methoxy-ethyl) 1,4-dihydro-2,6-dimethyl-4-(3-nitrophenyl)-3,5-pyridinedicarboxylate].[1,2,7-10] Despite all these proposed treatment options, the only conventional evidence-based treatment method is hemodynamic therapy, which involves the manipulation of blood pressure, volume, and viscosity to improve cerebral blood flow. And even this treatment method is associated with a 20 to 30% risk of complications.[11] In patients that have severe persistent cerebral vasospasm that does not respond to hemodynamic therapy, the last resort for the prevention of cerebral infarction seems to be endovascular treatment such as transluminal balloon angioplasty or the selective intra-arterial administration of vasodilators.

Previous studies have stated that intra-arterial nimodipine therapy is a safe and effective way to treat cerebral vasospasm.[12] In this study, we aimed to investigate the efficacy of intra-arterial nimodipine therapy in treating patients that presented with spontaneous subarachnoid hemorrhage and developed vasospasm following aneurysm surgery.

MATERIAL AND METHOD

Study population

This retrospective study was conducted between January and April 2020 in the Adana City Training and Research Hospital Brain and Nerve Surgery Department. The study was carried out with the permission of Adana City Training and Research Hospital Clinical Researches Ethics Committee (Permission granted 03.06.2020, Decision No. 903). This study was prepared in accordance with the Law on Protection of Personal Data, by anonymizing patient data and in accordance with the 2013 Brazil revision of the Helsinki Declaration and guidelines for Good Clinical Practice.

Sixty-thirty eight patients with cerebral aneurysm were treated endovascularly or surgically in our clinic between October 2015 and December 2019. The patients who developed early neurological deterioration and did not have any significant indicators of pathology in blood or radiography results underwent cerebral angiography for suspected cerebral vasospasm. 37 patients that underwent intra-arterial nimodipine therapy for cerebral vasospasm were included in the study. Other patients were excluded. Patients with clinical signs of vasospasm were included in the study. Patients with radiological vasospasm and no clinical deterioration were excluded from the study. In all subarachnoid hemorrhage cases, 2 - h and 3 - h treatments were applied in the preoperative and post operative period, and despite this treatment, nimodipine treatment was given to patients with vasospasm clinic.

The patients' clinical and demographic characteristics, cerebral aneurysm localization, Glasgow Coma Scores (GCS), Fischer scores, and pre-stroke and discharge modified Rankin Scores (mRS) were recorded from patient files.

Intra – arterial nimodipine application

Intra-arterial nimodipine administration was performed in the angiography department. Patients were brought to the angiography department and underwent intra-arterial pressure monitoring. Cerebral imaging was performed using a diagnostic catheter inserted through a femoral artery sheath. In patients that developed vasospasm, a catheter was selectively inserted into the internal carotid artery, 1–2 mg of nimodipine was diluted with 50 ccs of saline, and was slowly infused through the catheter. The patients were monitored with intra-arterial blood pressure monitoring during the procedure. This procedure was continued for 5–7 days according to the improvement of the patients' neurological findings.

Statistical analysis

Data were analyzed using SPSS for Windows version 20 (IBM SPSS Inc., Chicago, IL). The normality of data distribution was evaluated by the Kolmogorov-Smirnov test. Normally distributed numerical data were expressed as mean±standard deviation. Categorical variables were expressed as numbers and percentages.

RESULTS

The clinical and demographic characteristics and treatment protocols of the subjects are presented in **Table 1** in detail. The study population consisted of 20 male and 17 female patients. The mean age of the subjects was 56.3±10.8 years. The mean GCS was 13.45±0.77. All patients were operated on within 72 hours. 4 patients underwent endovascular treatment and 33 underwent open surgery. 28 patients developed unilateral and 9 developed bilateral cerebral vasospasm (**Figures 1-3**). Following intra-arterial nimodipine therapy, the neurological findings improved completely in 29 subjects (78.4%), did not improve in 5 (13.5%), and worsened in 3 (8.1%). Angiographic improvement was observed in only 15 patients (40.5%). The discharge modified Rankin Scores of the subjects were as follows: mRS 0 in twenty-one (56.8%), mRS 1 in eleven (29.7%), mRS 2 in three (8.1%), and mRS 3 in two (5.4%). 3 (8.1%) patients developed superficial infection at the site of femoral artery sheath insertion, all of which improved after medical treatment.

Table 1. Clinical, demographic and radiological findings of the study population

No	Age	Gender	GCS	Fischer Scor	Aneurysm localization	Treatment Option	mRS
1	55	M	14	1	AcomA	Surgery	0
2	65	F	14	2	ICA	Surgery	1
3	57	F	13	3	MCA, AcomA	Surgery	0
4	44	M	14	2	AcomA	Surgery	1
5	38	M	14	2	AcomA	Surgery	1
6	53	M	14	2	Bilateral MCA	Surgery	3
7	55	F	14	3	MCA	Surgery	0
8	69	F	14	1	AcomA	Surgery	0
9	58	F	14	4	ICA	EVT(FD stent)	1
10	43	F	14	1	AcomA	Surgery	0
11	60	F	13	3	AcomA	Surgery	0
12	70	M	14	2	AcomA	Surgery	1
13	54	M	14	2	MCA	Surgery	0
14	73	F	13	3	MCA ,PcomA	Surgery	1
15	63	F	14	1	AcomA	Surgery	0
16	79	M	14	4	MCA	Surgery	1
17	63	F	14	4	MCA	Surgery	1
18	39	M	13	2	DACA	Surgery	0
19	38	F	14	2	ICA	EVT(FD stent)	0
20	68	F	14	3	ICA	Surgery	0
21	56	M	14	4	PcomA	Surgery	2
22	66	M	13	3	MCA	Surgery	1
23	38	M	13	4	ICA	Surgery	0
24	50	F	14	1	MCA,AcomA	Surgery	2
25	57	M	12	3	MCA,DACA	Surgery	1
26	44	F	14	3	ICA	Surgery	0
27	59	F	14	3	AcomA	Surgery	0
28	57	M	12	3	MCA	Surgery	0
29	66	M	13	4	MCA,PcomA	Surgery	0
30	57	M	13	3	ICA	Surgery	0
31	59	F	14	4	MCA	Surgery	0
32	49	M	12	4	AcomA	Surgery	2
33	64	F	12	3	MCA	Surgery	0
34	55	M	14	4	MCA	Surgery	1
35	54	M	12	3	Acom A	Surgery	0
36	71	M	12	2	ICA	EVT(FD stent)	0
37	37	M	14	3	Baziler tepe	EVT(Primary coil)	3

Abbreviations: GCS: Glasgow coma scale, mRS: Modified rankin score, M: Male, F: Female, AcomA: Anterior communicating artery, MCA: Middle cerebral artery, PcomA: Posterior communicating artery, ICA: Internal carotid artery, DACA: Distal anterior cerebral artery, EVT: Endovascular treatment, FD: Flow diverting

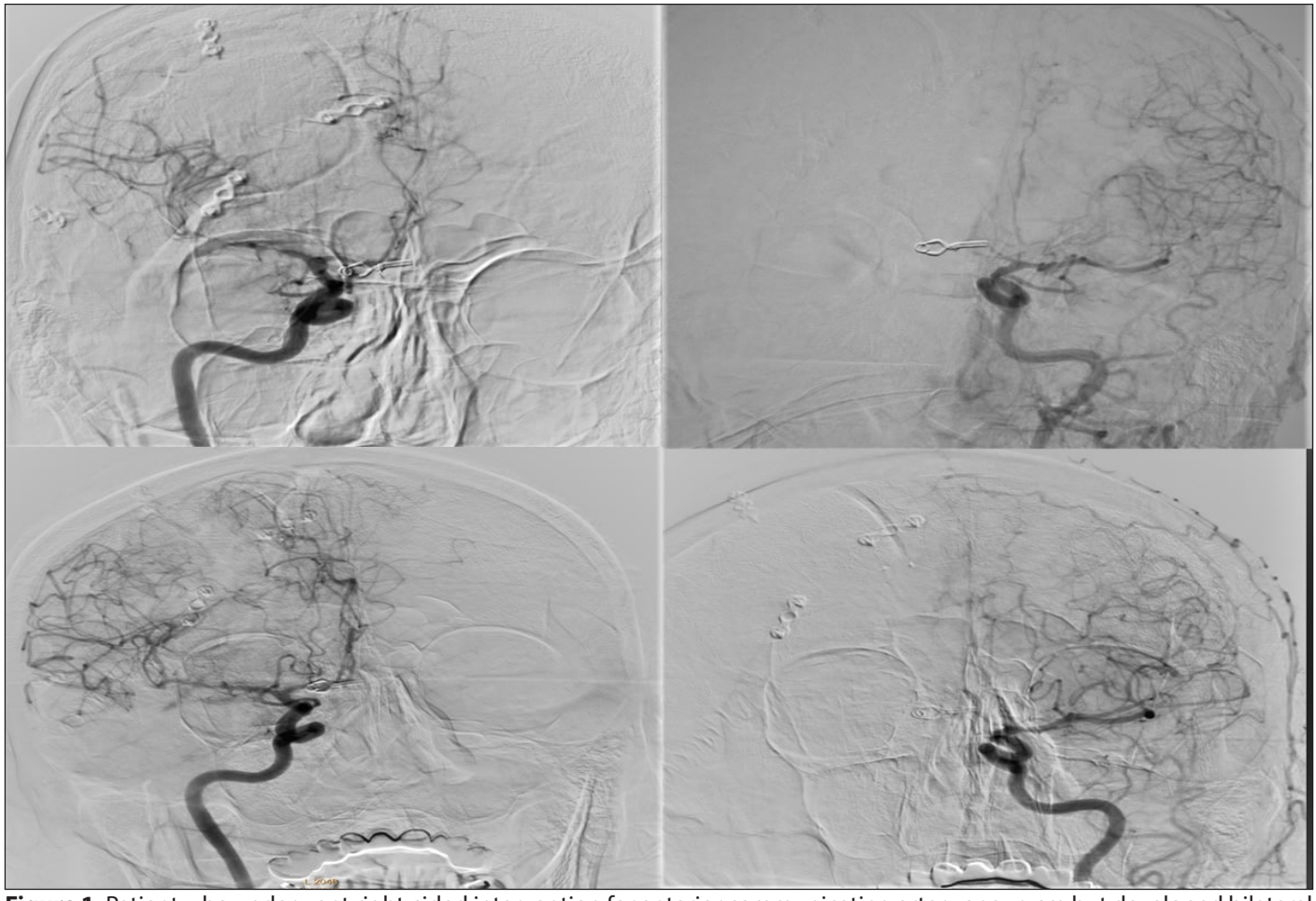

Figure 1. Patient who underwent right-sided intervention for anterior communicating artery aneurysm but developed bilateral vasospasm (top). Partial radiological improvement in the same patient after intra-arterial nimodipine therapy (bottom).

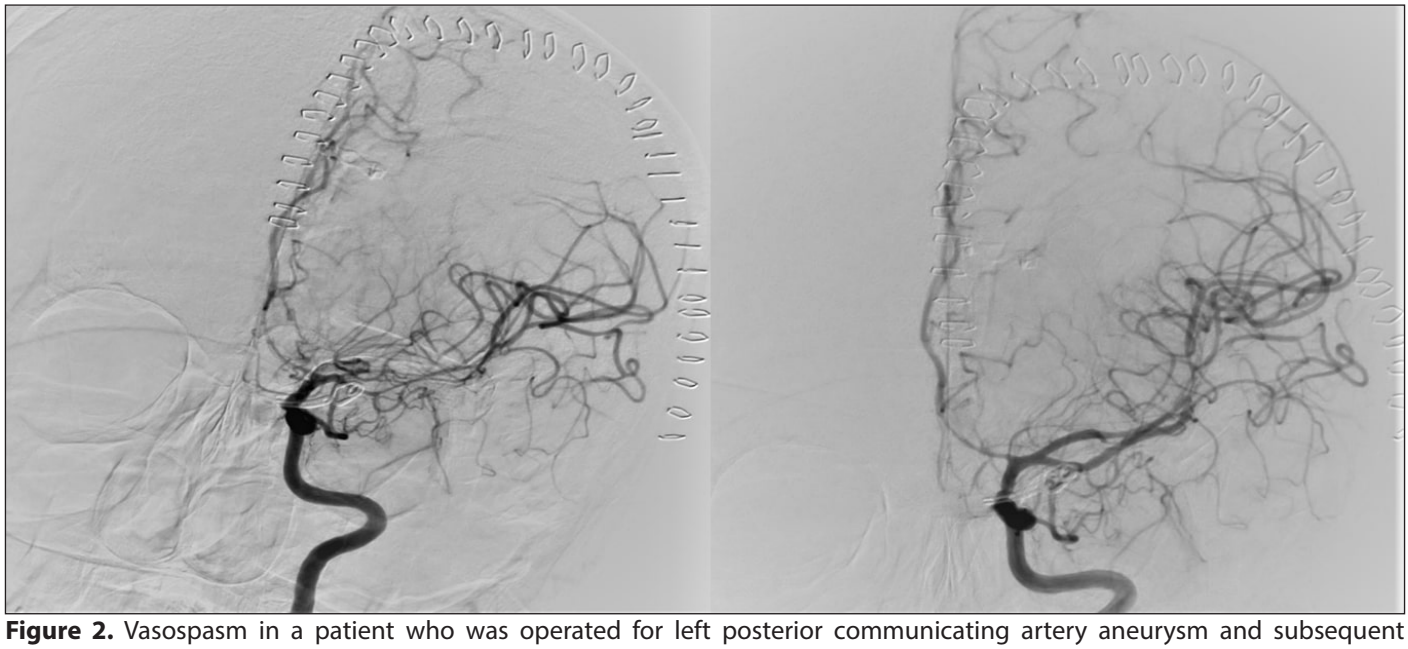

Figure 2. Vasospasm in a patient who was operated for left posterior communicating artery aneurysm and subsequent radiological improvement following intra-arterial nimodipine therapy.

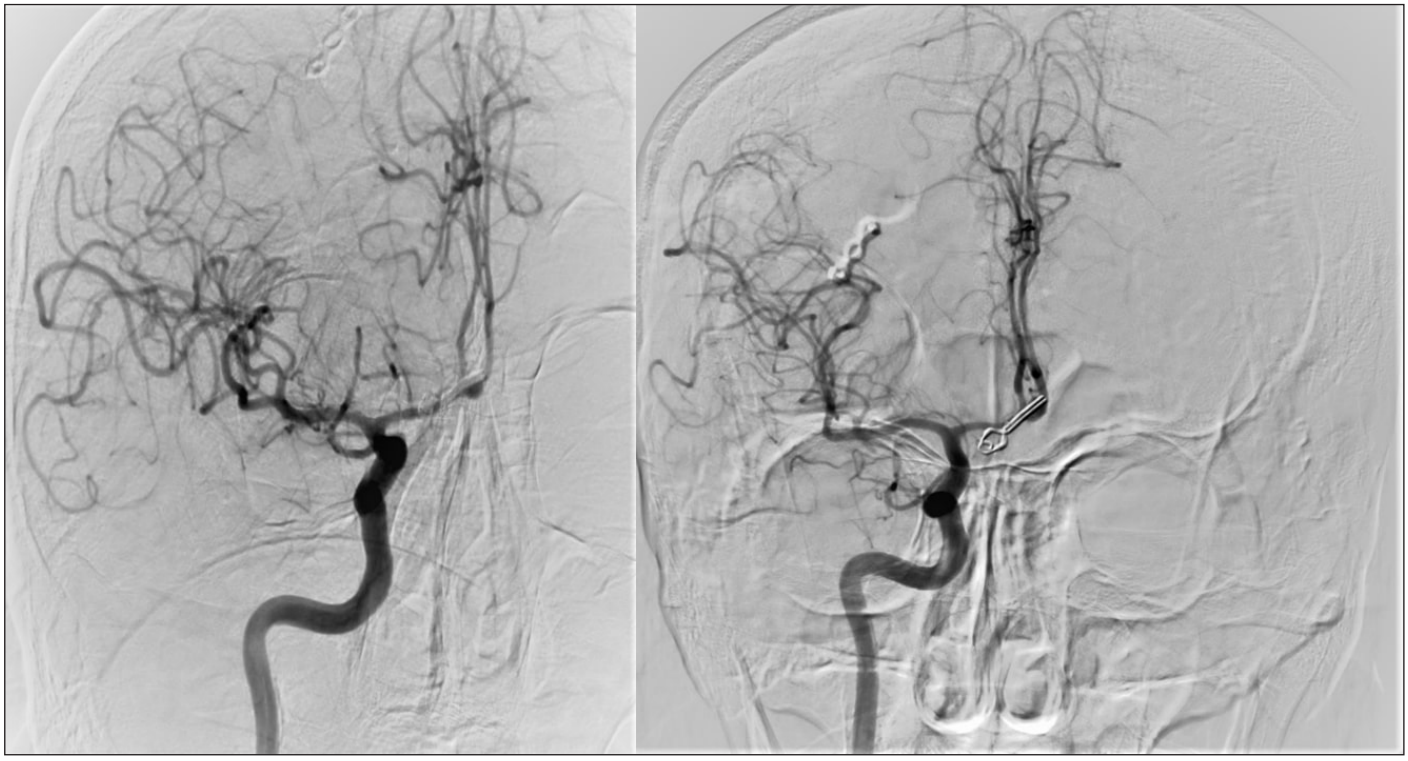

Figure 3. A not-clearly-discernible vasospasm in a patient that was operated for anterior communicating artery aneurysm. The patient enjoyed a significant clinical improvement after treatment, but there was not a significant radiological improvement.

DISCUSSION

In our study, the success rate of intra-arterial nimodipine therapy was 78.4%. The clinical condition did not improve in 13.5% of cases and worsened in 8.1%. 86.4% of our patients were discharged with good outcomes (mRS score 0–1).

Cerebral vasospasm is the main clinical finding that determines prognosis after subarachnoid hemorrhage. The vasoactive substances that are associated with vasospasm significantly affect the course of the disease due to their proinflammatory, vasoconstrictor, and various other undetermined effects.[13,14] One of the major pathophysiological mechanisms involved in the development of cerebral vasospasm is changes in the metabolism of nitric oxide (NO). NO is a vasodilator that is directly associated with smooth muscle relaxation. Studies have demonstrated that extravascular hemoglobin and catabolism products that result from subarachnoid hemorrhage disrupt NO signaling between the vascular endothelium and the underlying smooth muscle cells. Also, even though the narrowing of major blood vessels plays an important role in delayed ischemic injury, recent studies suggest that alternative mechanisms such as early brain damage, loss of autoregulation of cerebral microcirculation, and microthrombosis also play a role in the pathogenesis of cerebral vasospasm.[15-18]

Many interventional or medical treatment options have been proposed for the treatment of cerebral vasospasm. However, these methods have limited feasibility due to various reasons including the difficulty of application, lack of cost-effectiveness, and the high rates of treatment failure or adverse events. Intra-arterial calcium channel blockers are commonly used since they are partially outside of the above-mentioned limitations. Numerous experimental studies have demonstrated that different vessels in the body contain various types of calcium channels and receptors on their endothelia. It is established that calcium channel receptors of the cerebral vascular endothelium are different than those of the peripheral blood vessels. Furthermore, multiple studies have shown that the intravenous and topical administration of calcium channel blockers, and especially nimodipine, dilate narrowed vessels.

Hanggi et al.[19] administered intra-arterial nimodipine to 26 patients who developed cerebral vasospasm after subarachnoid hemorrhage. They reported that most of these patients showed clinical and angiographic improvement and increased cerebral perfusion. Some authors argue that intra-arterial nimodipine is a more effective treatment compared to intra-arterial papaverine.[19] In a different study, Hanggi et al.[19] applied intra-ventricular nimodipine bolus to 8 patients with cerebral vasospasm, followed by continuous lumbar intrathecal nimodipine infusion. 3 patients showed complete clinical improvement, whereas there was no clinical improvement in 4 cases.[20] In their study, Biondi et al.[12] reported that 76% of the patients treated with intra-arterial nimodipine clinically improved and 72% were in good condition at discharge (mRS score 0–1). In their study, Musahl

et al.[21] reported good outcomes for intra-arterial nimodipine therapy and no new ischemic lesions. The experimental study of Onal et al.[22] indicated that selective intra-arterial nimodipine therapy was more effective than intravenous and intrathecal administration. Roda et al.[23] found that the extent of cortical ischemia was reduced in subjects with focal cerebral ischemia that were administered an adequate dose of intra-arterial nimodipine. A case report by Böker et al.[24] indicates that vasospasm angiographically resolved in all 3 patients that postangiographically received intra-arterial nimodipine therapy. We ascribe the differences in treatment outcomes to several factors. The most significant factor is that, even though this procedure is fundamentally a medical treatment, it is an invasive process. Therefore, the outcome will be significantly associated with the ability of the practitioner. Secondly, we believe the outcome is most likely associated with the dosage and duration of nimodipine therapy. Indeed, in the aforementioned studies, the dosage and duration of treatment and the practitioners that administered nimodipine are completely different from our study.

In our study, the clinical conditions of 3 patients worsened after intra-arterial nimodipine therapy. We were unable to conclusively determine whether this resulted from the nimodipine treatment or the present cerebral vasospasm. However, we believe it is very likely associated with cerebral vasospasm since we did not observe any complications associated with the treatment. In their 2019 study, Adami D. et al.[25] investigated the use of balloon angioplasty and intra-arterial nimodipine for the treatment of vasospasm. They concluded that angioplasty was associated with a higher risk of thromboembolic events and arterial dissection and that it should not be considered as a first choice even in patients with severe vasospasm but only as a last resort.

The primary limitation of our study is its retrospective nature. Other limitations include the small number of subjects and not having tried different doses or durations of nimodipine therapy in patients that did not respond to intra-arterial nimodipine treatment.

We conclude that intra-arterial nimodipine therapy is a cost-effective, safe, and successful method for the treatment of cerebral vasospasm, a condition that directly affects morbidity and mortality after subarachnoid hemorrhage. Prospective studies are needed to determine standard doses and application times in order to establish the efficacy of intra-arterial nimodipine therapy in treating cerebral vasospasm.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Adana City Training and Research Hospital Clinical Researches Ethics Committee (Permission granted 03.06.2020, Decision No. 903).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Orjinal Araştırma / Original Article

Parental Anxiety Levels of Patients Admitted to Pediatric Emergency Clinic Due to Febrile Convulsion

Çocuk Acil Kliniğine Febril Konvülsiyon Nedeni ile Başvuran Hastaların Ebeveyn Anksiyete Düzeyleri

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Abstract

Aim: This study aims to determine the anxiety levels of the parents of patients admitted to the pediatric emergency clinic due to febrile convulsion, and to evaluate factors that may affect anxiety levels. In addition, it is aimed to investigate the effect of the febrile convulsion on parents' behavior and emotional status in order to improve our attitude towards parents in the future.

Material and Method: The study was done at Necmettin Erbakan University Meram Medical Faculty Faculty Hospital Pediatric Emergency Department between February 2017 and September 2018 with febrile convulsion and fever were included in this study. The patients were evaluated in two groups as those with febrile convulsion and those who complained of fever only. The State-Trait Anxiety Inventory was used to determine the level of anxiety of parents.

Results: Of the patients included in the study, 323 (48.6%) were admitted with febrile convulsion and 341 (51.4%) with fever complaints. When compared to the mean of the state anxiety score and the trait anxiety score between the groups, it was found that the mean of the state anxiety score was statistically higher in the febrile convulsion group than the non-seizure fever group (p=0.001), while the trait anxiety score was also high in the febrile convulsion group, but no statistical significance was found between the non-seizure fever group (p>0.05). When the anxiety level of parents was examined according to the number of seizures of the patients in the febrile convulsion group, it was found that the parents of patients with their first seizures were statistically significantly higher than their parents with multiple seizures (p=0.007, p=0.001). No statistical significance was found between the education level of the parents and their anxiety scores (p>0.05).

Conclusion: Parents of patients who have applied to health institutions with a fever complaint, providing fever and febrile convulsion training, explaining the first interventions to the patient who has a seizure, and raising awareness of the families reduce parents' worries and fears.

Keywords: Febrile convulsion, anxiety, parents, child, pediatric emergency

Öz

Amaç: Bu çalışmada febril konvülsiyon nedeniyle çocuk acil kliniğine başvuran hastaların ebeveynlerinin kaygı düzeylerinin belirlenmesi ve kaygı düzeylerini etkileyebilecek faktörlerin değerlendirilmesi amaçlanmıştır. Ayrıca, gelecekte ebeveynlere karşı tutumumuzu geliştirmek için ateşli konvülsiyonun ebeveynlerin davranışları ve duygusal durumları üzerindeki etkisinin araştırılması amaçlanmaktadır.

Gereç ve Yöntem: Çalışma Şubat 2017-Eylül 2018 tarihleri arasında Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi Hastanesi Çocuk Acil Servisine konvülsiyon ve ateşle başvuran hastalar ve ebeveynleriyle yapıldı. Hastalar febril konvülziyonu olan ve sadece ateş yakınması olan olmak üzere iki grupta değerlendirildi. Ebeveynlerin kaygı düzeyini belirlemek için Durumluk Sürekli Kaygı Envanteri kullanıldı.

Bulgular: Çalışmaya dahil edilen hastaların 323'ü (%48,6) febril konvülsiyon, 341'i (%51,4) ateş yakınması ile başvurdu. Gruplar arasındaki durumluk kaygı puanı ve sürekli kaygı puanı ortalaması karşılaştırıldığında, durumluluk kaygıpuan ortalamasının febril konvülsiyon grubunda sadece ateşi olan gruba göre istatistiksel olarak anlamlı şekilde daha yüksek olduğu saptandı (p=0,001). Sürekli kaygı puanı da febril konvülsiyon grubunda daha yüksek saptandı ancak sadece ateşi olan grup ile arasında istatistiksel olarak anlamlı bir fark saptanmadı (p>0,05). Ebeveynlerin kaygı düzeyi, febril konvülsiyon grubundaki hastaların nöbet sayısına göre incelendiğinde, ilk nöbetleri olan hastaların ebeveynlerinin kaygısının çoklu nöbetleri olan ebeveynlerine göre istatistiksel olarak anlamlı derecede yüksek olduğu bulundu (p=0,007, p=0,001). Ebeveynlerin eğitim düzeyleri ile kaygı puanları arasında istatistiksel olarak anlamlı bir fark saptanmadı (p>0,05).

Sonuç: Sağlık kurumlarına ateş şikayeti ile başvuran hastaların ailelerine, ateşe yaklaşım ve febril konvülsiyon eğitimi verilmesi, nöbet geçiren hastaya yapılması gereken ilk müdahalelerin açıklanması ve ailelerin farkındalığının artırılması, ebeveynlerin endişe ve korkularını azaltmaktadır.

Anahtar Kelimeler: Ateşli konvülsiyon, anksiyete, ebeveyn, çocuk, çocuk acil

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INTRODUCTION

Febrile convulsion (FC) is defined as a type of seizure accompanied by fever in children between the ages of six months and five years without any central nervous system disease or electrolyte imbalance.[1] FC is the most common neurological disorder of infants and young children. FC occurs in 2-5% of children under the age of five. The risk of mortality and morbidity in FC is very low and there is no detectable brain damage associated with FC.[2]

Although the FC is a type of seizure in benign character, the clinical condition resulting as a result of seizures causes fear and anxiety in parents.[3] This can bring impairment to the quality of life of the family, and parents may suffer from long-term anxiety and insecurity when their children develop fever.[4]

This study aims to determine the anxiety levels of the parents of patients admitted to the pediatric emergency clinic due to FC, and to evaluate factors that may affect anxiety levels. In addition, it is aimed to investigate the effect of the FC on parents' behavior and emotional status in order to improve our attitude towards parents in the future.

MATERIAL AND METHOD

Patients who were admitted to Necmettin Erbakan University Meram Medical Faculty Hospital Pediatric Emergency Department between February 2017 and September 2018 with FC and fever were included in this study. The patients were evaluated in two groups as those with FC and those who complained of fever only. The age, gender, number of seizures, parent age and level of education of the parents were recorded by the clinician. Those who did not agree to participate in the study, who had another chronic disease and those over the age of five for the seizure-free group were excluded from the study. The scales were applied to one of the parents who wanted to be included in the study. The State-Trait Anxiety Inventory (STAI) was used to determine the level of anxiety of parents.[5] The STAI is used to measure anxiety levels in adults and has two multiple-choice subscales with 20 questions for state and trait anxiety. Each item is scored 1, 2, 3 or 4 according to the severity of the indication. State anxiety defines the anxiety of the individual feels at a certain time. Trait anxiety describes the individual's general anxiety predisposition. The scores obtained from the scale vary between 20-80 points. Low score indicates low anxiety level and high score indicates high anxiety level.

Statistical analysis of the study was done using the SPSS 20.0 package program. Identifying analyses were used in the analysis of the distribution and frequency of data, and qhi-square tests were used to compare two independent groups in frequency data. Independent T-testing was used to compare the average of the two independent groups. The level of significance in all statistical analyses was considered $p<0.05$.

RESULTS

This study included 664 patients who admitted to the pediatric emergency clinic of Necmettin Erbakan University Meram Medical Faculty Hospital between August 2017 and September 2018 with febrile convulsions or only fever. Of the patients included in the study, 323 (48.6%) were admitted with FC and 341 (51.4%) with fever complaints. The average age of patients and the distribution of them by gender are shown in **Table 1**. It was determined that 170 (52.6%) of the FC patients had first seizures and 153 (47.4%) had more than one seizure. STAI was applied to the mother of 502 (75.6%) of the participants and 162 (24.4%) to his father. The mean age of all parents was 33.72±8.53 years old, while those in the FC group were 35.16±9.20 and 32.35±7.61 in the non-seizure fever group. 344 (51.8%) of parents were primary school, 134 (20.2%) were secondary school, 65 (9.8%) were high school and 121 (18.2%) were university graduates.

Table 1. Mean age of patients and distribution by gender

		Febrile seizure	Fever	Overall
n (%)		323 (48.6%)	341 (51.4%)	664 (100%)
Gender n (%)	Female	163 (50,5%)	129 (37.8%)	292 (44%)
	Male	160 (49.5%)	212 (62.2%)	372 (56%)
Age (month)		38.15±11.03	38.28±11.07	38.21±11.04

The mean state anxiety score of all patients was 49.58±15.02, and mean trait anxiety score was 35.70±11.36. When compared to the mean of the state anxiety score and the trait anxiety score between the groups, it was found that the mean of the state anxiety score was statistically higher in the FC group than the non-seizure fever group ($p=0.001$), while the trait anxiety score was also high in the FC group, but no statistical significance was found between the non-seizure fever group ($p>0,05$) (**Table 2**).

Table 2. Parental State and Trait Anxiety Scores

	Febrile seizure Parent	Fever Parent	p
State Anxiety Point Mean	53.50±12.63	45.86±16.15	0.001
Trait Anxiety Point Mean	39.92±12.41	31.71±8.54	>0.05

Compared to the mean of anxiety scores among parents in the FC group; the mean of the anxiety score of the state anxiety score was statistically significantly higher in mothers (56.04±12.08) than fathers (48.00±12.07) ($p=0.001$), but the mean scores of trait anxiety were not found between the parents ($p>0.05$). In the seizure-free fever group, the mean state anxiety scores and trait anxiety scores were not found statistically significant among parents ($p>0.05$).

When the anxiety level of parents was examined according to the number of seizures of the patients in the FC group, it was found that the parents of patients with their first seizures

were statistically significantly higher than their parents with multiple seizures (p=0.007, p=0.001). No statistical significance was found between the education level of the parents and their anxiety scores (p>0.05).

DISCUSSION

In our study, it was determined that the parents of patients with FC had higher anxiety scores than the group with fever only, the anxiety scores of the families who had seizures for the first time were higher than the group with multiple seizures, and the anxiety scores of the mothers were higher than the fathers.

One of the most common reasons for applications to pediatric emergency departments is fever. When a child is brought to the hospital for any reason, the anxiety level of their family members increases and they worry. In 1980, "fever phobia" was defined by Schmitt by determining that fever was a concern for families and caregivers.[6] Most parents who are concerned about fever; they fear a severe disease, adverse effects of fever, or the possibility of a febrile seizure.[7,8] In the study of Stuijvenberg et al.[4] the emergence of febrile seizures during high fever has been shown to be an important problem for parents. In a study examining the attitudes and behaviors of parents about fever in children in our country, it was reported that families experienced panic, anxiety, and misappropriations related to fever, and it was concluded that management of the febrile child could be better done with ongoing trainings.[9] In our study, we compared the anxiety level of families of children with FC and those of children with fever only. In our study, it was found that the parents of patients with FC had higher anxiety scores than the parents of children with only fever. In addition, the mean of state anxiety score was higher in both groups than the mean of trait anxiety point. This shows that current situations increase the level of anxiety of families similar to the literature.

Although FC in children is a benign and self-limiting condition in most cases, witnessing such seizures is a terrible experience for most parents.[10,11] Parents feel panic when they witness their child being shaken, and many think that their child may die.[12] There are many studies in the literature about the responses of parents during and after FC.[13-15] These responses include physical, psychological and behavioral symptoms and cause poor quality of life of families. Parents may feel extreme anxiety and fear, and may think their children are weak and vulnerable.[16] Huang et al.[17] organized a training program among parents of children with FC, investigating the effects on knowledge, attitudes, anxieties, and first aid approaches. In this study, although there was only a slight change in fever-related anxiety, it was found that there was a significant improvement in knowledge, attitude, anxiety and first aid practice in the FC group after the training. In addition, it was determined that the training package about FC had an important effect on the anxiety of the mothers of children with FC who were treated in the hospital. In a similar study by Rofiqoh et al.[18] it was concluded that the FC training package could be used as an alternative treatment to reduce anxiety levels in mothers. In our study, we found that the anxiety level of these families was high in accordance with the literature. Giving trainings about fever and FC in emergency departments is important because it will learn the relationship between fever and FC, understand the usual good prognosis and thereby reduce parental anxiety.

Traditionally, mothers have a greater responsibility for childcare. Therefore, mothers may be more anxious due to the future of their child, insecurity, pain of their child during treatment and a sense of responsibility towards their family.[19] In the study of Rutter et al.[20] it was determined that 82% of the children who had FC had family members during the seizure and 50% of these children had only their mother. In our study, when the mean of anxiety point between parents were compared; it was determined that the mean of state anxiety scores were statistically higher in mothers than fathers (p=0.001). This reveals the importance of evaluating the emotional responses of parents, especially mothers, by health professionals and supporting them when necessary. It is thought that informing these people about the disease will both decrease the level of anxiety and that mothers can provide positive support to their sick children.

Flury et al.[21] reported that family anxiety during the first seizure was associated with lower education levels, and special and repetitive education could provide an important advantage for these families. Shuper et al.[3] found a significant relationship between low level of knowledge and high level of anxiety. Similarly, in our study, both the state and continuity anxiety point averages of the parents of patients with first seizures were found to be statistically significantly higher than the families of patients with more than one seizure. This reveals that the information provided to the families of patients with recurrent seizures significantly reduces the level of anxiety and how important the education which is given about the diseases besides the medical treatments applied in the hospitals.

CONCLUSION

Parents' fear of fever and febrile seizures is one of the major problems with several negative consequences for daily family life. Giving trainings on fever and FC to the families of patients who applied to health institutions with complaints of fever, explaining the first interventions that should be done to the patient who had a seizure, and raising the awareness of the families will both reduce the anxiety and fears of the parents who encounter this situation for first time, and ensure that the families bring their patients to the health institution by making appropriate interventions.

Author Contributions: Concept: E.T, A.Y, F.A, A.O.K, N.U; Design: E.T, A.Y, F.A, A.O.K, N.U; Data Collection or Processing: E.T, A.Y; Analysis or Interpretation: E.T, A.Y, F.A; Literature

Search: E.T, A.Y, F.A; Writing: E.T, A.O.K, N.U (All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version)

ETHICAL CONSIDERATIONS

Ethics Comittee Approval: In this research, the data before 2020 was used and the research was concluded before 2020. According to the Regulation on Clinical Researches published in the Official Gazette of the Republic of Turkey with the number 28617 dated 3 November 2015, the ethics committee approval was not obtained in accordance with the article "This Regulation includes bioavailability and bioequivalence studies, medicines, medicinal and biological products to be made on humans, even if licensed or permitted. (article 2-(1))". So clinical survey studies are outside the scope of the regulation. This study was prepared in accordance with the Law on Protection of Personal Data, by anonymizing patient data and in accordance with the 2013 Brazil revision of the Helsinki Declaration and guidelines for Good Clinical Practice.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Orjinal Araştırma / Original Article

Evaluation of the Inpatients Who Apply With High INR-Level Due to Warfarin Use- A Retrospective Descriptive Study

Warfarin Kullanımına Bağlı Yüksek INR Düzeyi ile Başvuran Hastaların Değerlendirilmesi: Tanımlayıcı Retrospektif Bir Çalışma

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Abstract

Aim: In this study, we aimed to evaluate the causes of mortality and their ability to benefit from primary health care facilities in patients receiving warfarin treatment and applying with high INR (international normalization ratio) values.

Material and Method: All patients who were admitted to our hospital for any reason, who had at least 4 INR and received warfarin treatment, were included in the study. The studies were analyzed retrospectively. The hospitalization epicrisis of 187 patients was evaluated. Questions were asked by phone about duration of warfarin use, follow-up frequency, primary health care status, changes in the floor made by the clinic, and the use of warfarin data.

Results: The study population consisted of 87 women and 100 men. The mean age of the patients was 64.1±17.6 years. The most common hospitalization complaints in the whole population were bleeding (22.4%), dyspnea (18.2%), confusion (17.1%) and nausea/vomiting (9.6%). INR level was above 10 in 34.2% of the patients. The highest indication of warfarin use was AF. Hypertension was the highest comorbidity. The predictors of mortality were chest pain (HR=3.808; p=0.012) and hemathesis (HR=3.688; p=0.033), respectively. The number of patients admitted to primary care for warfarin was 23 (12.3%). Patients were followed up in cardiology, home health care, cardiovascular surgery and neurology (16%, 6.4%, 5.9%, and 4.3%, respectively). The rate of people who received warfarin training was 36.8%.

Conclusion: Warfarin is a drug that requires frequent follow-up and complications are mortal. Patient education is very important and patients should be encouraged to use primary health care services, which are the most accessible health services.

Keywords: Bleeding, INR, mortality, primary health care, warfarin

Öz

Amaç: Bu çalışma ile warfarin tedavisi alan ve yüksek INR (uluslararası normalizasyon oranı) değerleri ile başvuran hastalarda mortaliteye etki eden nedenleri ve birinci basamak sağlık kuruluşlarından uygun olarak yararlanabilme durumlarını değerlendirmeyi amaçladık.

Gereç ve Yöntem: Herhangi bir nedenle warfarin tedavisi alan, INR değeri 4 'ün üzerinde olan ve komplikasyon yaşayan 187 hasta çalışmamıza dahil edildi. Hastaların hastane epikrizlerinden hastane başvuru nedeni, hangi kliniğe başvurduğu, INR değerleri, komorbid hastalık varlığı, kan transfüzyonu ihtiyacı, tedavi sonrası sağlık durumu, warfarin endikasyonu, warfarin başlayan klinik retrospektif olarak değerlendirildi. Taburculuk durumu, warfarin kullanma süresi, takip sıklığı, birinci basamağa başvuru durumu, doz değişikliklerini hangi kliniğin yaptığı, eğitim durumu telefondan öğrenildi.

Bulgular: En sık hastaneye başvuru sebepleri kanama (%22.4), dispne (%18.2), ve kusma/bulantı (%9.6) olarak belirlendi. Hastaların %34.2'sinin INR değeri 10'un üzerindeydi. En sık warfarin başlama endikasyonu AF idi. Mortaliteye etki eden prediktörler göğüs ağrısı (HR=3.808; p=0.012) ve hematemaz (HR=3.688; p=0.033) olarak değerlendirildi. Birinci basamağa doz değişimi için başvuran hasta oranı %12.3 idi. Hastaların takipleri en sık olarak kardiyoloji, evde sağlık hizmetleri, kardiyovasküler cerrahi ve nöroloji tarafından yapılmaktaydı (sırasıyla; %16, %6.4, %5.9 ve %4.3). Warfarin eğitimi alanların oranı ise %36.8 idi.

Sonuç: Warfarin sık takip gerektiren ve komplikasyonları mortal olan bir ilaç olduğu için hasta eğitimi çok önemlidir ve hastaların en kolay ulaşabilecekleri sağlık hizmeti olan birinci basamak sağlık hizmetlerini kullanmaları yönünde teşvik edilmesi gerekmektedir.

Anahtar Kelimeler: Kanama, INR, mortalite, birinci basamak sağlık hizmetleri, warfarin

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INTRODUCTION

Thrombotic diseases are the most frequent group of diseases that cause death at present time. In the United States, two million people from six million people affected by thrombotic events die each year.[1,2] Thrombosis occurs as a result of the process in the coagulation system, which begins with the deterioration of vascular integrity. Venous thrombosis most commonly ends up as pulmonary thromboembolism; arterial thrombosis results in as myocardial infarction, stroke and extremity gangrene. When considered how deadly the consequences of thrombotic event are, it shows obviously that prophylaxis and also treatment are so important. The drugs in treatment are three groups as anticoagulants (AC), antithrombocytes and thrombolytics. Among them, the most commonly used AC drugs are unfractionated heparin, standard heparin, and low molecular weight heparin (LMWH) and coumarin derivatives, warfarin.[3] Warfarin prevents the activation of coagulation factors and prevents clotting. Warfarin's teropatic interval is narrow and its efficacy is defined by the value of the international normalization ratio (INR).[4-6] In the early stages of warfarin use INR follow-ups are frequent, but these intervals are expanded over time. In long term side effects begin to emerge by the influence of patient related risk factors.[7,8] The most important side effect of warfarin is bleeding and its ratio varies percent 12-40. Bleeding ratios are found in the nose (35%), soft tissue (21%), gastrointestinal system (15%), urinary system (15%), intracranial (4%), thorax (3%), intraocular (2%), retroperitoneal (1%).[9]

In last 30 years, big developments are recorded in the field of family medicine in our country. The position of the family medicine, which is one step ahead from other departments with its protective and coordinating features, in order to follow the diseases with high mortality and morbidity which require coordination of many units such as thrombosis, cannot be denied. Especially in today's condition where home health care services, which family doctors work mostly at, become widespread, the active participation of family physicians at managing indications and contraindications for thrombosis treatment and complications, requesting coagulation tests, interpreting, anticoagulation treatment-follow up and their interventions in these areas are very important. The purpose of our work; to examine the reasons for admission of patients whose INR value 4 and above and use warfarin and to evaluate the primary follow-up status of these patients. Our secondary purpose is to increase awareness for thrombotic diseases and treatment in the primary care services with the results of this study, and to plan training if necessary.

MATERIAL AND METHOD

Our study is designed as the retrospective descriptive type. The study was approved by the local ethics committee at Ankara Numune Training and Research Hospital prior study (IRB number: 2014-236, date: 16.07.2014). Our study includes all patients admitted to the Ankara Numune Training and Research Hospital between November 1, 2012 and October 31, 2013, for warfarin treatment and for at least 4 of the INR (International Normalization Ratio) values and who were admitted to our hospital. Hospitalized clinics were identified as Neurology, Cardiology, Intensive Care Service, Cardiovascular Surgery (CVS), Gynecology (G), Hematology, Urology, Anesthesia, Intensive Care Service, Emergency Internal Service (EIMS) and other services. In our hospital, there is no chest diseases service; patients who need to be hospitalized for pulmonary diseases were admitted to emergency internal medicine service.

The patient's name, surname, admission number, age, telephone, and gender of the 187 patients who had been hospitalized with any complications from 6108 patients with an INR greater than 4 determined from the hospital data center were reached. 187 hospitalized patient epicrisis were reviewed and it was learned which clinic referral complaint, which clinic is applied, which warfarin use status, INR value, comorbid diseases, blood transfusion need, treatment end point, warfarin use indications, which clinics started warfarin. In our hospital, 116 patients (71 in-hospital exitus) who were discharged from the hospital were contacted by telephone and were questioned to determine the duration of warfarin use, follow-up frequency, primary care application status, and whether they had been trained to use warfarin. No information was received from 43 of the 116 patients who did not have telephone numbers, who did not give information, did not answer the phone, and who were ex-patients after discharge from our hospital. Although the contact information of 73 patients was available, 5 patients could not be reached from the contact information, and as a result, 68 patients could be reached.

Statistical analysis was performed by using the Statistical Package for Social Sciences (SPSS) 20 program. The normal distribution of the numerical data was assessed by the Kolmogorov-Smirnov test. Numerical variables with normal distribution are shown as mean±standard deviation and numerical variables with no normal distribution are shown as median (min-max). Categorical variables were stated as number (%). Comparison of normal distribution of numerical variables between two groups was done by T test in independent samples and ANOVA test in comparison between three or more groups. The Mann-Whitney U test was used to compare non-normal numerical variables between two groups, and the Kruskall Wallis H test was used to compare three or more groups. Chi-square, Fisher's exact Chi-square test and Monte Carlo Simulation test were used to compare categorical data. Backward method of cox regression analysis was used to determine the risk factors that might affect mortality. Survival graphs were shown with Kaplan-Meier. In analyzes $p<0.05$ value was accepted as statistically significant.

RESULTS

Demographic features

The study population consisted of 187 patients (87 females and 100 males). The mean age of male patients was 67.2±16.96 years and the mean age of women patients was 60.6±17.6. The median of INR level for the whole population was 7.9 (min:4.5; max:19.8). While INR levels do not differ statistically between genders (p=0.138); there was a statistically significant difference according to age (p=0.040). The most common comorbid diseases in patients are hypertension in 39%, diabetes mellitus in 13.5%, and COPD in 13.9%. In 31.6% of patients it was determined blood transfusion (Fresh frozen plasma) is done. The demographic characteristics of the patients are shown in **Table 1**.

Patient Hospitalization Characteristics and Mortality States

While the hospital complaints did not show any significant difference according to sex (p=0.953), the most common complaints were determined as dyspnea (18.2%), consciousness blurring (17.1%) and nausea / vomiting. The most frequent admission clinics in the hospital were the EIMS, the intensive care unit and the cardiology service. The in-hospital mortality rate was 38%.

Starting Clinic and Indications of Warfarin

Indications for induction of warfarin and starting clinics of 134 patients whose records are available are given in **Table 2**. It was determined that warfarin induction indications (p=0.323) and warfarin starting clinics (p=0.191) did not statistically affect patients' discharge or exitus status.

Table 1. Demographic features of patients

Variables	Whole population (n=187)	Women (n=87)	Men (n=100)	p
Age	64.1±17.6	60.6±17.6	67.2±16.9	0.010*
<65	86(46.0)	47(54.0)	39(39.0)	0.040*
65 and over	101(54.0)	40(46.0)	61(61.0)	
INR Value	7.9(4.5-19.8)	(4.5-18.6)	8.6(5.1-19.8)	0.138
4.5< INR ≤10	123(65.8)	63(72.4)	60(60.0)	0.081
10< INR ≤15	20(10.7)	10(11.5)	10(10.0)	
INR >15	44(23.5)	14(16.1)	30(30.0)	
Comorbidity				
HT	73(39)	36(41.4)	37(37)	0.552
DM	44(23.5)	20(23)	24(24)	0.871
COPD	26(13.9)	9(10.3)	17(17)	0.21
CHF	18(9.6)	11(12.6)	7(7)	0.22
Renal failure	21(11.2)	6(6.9)	15(15)	0.104
Alzheimer	3(1.6)	0(0)	3(3)	0.25
Cancer	14(7.5)	5(5.7)	9(9)	0.579
Liver disease	6(3.2)	4(4.6)	2(2)	0.419
Hematological disease	8(4.3)	3(3.4)	5(5)	0.726
Others	11(5.9)	7(8)	4(4)	0.352
Blood transfusion	59(31.6)	26(29.9)	33(33)	0.753

Numerical variables were expressed as mean ± standard deviation or median (min-max).Categorical variables were expressed as number (%).
* p <0.05 is statistically significant.
Abbreviations: INR: International normalized ratio; HT: Hypertension; DM: Diabetes mellitus; COPD: Chronic obstructive pulmonary disease; CHF: Chronic heart failure.

Table 2. Indication of warfarin initiation and starting clinics of patients

Variables	Discharged	Ex	p	Women	Men	p
Indications	n=96	n=38		n=96	n=38	
AF	44(45.8)	13(34.2)		21(36.2)	36(47.4)	
Valve replacement	15(15.6)	5(13.2)		8(13.8)	12(15.8)	
CVD	13(13.5)	11(28.9)		12(20.7)	12(15.8)	
PTE	9(9.4)	2(5.3)		3(5.2)	8(10.5)	
DVT	10(10.4)	4(10.5)	0.323	8(13.8)	6(7.9)	0.301
Pace	1(1.0)	2(5.3)		2(3.4)	1(1.3)	
Bypass	2(2.1)	-		1(1.7)	1(1.3)	
PAH	1(1.0)	1(2.6)		2(3.4)	-	
Stent	1(1.0)	-		1(1.7)	-	
Starting Clinic	**n=94**	**n=38**		**n=94**	**n=38**	
Neurology	12(12.8)	10(26.3)		10(17.9)	12(15.8)	
Cardiology	55(58.5)	16(42.1)	0.191	28(50.0)	43(56.6)	0.572
CVS	21(22.3)	8(21.1)		15(26.8)	14(18.4)	
Chest disease service	6(6.4)	4(10.5)		3(5.4)	7(9.2)	

Categorical variables were expressed as number (%). p <0.05 was considered statistically significant.
Abbreviations: AF: Atrial fibrillation; CVD: Cerebrovascular disease; PTE: Pulmonary thromboembolism; DVT: Deep vein thrombosis; PAH: pulmonary arterial hypertension; CVS: Cardiovascular surgery

Patients with hemorrhage were found to have indications of AF in 52.4%,valve replacement in 7.1%, CVD in 12.9%, DVT in 9.5%, bypass in 4.8%, PAH in 2.4%, but the type of indication was not statistically significant compared to non-hemorrhage group (p=0.070).

Patients with an INR level above 10 were found to have indications of AF in 39.4%, valve replacement in 18.2%, CVD in 12.1%, PTE in 3.0%, DVT in 15.2%, pace in 6.1%, the bypass in 3%, and PAH in 3%.

When examining the clinics where warfarin is started; the proportion of patients in the cardiology clinic was higher in patients with hemorrhage compared to those without hemorrhage, but it was not statistically significant, in the group with INR level above 10, the proportion of patients in the CVS clinic was high but not statistically significant.

Age, geriatric age, sex and presence of comorbidity did not differ significantly between patients with INR levels of 10 and below compared to patients above 10 (p>0.05).

The proportion of patients who had blood transfusion in patients with an INR level above 10 (40.6%) was statistically significant higher than those with INR levels between 4.5 and 10 (26%) (p=0.044). Complaints of admission to patients with INR levels above or below 10 did not differ statistically significant. Although the rate of exitus (42.3%) was higher in patients with an INR level of 10 or less, it was statistically insignificant compared to patients with an INR level higher than 10 (29.7%). The duration of hospitalization and the duration of warfarin use were close in both groups.

The mean age of the patients with in-hospital died (68.3±15.2) was significantly higher than those discharged (61.6±18.5) (p=0.011). Also, median INR level (9.0) was statistically significantly higher in discharge patients compared to those who had died (7.0) (p=0.034). The proportion of patients with comorbidities and blood transfusion did not differ significantly between the patients with discharge and died (p> 0.05).

Although admission complaint varies according to mortality; (4.8% vs. 5.6%), routine control (5.2% vs. 2.8%), nose bleeding (4.3% vs. 4.8%), vaginal bleeding (4.3% vs. 1.4%), bruise (4.3% vs. 0%) and (3.4% vs. 0%) visual loss were higher in the discharge group. Confusion (10.3% vs. 28.2%), dyspnea (15.5% vs. 22.5%), nausea / vomiting (7.8% vs. 12.7%), melena (4.3% vs. 7%) and hematemesis (3.4% vs. 4.2%) were higher in the group with exitus. When the hospitalized clinics are examined; it was found that the majority of discharged patients were admitted to EIMS (45.7%) and cardiology (13.8%) services, while the majority of patients who died had admission to intensive care (43.7%) and EIMS (23.9%).

Predicting Factors In-hospital Mortality

Step wise cox regression analysis was used to determine the risk factors that might affect on in-hospital mortality. Age, sex, INR value, comorbidity(hypertension, DM, COLD, CHF, renal failure, hematological disease, others), blood transfusion, complaints of hospitalization (hematuria, melena, hematemesis, nose bleeding, vaginal bleeding, unconsciousness, dizziness, chest pain, bruxism, suicide, diminished vision, routine control, shortness of breath, other factors) got involved in regression model. Chest pain and haematemesis which were complaints of hospitalization were found to be predictors of increased risk of in-hospital mortality. It was found that the risk of death was 3.808 times at patients with chest pain higher than those without chest pain, and 3.688 times more risk of death at patients with hematemesis than those without hematemesis complaints (It is not forgotten that there may be many different causes of chest pain.).

Controls after Discharge

After the discharge, control information of 68 patients was reached. We have not detected control findings of patient who did not give contact information, respond to phone and not give information about it. The median duration of warfarin use was 36 months, with a minimum of 2 months and a maximum of 156 months. The control frequencies of the control patients and the clinics where the dose change is provided are given in **Table 3.**

Table 3. Controls after discharge

Usage time of Warfarin	36(2-156)months
Control	
Irregularly	7(10.3)
Once a week	2(2.9)
Once every 15 days	9(13.2)
Once a month	26(38.2)
Once every 3 months	21(30.9)
Unchecked	3(4.4)
Clinics which change dosages	
Neurology clinics	8(11.8)
Cardiology clinic	30(44.1)
CVS clinic	11(16.2)
Home health service	12(17.6)
Unchecked	7(10.3)

DISCUSSION

Warfarin is a widely used anticoagulant drug for both therapeutic and prophylactic purposes. In the amounts used, the balance between plasma warfarin level and its side effects should be well established.[10] Problems may arise for patients when usage of warfarin, which is used for many diseases and has many indications, is not controlled or spontaneously. For this reason, besides the risks of using warfarin in patients who started warfarin treatment, the risks of use should be taken into account during treatment. It is most importance that patients be called to follow and trained in regular follow-up clinics in order to minimize these complications that may develop under warfarin therapy.[11]

It is known that age is an important parameter when the frequency of increasing comorbidities in geriatric age is considered. In our study, the geriatric patient population was 54%. The risk associated with warfarin use may vary depending on the comorbidities and age of the patient and the patient. There are several studies evaluating the relationship between warfarin complications and age. Studies have shown that the incidence of hemorrhage complications due to high warfarin dose with the possibility of being seen at all ages is higher in patients over 50 years of age.[12] In the study of Wallvik J et al.[13] which included 195 major bleeding cases from 2701 patients followed by a 5-year period in northern Sweden. They reported that there was 2.9 fold increase in risk in patients aged 60-69 years; 4.8 fold increase in patients aged 70-79 years; 6.6 fold increase risk in patients aged 80 and over in bleeding probability. In our study, there was no relationship between both increased age and geriatric age group and bleeding. In addition, although the mean age was high in the dying patients, neither the increased age nor the geriatric age was found to be an effective factor in the regression analysis aimed at revealing the in-hospital mortality risk. This suggests that the increased incidence of comorbidities with increasing age and the associated drug use may have a more effective role in the interaction with warfarin.

The role of gender should be discussed in relation to bleeding complication of warfarin. Some studies say that it is important to be a woman or a man, and some studies say that gender is not important.[14,15] Female sex at the study of Shireman et al.[16] male sex at the study of Lindh et al.[17] and no gender at others' study as like our study is reported as a risk factor. In our study, gender was found to have no effect on both hemorrhage and mortality.[18-20]

When we considered on the indications of warfarin use in our study, patients were predominantly using warfarin due to atrial fibrillation. The most frequent indication for use in similar studies, including in our study, was reported as AF.[21,22]

Makris et al.[23] reported that hypertension, history of previous GI bleeding, and the presence of previous cerebrovascular events have been associated with high risk of bleeding. Some studies reported that major bleeding was particularly prominent in patients with ischemic cerebrovascular disease and venous thromboembolism, and that the most important risk factors were hypertension, ulcer, cancer, previous surgical interventions.[24,25] In our study, we reported that the most common accompanying diseases were hypertension, DM, COPD and renal failure, but the comorbidity and indications were not related to bleeding.

In literature, when the percentage of bleeding according to INR level was examined, studies showed no linear relationship between INR value and bleeding complication.[4-6]

Lindh et al.[17] study identified a 46-fold increased risk of bleeding complications for every 1.0 increase over the target INR. In another study, there was no linear correlation between INR value and bleeding complication.[26] In our study, it was also found that there was no relationship between high INR level and bleeding.

In our study; it is a very important finding that none of the diabetes, heart failure and other comorbidities questioned with hypertension makes a statistically significant difference with the INR levels. Because, except for the period of acute attacks of these diseases; it can be assumed that the agents used for treatment have increased the risk of bleeding except themselves.

Although we did not find any significant association between bleeding and comorbidities in our study, the association with the use of warfarin suggests that additional drug use may be responsible for bleeding. In a study; drug interactions play a role in the 43.5% of the development of warfarin-induced bleeding.[27] For this reason, patients should be adequately informed about the use of warfarin, educated and regularly called for control.

In some studies, it was seen that the patients who were trained returned with fewer complications and were more compatible.[28,29] For this reason, anticoagulation clinics or units have been established in developed countries like America. Warfarin self-monitoring has been initiated in some countries, especially in countries such as Germany and the Netherlands; they started to make home controls with home type coagulometers. Even in some studies, home-type coagulometer and self-monitoring have been at least as successful as anticoagulation clinics.[30,31] When we looked at Turkey, although many universities prepared booklets which are for educating patients about usage of warfarin, it was not seen enough. Especially in the South eastern Anatolia and Eastern Anatolia regions, low literacy rates indicate the necessity of education clinics or units. In the study done by Baydın et al.[32], 41% of the cases were uneducated and 51.2% were primary school graduates. In our study, although not statistically significant, it is an important result that all patients who die are uneducated. These shows how important education is to patients using warfarin.

It is extremely important that individuals who use warfarin move alongside a note (identity/document wristband) indicating that they are using medication.[33,34] In our study, 63.2% of the cases indicated that they did not receive warfarin training. This shows that not only in the family medicine, but in the other clinics where warfarin is most frequent, there is a lack of patient education. These findings indicate that events require training in the use of warfarin and identification/documentation or wristbands.

In our study although 33.8% of patients who came for controlling applied for primary care, any patients did not apply for changing dosage, its reason may be that INR value is not measured in primary care center at Turkey. It was determined that 17.6% of the patients who were given dose replacement received home health care service. The

importance of primary health care services in our country has been understood in time and required importance has been given. Early detection, appropriate treatment and regular checks of chronic diseases have been required with the spread of chronic diseases and related deaths. As seen in our study, medical errors or omissions encountered in anticoagulation therapy cause high complication in the patient and result in death. Nowadays, physicians working in primary health care services have great duties for this reason. In home health care services which are updated and get new shaped, the role of primary care physicians is important.

The goal of this study is to increase the knowledge and awareness of primary care physicians about the clinical follow-up of patients in the home health care setting. Home health services are aimed to provide all kinds of health care services that are needed in bed-dependent and difficult-to-reach hospitals. Primary care physicians are the most important part of this service. The role of these physicians are very important at cooperation and communication with different disciplines, role of providing a comprehensive service and increasing quality of life, and they need the guidelines to be prepared in this area and to be more informed with these guides.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Ankara Numune Training and Research Hospital Ethics Committee (Permission granted.16.07.2014, Decision No. 2014-236).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Orjinal Araştırma / Original Article

The Effect of The Number of Needle Maneuver in The Lung and The Number of Pleural Punctures on The Formation of Pneumothorax, A Complication of Lung Transthoracic Core Needle Biopsy

Akciğer İçindeki İğne Manevrası Sayısının ve Plevral Ponksiyon Sayısının, Akciğer Transtorasik Çekirdek İğne Biyopsisinin Bir Komplikasyonu Olan Pnömotoraks Oluşumuna Etkisi

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Abstract

Aim: This study sought to investigate the effect of the needle maneuver count and number of pleural punctures on pneumothorax in CT-guided transthoracic core needle biopsy.
Material and Method: Records of CT-guided core needle biopsy performed on patients were retrospectively reviewed. Demographic data, procedure reports, pathology reports, tomography images, follow-up examinations, and complications due to biopsy were examined. Next, the number of times the needle penetrated the pleura and the number of maneuvers in the lung were listed. The number of pleural punctures was recorded either as 1 or ≥2. The needle maneuver count was recorded either as 1, 2, or ≥3. All listed variables were statistically evaluated.
Results: A total of 393 patients were included in the study. Complications of pneumothorax occurred in 87 (22.1%) patients. A thorax tube application due to pneumothorax was required in 39 (9.9%) patients. When the needle maneuver count in the lungs during biopsy was greater than 3, the incidence of pneumothorax and the need for a thorax tube application were increased (p=0.001). As the size of the lesion decreased and the lesion-pleura distance increased, the needle maneuver count in the lung increased (p=0.001, p=0.008). Pneumothorax and thorax tube application rates were increased in 48 patients with pleural punctures ≥2 (p=0.001, p=0.001).
Conclusion: In CT-guided pulmonary transthoracic core needle biopsy applications, needle maneuver count and the number of pleural punctures constitute the major factors contributing to the risk of developing pneumothorax.

Keywords: Pneumothorax, lung cancer, transthoracic biopsy, lung biopsy

Öz

Amaç: Bu çalışmada BT eşliğinde transtorasik çekirdek iğne biyopsisinde, iğne manevrası sayısı ve plevral ponksiyon sayısının pnömotoraks üzerine etkisini araştırmak amaçlandı.
Gereç ve Yöntem: Hastalara uygulanan BT eşliğinde çekirdek iğne biyopsisi kayıtları retrospektif olarak incelendi. Demografik veriler, işlem raporları, patoloji raporları, tomografi görüntüleri, takip muayeneleri ve biyopsiye bağlı komplikasyonlar incelendi. Daha sonra, iğnenin plevraya kaç kez girdiği ve akciğerdeki manevra sayısı listelenmiştir. Plevral ponksiyon sayısı 1 veya ≥2 olarak kaydedildi. İğne manevra sayısı 1, 2 veya ≥3 olarak kaydedildi. Listelenen tüm değişkenler istatistiksel olarak değerlendirildi.
Bulgular: Toplamda 393 hasta çalışmaya dahil edildi. Pnömotoraks komplikasyonu 87 (%22,1) hastada oldu. Pnömotoraksa bağlı toraks tüpü uygulaması 39 (%9,9) hastada gerekli oldu. Biyopsi uygulama esnasındaki akciğerlerdeki iğne manevrası sayısının 3+ olduğu durumlarda, pnömotoraks insidansında ve toraks tüpü uygulama gereksiniminde artış saptandı (p=0,001). Lezyon boyutu azaldıkça ve lezyon plevra mesafesi arttıkça iğnenin akciğer içerisindeki manevra sayısı artmıştır (p=0,001, p=0,008). Plevra delinme sayısı ≥2 olan 48 hastada, pnömotoraks ve toraks tüpü uygulama oranları artmıştır (p=0,001, p=0,001).
Sonuç: BT eşliğinde yapılan pulmoner transtorasik çekirdek iğne biyopsisi uygulamalarında, iğne manevrası sayısı ve plevral ponksiyon sayısı pnömotoraks gelişme riskine katkıda bulunan ana faktörleri oluşturmaktadır.

Anahtar Kelimeler: Pnömotoraks, akciğer kanseri, transtorasik biyopsi, akciğer biyopsisi

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INTRODUCTION

Computed tomography (CT)-guided lung transthoracic needle biopsy (TTNB) is a well-known technique for the diagnosis of thoracic lesions.[1] It is an easily applicable and inexpensive alternative to more invasive surgical procedures.[2,3] The use of a coaxial system and a core needle in TTNB allows for the sampling of multiple tissues.[4-6] A high specific diagnostic rate for both benign and malignant lesions following biopsy were reported with the use of automated biopsy devices.[7,8]

Some complications may occur following CT-guided core needle biopsy. Pneumothorax (PTX), bleeding, air embolism, and tumor seeding through the needle tract are known biopsy complications. PTX is the most common complication of lung biopsy and was reported to occur in 17–26.6% of patients. A thorax tube application is required more rarely, in 1% to 14.2% of patients.[9-12]

Recently, risk factors that may increase PTX formation have been tried to be identified. Variables that could be risk factors included patient age, sex, smoking history, lesion size, external stabilizing needle size, whether a core biopsy needle or an automated needle gun system were used, and the depth of the parenchyma.[13] In other words, there are risk factors related to the lesion, patient, practitioner experience and method.[14,15] The risk factors associated with the lesion and patient (age, presence of emphysema, small lesion size, long needle path, etc.) cannot be altered. In the presence of these risk factors, the likelihood of developing PTX may be high. Practitioner experience is a variable factor, however. The procedure is very safe when performed by appropriately trained and experienced doctors.[16] The needle maneuver count and pleural punctures in the lung are among the practitioner-dependent variables. The effect of these variables on PTX has not been adequately evaluated in studies published to date. Proving that these variables are risk factors can lead to new studies on practitioner experience and technical methods. The aim of this study was to investigate whether the needle maneuver count in the lung and the number of pleural punctures constitute risk factors to the formation of PTX. In addition, the presence of factors associated with the lesion that could affect the needle maneuver count and pleural punctures, and that were not included in any of the studies published to date, were also evaluated.

MATERIAL AND METHOD

All procedures in the study were performed on human participants in accordance with national research committee standards, and ethical guidelines for the 1964 Helsinki Declaration and subsequent editions. The study was carried out with the permission of Necmettin Erbakan University Meram Faculty of Medicine Non-Pharmaceutical and Medical Device Research Ethics Committee (Decision No. 2019/2203). Treatment methods were performed according to approved guidelines. Permission was obtained from the institution for retrospective examination of the records. All patients were informed that their biopsy samples could be used forscientific research purposes and provided written consent before undergoing the procedure. Additional approval via telephone was obtained from patients whose images were used during manuscript preparation.

Study Plan and Patients

This study was jointly planned between Interventional Radiology and Thoracic Surgery Clinics. The records of patients who underwent CT-guided core needle biopsy between January 2017 and October 2019 were retrospectively screened. Demographic data, procedure reports, pathology reports, tomography images, follow-up examinations and complications due to biopsy were examined. CT images during and before the biopsy were obtained. The location of the lesion, lesion size, lesion-pleura distance and presence of emphysema were recorded. Emphysema was assessed using the Goddard classification, a visual scale that scores vascular impairment and low attenuation for each lung area. Patients with a history of ipsilateral surgery, bulla on the needle tract, a fissure that had to be passed, and a pleural-based lesion were excluded. All recorded sequential tomography images taken during the biopsy were screened by the interventional radiologist who performed the biopsy. This scan recorded the number of times the needle perforated the pleura and the needle maneuver count in the lung (**Figure 1**). Needle maneuver count in the lung, controlled progress and angle-shifting movements of the needle after crossing the pleura were listed (**Figure 2**). The number of pleural punctures was recorded either as 1 and ≥2. The needle maneuver count was grouped either as 1, 2 or ≥3.

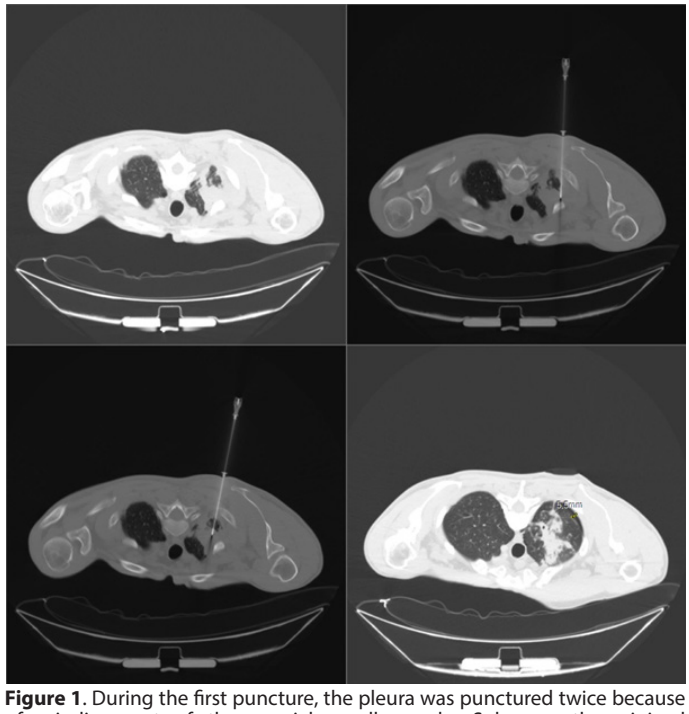

Figure 1. During the first puncture, the pleura was punctured twice because of misalignment of the coaxial needle angle. Subsequently, minimal pneumothorax occurred as a complication.

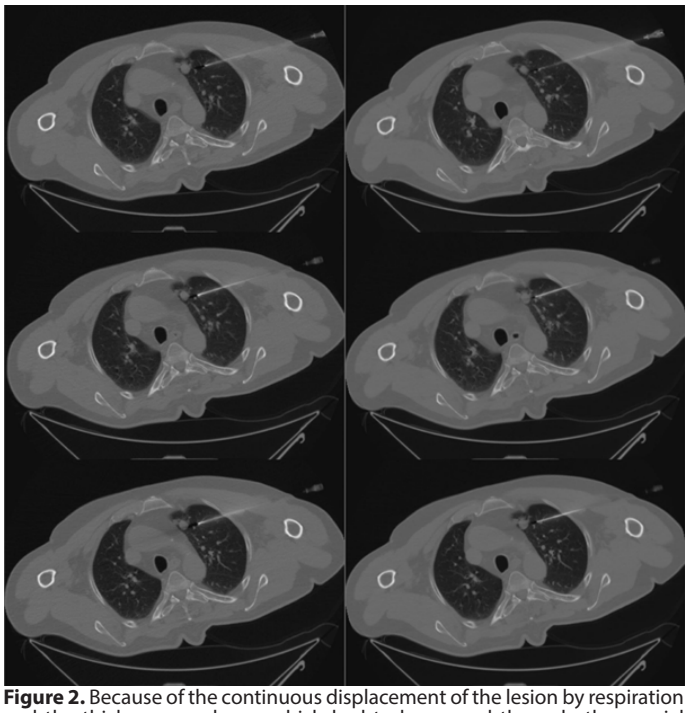

Figure 2. Because of the continuous displacement of the lesion by respiration and the thicker parenchyma which had to be passed through, the coaxial needle was maneuvered 6 times during biopsy. (20x15 mm irregular contoured lesion located in the anterior upper lobe of the left lung in the paramediastinal area; pathological diagnosis was adenocarcinoma)

Statistical Analysis

Data from the study was uploaded to the computer and evaluated by using "SPSS (Statistical Package for Social Sciences) for Windows 22.0 (SPSS Inc, Chicago, IL)." Descriptive statistics are presented as median (25%-75%), frequency distributions, and percentages. Visual (histogram and probability graphs) and analytical (Kolmogorov-Smirnov Test) methods were used to assess the conformity of the quantitative data to the normal distribution. A Pearson's chi-squared test was used to evaluate the number of pleural punctures, the needle maneuver count and the presence of emphysema with PTX and thorax tube placement variables. An independent samples test was used to evaluate the correlation between lesion size, lesion depth and PTX complications. The effects of lesion size and lesion-pleura distance on the number of pleural punctures were evaluated using a Mann-Whitney U test. The effect of increased lesion-pleura distance on needle maneuver count was evaluated using a Kruskal Wallis test and the effect of lesion size on maneuver count was evaluated using a one-way ANOVA test. The level of statistical significance was set at $p<0.05$.

Biopsy Procedure and Follow-up

Patients were informed by all medical practitioners about their possibility of disease and the reasons for which a biopsy should be performed. Written approval indicating the complications and the fact that information from the patients' file could be used for study purposes, were received. Routine bleeding parameters (INR<1.5, platelet count>50000) were assessed to minimize risks.

All biopsy procedures were performed by an interventional radiologist with at least 6 years of experience. All core needle biopsy procedures were performed under multidetector CT guidance (Somatom Emotion 6, Siemens, Erlangen, Germany). The technical parameters for CT are as follows: 120 mA; 100kVA; collimation 6x2 mm; slice thickness 2.5 mm; restructuring range 1 mm. A fully automatic coaxial system 20G, 15-20 cm core needle biopsy needle (estacore, Geotek Medical, Ankara, Turkey) was used for the biopsies. The coaxial needle used was a 19G needle. In our clinic, 20G needles have been used for the last 6 years since we have never encountered any problem obtaining adequate tissue. A breath holding technique was not used during patient biopsies. Initially, 10 cm tomography axial images were obtained. The most appropriate coaxial needle route was then determined. Skin antisepsis and local anesthesia were carried out. The coaxial system was carefully advanced. CT images were obtained after each maneuver to assess the accuracy of the needle tract. Approximately 3-4 pieces of tissue were taken with a core biopsy needle after visualization of the tissue was confirmed with tomography images showing that the coaxial needle had reached the lesion.

After the biopsy, CT images of the same region were taken while the patient was still on the table and assessed for the presence of any complications. Pulmonary radiographs were taken at the 6th and 24th hours of the follow-up period at the outpatient thoracic surgery service and evaluated by a thoracic surgeon. Patients who did not develop any complications were discharged. After the biopsy procedure, patients who developed PTX without a necessary intervention were closely monitored with nasal oxygen administration. A thorax tube was placed in patients with a large PTX (35% reaching below apical or hilus level), patients with progressing PTX on repeated radiographs, and symptomatic patients (severe pain or dyspnea) (**Figure 3**).

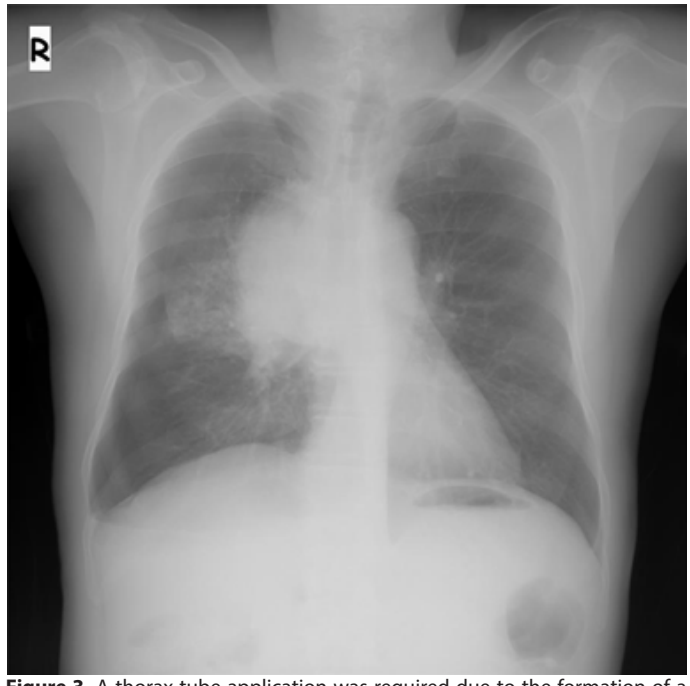

Figure 3. A thorax tube application was required due to the formation of a large pneumothorax on the posteroanterior chest X-ray at the 6th hour after the biopsy. (A biopsy was performed from the lesion located in the superior segment of the lower lobe of the right lung; the pathological diagnosis was high grade neuroendocrine carcinoma.)

RESULTS

A total of 393 patients (285 males and 108 females) were included in the study. The mean age of the patients was 58.4±12.1 years. Of all lesions, 208 were in the upper lobe, 41 in the middle lobe and 144 in the lower lobe. A total of 89 (22.6%) patients had PTX complications. Thorax tube application due to pneumothorax was required in 40 (10.1%) patients. Minimal pulmonary bleeding along the needle tract was seen in 48 (12.2%) patients. There were no severe pulmonary hemorrhage cases requiring treatment. Transient hemoptysis resolved spontaneously in 20 (5.08%) patients. No patient experienced air embolism or death. The diagnostic efficiency was 98.3% (**Table 1**).

Table 1. Descriptive and clinical characteristics of the performed biopsies.

	n=393 (100%)
Size (mm), mean±SD (min-max)	33.4±16.6 (7-110)
Lesion-Pleura Distance (mm), mean±SD (min-max)	30.5±12.8 (13-90)
Number of Parietal Pleura punctures, n (%)	
1	345 (87.8)
2	45 (11.4)
3	3 (0.8)
Needle Maneuver Count in the Lung, mean ± SD (min-max) w	1.8±1.0 (1-6)
1, n (%)	192 (48.9)
2, n (%)	130 (33.2)
3, n (%)	54 (13.7)
4, n (%)	5 (1.1)
5, n (%)	9 (2.3)
6, n (%)	3 (0.8)
Pneumothorax, n (%)	89 (22.6)
Thorax Tube Applications, n (%)	40 (10.1)
Pathology Result, n (%)	
Malignant	265 (67.5)
Benign	123 (31.2)
Insufficient Material	7 (1.7)
Diagnostic Efficiency Value, n (%)	98.3%

n: number of biopsy; **%:** column percentage; **mean:** mean value, **SD:** standard deviation

The mean lesion size was 34.5 (±19.9) mm in patients with PTX and 33.1 (±15.5) mm in patients without PTX. There was no significant difference in PTX rates between these two groups (p=0.969). The mean lesion-pleura distance was 34.7 (±13.4) mm in patients with PTX and 29.2 (±12.3) mm in patients without PTX. There was a difference in terms of PTX rates between these two groups (p=0.029). Emphysema was present in 62 patients in the lung lobe in which the biopsy was performed. PTX developed in 20 (35.2%) of the 62 patients with emphysema. This rate was 20.2% in patients without emphysema. The rate of PTX was higher in patients with emphysema (p=0.001).

The rates of PTX complications were similar between patients with a needle maneuver count of 1 and 2 in the lung. When the needle maneuver count in the lungs during biopsy was greater than 3, the incidence of PTX and the need for a thorax tube application were increased (p=0.001). As the size of the lesion decreased and the lesion-pleura distance increased, the maneuver count of the needle in the lung increased (p=0.001, p=0.008) (**Table 2**).

Table 2. Distribution of pneumothorax development and cases with thorax tube application according to the maneuver count of needle in the lungs.

	Maneuver Count Of Needle In The Lungs			p
	1 (n=192)	2 (n=130)	≥3 (n=71)	
Pneumothorax, n (%)	29 (15.1)	21 (16.1)	39 (54.9)	0.001
Status of Thorax Tube Application n (%)	13 (6.7)	7 (5.3)	20 (28.1)	0.001
Lesion-Pleura Distance mean (± SD)	27.3 (±9.8)	31.9 (±12.7)	36.3 (±17)	0.001
Lesion Size mean (± SD)	36.4 (±15.9)	31.7 (±15.4)	28.7 (±19.1)	0.008

n: number of biopsy, %: column percentage, mean: mean value, SD: standard deviation

There were 345 patients with 1 pleural perforation 1 and 48 patients with ≥2. In this group of patients with ≥2, the PTX ratio and necessity for a thorax tube application were significantly increased (p=0.001) (**Table 3**).

Table 3. Distribution of pneumothorax development with parietal pleura transition count and thorax tube application rate.

	Number of Parietal Pleura Punctures		p
	1 (n = 345)	≥2 (n= 48)	
Pneumothoraxn (%)	64 (18.5)	25 (52.0)	0.001
Status of Thorax Tube Attachment n (%)	23 (6.6)	17 (35.4)	0.001
Lesion-Pleura Distancemean(±SD)	30.3 (± 12.8)	31.5 (± 12.8)	0.391
Lesion Sizemean(±SD)	34.1 (± 16.7)	28.5 (± 14.8)	0.085

n: number of biopsy, %: column percentage, mean: mean value, SD: standard deviation

DISCUSSION

In this study, the risk factors contributing to PTX after lung TTNB and the conditions that might affect these risk factors were evaluated. In cases in which the number of coaxial needle maneuvers in the lung was greater than 3, there was an increase in the incidence of PTX occurrences and the need for thorax tube application. Similarly, the PTX rate and the need for thorax tube application were increased in patients with a pleural needle perforation count ≥2. As the size of the lesion decreased and the lesion-pleura distance increased, the number of needle maneuvers in the lung increased. These findings demonstrate the importance of practitioner experience.

Risk factors contributing to PTX complications have been evaluated in many studies. Each study has discussed the risk factors that they consider important. This limitation is natural since this issue is comprehensive. It may not be technically possible to discuss all risk factors in the studies. Heerink et al.[17] recently published a very interesting meta-analysis on this topic. They examined 32 core needle biopsy articles and 17 fine needle aspiration biopsy articles in their meta-analysis. They presented risk factors for biopsy complications and reported that factors such as larger needle diameter, smaller lesion size, and increased transverse lung parenchyma are risk factors for complications. The increased risk of transverse lung parenchyma, which is a risk factor, indirectly supports the hypothesis in this study. A long tract can increase the number of maneuvers and pleural punctures. There are also studies evaluating patient and lesion characteristics from risk factors applying univariate analysis.[18,19] These studies included factors such as patient age, sex, smoking history, localization of the site, lesion size, patient's lying position and size of external stabilizing needle. But, the number of needle maneuvers in the lung were not assessed.This factor can be improved with good planning before and during biopsy. Therefore, it is important to evaluate it. In this study, unlike the others, the needle maneuver count in the lung was assessed and its effect on PTX and thorax tube application rate was indeed studied. PTX complications were seen in 15.1% of patients with 1 needle maneuver number and 16.1% of patients with 2 needle maneuvers in the lung. PTX complication rates were similar in these two groups. However, the rate of pneumothorax increased dramatically in 54.9% of patients with ≥3 needle maneuvers. As a result of this study, when the maneuver count was ≥3, the incidence of PTX and the need for thorax tube application increased.

Lesion size and depth of placement are known to affect the incidence of pneumothorax after biopsy. There are studies examining the effects of lesion size and depth on PTX.[20-23] In fact, one of these studies described a pulmonary parenchyma with a thickness of 4 cm or more, through which the needle was passed, as a major risk factor for PTX formation.[20] Laurent et al.[21] examined the lesion size. There were no significant differences in the complication rate between the two patient groups with a size below or above 20 mm.[21] Heyer et al.[22] and Shiekh et al.[23] found the incidence of PTX to be significantly higher in smaller and deeper lesions. These three studies actually provided support for our theory, but did not elaborate on these factors. The greater distance between pleura and lesion means that the coaxial needle travels a longer way to reach the lesion. Access to this lesion is more difficult than to a nearby lesion. As a brief result of these studies, small sized and deeply located lesions can be defined as risk factors. However, the reasonsfor which these factors increase pneumothorax have not been evaluated in these studies. Small, deeply located lesions that are translocated by respiration are difficult to access. Therefore, it is clear that the number of maneuvers will be higher than in the others. In this study, the effect of lesion size and lesion-pleura distance variables on the needle maneuver count in the lung was evaluated. As the lesion size decreased, the number of needle maneuvers increased. As the lesion-pleura distance increased, the number of needle maneuvers in the lung increased significantly. According to the results of this study, the needle maneuver count in the lung was a risk factor for pneumothorax. In parallel with this information, the direction in which the lesion-pleura distance and lesion size increased the rate of pneumothorax was elucidated.

To the best of our knowledge, there is little work examining the number of pleural puncturesas a PTX risk factor.[24-26] Although the subject is partially included in these three studies, it has not been centrally examined. Geraghty et al.[24] found PTX complications in 27% of patients with a pleural perforation count of 1, in 29% of patients with a pleural perforation count of 2-3, and 30% of those with a pleural perforation count of 4 or more. They stated that there was no significant difference between these values (p=0.558).[24] Pleural punctures of two or more are abnormal. Comparison of the above-normal number of pleural punctures in different groups (2-3, ≥4) may have negatively affected their statistical results. Joseph et al.[25] noted in their study, whichincluded 356 patients, that there was no statistically significant correlation between PTX complication and the number of pleural punctures. In their evaluation, they listed all perforation counts as 1,2,3,4, and 5, without grouping them separately. The number of pleural punctures is higher than normal in the 2, 3, 4 or 5 groups. It can be predicted that there will be no significant difference when these 5 groups include 4 patients, since all of these have a number of pleural punctures. It is generally accepted that a pleural perforation number of 1 is the most appropriate count in biopsy applications. This is one of the main objectives in planning, but multiple punctures of the pleura may be required to reach small, deep-located lesions that are more displaced by respiration. In this study, the number of pleural punctures was divided into two groups, as having either 1 or ≥2 pleural punctures. In this way, statistics were carried out according to groupings. There was a significant increase in the rate of pneumothorax and the necessity of thorax tube application in patients with a pleural perforation count ≥2. In addition, this study provides evidence of the effect of pleural perforation on complications. It is considered that the observation period and the decreased need for additional treatment in contemporary medical care is just as important as providing quality health care. Therefore, it is important to know the factors affecting the rate of complications after percutaneous transthoracic core needle biopsy.

This study has some limitations. First, the evaluation was based on a monocentric retrospective analysis. Secondly, this resulted in insufficient smoking records. Third, the proportions of risk factors examined in this study may vary depending on practitioner experience. As a consequence, the results of studies across different centers may differ.

In conclusion, this study showed that the needle maneuver count and the number of pleura punctures in the lungs were risk factors for pneumothorax in the application of CT-guided lung core needle biopsy. A decrease in lesion size and an increase in lesion-pleura distance lead to an increase in the number of maneuvers, which constitutes a risk factor.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Necmettin Erbakan University Meram Faculty of Medicine Non-Pharmaceutical and Medical Device Research Ethics Committee (Decision No. 2019/2203).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Orjinal Araştırma / Original Article

Relation of Pulmonary Thromboembolism and Significance of Laboratory Parameters (D-Dimer-Fibrinogen) of Patients with Isolated COPD During Exacerbation

İzole KOAH Hastalarının Alevlenme Anında Pulmoner Tromboemboli İlişkisi ve Labaratuvar Parametrelerinin (D-Dimer-Fibrinojen) Anlamlılığı

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Abstract

Aim: Dyspnea can be a symptom of many diseases. Pulmonary thromboembolism (PTE) is the most important one of these conditions. It can occur together with Chronic Obstructive Pulmonary Disease (COPD) and PTE, and their symptoms may mask each other. Identify the relationship between d-dimer levels of patients diagnosed with COPD exacerbation; is to determine the cut-off value in case of connection. It is aimed to guide clinicians in their patient management according to the results.
Material and Method: This study was conducted prospectively. Patient group was 49 patients presenting to the emergency department with exacerbation of COPD who have no comorbid disease such as malignancy, Diabetes Mellitus (DM), Chronic Hearth Failure (CHF); were over than 18 years old, non-pregnant; and with Glasgow Coma Scale (GCS) > 10 points and the control group consisted of 52 patients who presented to the emergency department with dyspnea who haven't got any diseases.
Results: 65% of COPD patients are male. The most common comorbid disease was Hypertension (p <.05) in 7 patients (14,2%). Fibrinogen and d-dimer were higher in the patient group (p <.05). The D-dimer cut-off value in patients with COPD was 0.97 µg / ml (p<.05). Pulmonary thromboembolism was detected in 3 COPD attack patients (6%) (p <.05). During COPD exacerbation inflammatory markers such as C-reactive protein (CRP), D-dimer, fibrinogen increases.
Conclusions: The incidence of PTE was significantly increased in patients with COPD exacerbation. PTE should be absolutely included in the differential diagnosis in patients presenting to the emergency department with dyspnea and necessary examinations should be performed for the retraction.

Keywords: D-dimer, chronic obstructive pulmonary disease, pulmonary thromboembolism

Öz

Amaç: Dispne birçok hastalığın semptomu olabilir. Pulmoner tromboemboli (PTE) bu durumların en önemlilerinden birisidir. Kronik Obstruktiv Akciğer Hastalığı (KOAH) ve PTE birlikte bulunabilmekte ve semptomları birbirini maskeleyebilmektedir. KOAH alevlenme tanılı hastaların d-dimer seviyesi arasındaki ilişkinin tanımlanması ve bağlantı durumunda cut-off değeri belirlemektir. Klinisyenlere hasta yönetiminde yol gösterici olunabilmesi hedeflenmiştir.
Gereç ve Yöntem: Bu çalışma prospektif olarak yapılmıştır. 18 yaşından büyük, Diyabetes mellitus (DM), Konjestif Kalp Yetmezliği (KKY), malignite gibi ek hastalığı bulunmayan, gebeliği olmayan, Glasgow Koma Skalası (GKS) > 10 olan KOAH alevlenme ile acil servise başvuran 49 kişilik hasta grubu ve herhangi bir hastalığı olmayıp ve dispne ile acil servise başvuran 52 kişilik kontrol grubu ile oluşturuldu.
Bulgular: KOAH hastalarının %65'i erkekti. En sık eşlik eden ek hastalık; 7 kişide (%14,2) saptanan hipertansiyon oldu (p< .05). Fibrinojen ve d-dimer hasta grubunda daha yüksek bulunmuştur (p< .05). KOAH hastalarında d-dimer cut-off değeri 0,97 µg/ml olarak saptanmıştır (p< .05). KOAH atak ile başvuran 3 kişide (%6) pulmoner tromboemboli saptanmıştır (p< .05). KOAH alevlenmesi sırasında C-reaktif protein (CRP), D-dimer, fibrinojen gibi inflamatuar belirteçler artmaktadır.
Sonuç: KOAH alevlenmesi olan hastalarda PTE insidansı önemli ölçüde artmıştır. Acil servise dispne ile başvuran hastalarda PTE mutlaka ayırıcı tanıya dahil edilmeli ve ekartasyon için gerekli işlemler yapılmalıdır.

Anahtar Kelimeler: D-dimer, kronik obstruktif akciğer hastalığı, pulmoner tromboemboli

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a non-reversible, progressive, increased chronic inflammatory response in the airways and lungs to noxious particles or gases. Due to increasing expected life expectancy and exposure to new risk factors (tobacco, physical inactivity, obesity, occupational exposure, air pollution etc.) nowadays chronic diseases have become the biggest cause of mortality and morbidity.[1] This causes a serious social and economic burden. COPD is an important part of chronic respiratory diseases. COPD is one of the most important causes of morbidity and mortality worldwide.[2] With increasing expected life expectancy and exposure, the burden of COPD is expected to increase mostly.[3] According to the 2016 WHO report, COPD is responsible for 5.3% of all deaths in the world and ranks third among all diseases. It is estimated that in 2030, it will be responsible for 5.7% of all deaths and will retain its place. [4] Dyspnea is the most common complaint of individuals with COPD presenting to the emergency departments. Dyspnea is a general symptom and may indicate many diseases other than COPD.

D-dimer results from plasmin degradation of fibrin clot formed by activation of coagulation cascade.[5] D-dimer can be roughly described as fibrin degradation product. It is called D-dimer because it contains two D fragments. Fibrinogen is an important acute phase reactant. Its production is increasing in cases of inflammation, malignancy, pregnancy, and trauma. D-dimer production is part of clot formation and wound healing. D-dimer pathologically becomes an important value indicating the presence of unwanted thrombotic events as a result of clot formation or some underlying diseases.[6]

Clinical use of D-dimer is particularly the diagnosis and follow-up of intravascular coagulation. When it comes to venous thrombus, deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE) are the most common. PTE is one of the most important diseases presenting to the emergency department with dyspnea. It progresses together with COPD and PTE in some patients and the patient's complaints of dyspnea can be confused. This causes delay in the diagnosis of PTE and increases the likelihood of mortality. Although some studies shown that the prevalence of PTE was between 13.7–20% among patients who were in a period of exacerbation of COPD, in the other hand postmortem studies in patients with COPD, 28-51% of patients are accompanied by PTE.[7] For this reason, this study has aimed to be able to guide clinicians in their patient management by determining whether d-dimer level of patients diagnosed with COPD exacerbation are related to COPD or there is any additional pathology. It also sought an answer to the question: 'is there a cut-off value for d-dimer in patients with COPD?'

MATERIAL AND METHOD

The study was designed prospectively. This study was conducted with the Tokat Gaziosmanpasa University Clinical Research Ethic Committee (Decision dated: 02.10.2014, Desicion No: 14-KAEK-133).

Patients

Study inclusion Criteria

Local ethics committee approval was obtained for this study. 49 patients presenting to the emergency department with dyspnea during 2014-2015 years , diagnosed with COPD exacerbation; having no additional disease such as malignancy, diabetes mellitus (DM), chronic heart failure (CHF); more than 18 years; non-pregnant; and with Glasgow Coma Scale (GCS)> 10 were included in the study. While 52 adults who are healthy and without respiratory distress were involved in the control group. PTE was excluded using the PERC Score for patients in the control group. All the participants were informed and approval form was obtained.

Study Exclusion Criteria

The cases such as having any malignancy, systemic diseases (DM, Cerebrovascular Diseases, CHF, Chronic Renal Failure …), another risk factor (hematological disorder, active DVT) for pulmonary thromboembolism other than COPD, and pregnancy were excluded from study because of these situations make d-dimer increase.

COPD staging system

In order to stage COPD patients, the Pulmonary Function Test (PFT) results at presentation to hospital were performed according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) 17 Guideline. **Table 1** indicates Spirometric classification of COPD Severity Based on Post-bronchodilator forced expiratory volume in 1 second (FEV_1).[3]

Table 1. Spirometric classification of COPD Severity Based on Post-bronchodilator FEV_1*

In patients with post-bronchodilator FEV_1/FVC**<0.70		
GOLD*** 1	Mild	FEV_1≥%80 predicted
GOLD 2	Moderate	≥%50 FEV_1<% 80 predicted
GOLD 3	Severe	≥%30 FEV_1<%50 predicted
GOLD 4	Very severe	FEV_1<%30 predicted

*FEV1: Forced Expiratory Volume in 1 second
** FVC: Forced Vital Capacity
*** GOLD: Global Initiative for Chronic Obstructive Lung Disease

Collecting Clinical Information

Demographic characteristics (age, gender, height, weight), arterial blood gas, vital signs, microbiological and biochemical laboratory parameters (C-reactive protein (CRP), leukocyte, neutrophil, hemoglobin, d-dimer, fibrinogen) of patients were recorded. For the patients considered with pulmonary thromboembolism it was determined whether they have pulmonary thromboembolism with pulmonary function test, pulmonary angiography and ventilation - perfusion scintigraphy.

Measurement of D-dimer in serum

Although many techniques have been developed for the measurement of d-dimer in the literature, 3 most commonly used methods are;[8]

1. ELISA (enzyme-linked immunosorbent assay): it is quantitative and highly sensitive method
2. Latex immunoagglutination assays: It is faster but less sensitive than ELISA method, and semi-quantitative method because it is based on visual observation
3. Latex immunoturbidimetric assay for the automated measurement: It is quantitative and faster as well as sensitive as the ELISA method.

Both ELISA and latex turbidimetric immunoassay (LTIA) are approved by the FDA (US Food and Drug Administration) and is widely used in the world for the exclusion of venous thromboembolism.[8]

D-dimer levels of all patients were measured using a latex-based immunoturbidimetric assay from blood taken without treatment by using Cobas-501; Roche machine in biochemistry central laboratory. For D-dimer 0-0.5 µg/ml was accepted as normal value. Over 0.5 µg/ml was taken as positive value.

Statistical analysis

The statistical analysis of the results was obtained by SPSS 22.0 package program by a statistician. T-test, a parametric test, was used to determine whether body mass index (BMI), PFT, laboratory parameters, Fibrinogen and D-dimer average values of Individuals in the study group show significant difference between the case and the control group. Before the analysis, the data set was examined in terms of the assumptions of the relevant statistical technique and it was determined that the assumptions were met. The difference between the case and the control group; and gender was examined by the Chi-Square test, a nonparametric test. In the case group, ROC curve analysis was carried out to determine the D-dimer cut-off value of the patient with COPD but non-PTE. In statistical analysis, significance level was accepted as 0.05.

RESULTS

Demographic Features

In our study, while case group consisted of 49 individuals (32 males, 17 females), control group consisted of 52 individuals (36 males, 16 females). From the point of COPD, there was no statistically significant difference in COPD in terms of sex (p>.05).

When the BMI averages are evaluated, there was no statistically significant difference between case group and control group (27.8–27.7 kg/m^2) (p>.05).

Comorbidities

Comorbid disease was detected in 9 (18.3%) of 49 patients in the case group. The most common comorbid disease was hypertension in 7 (14.2%) patients. In addition, it was found that 1 patient (2%) had dementia and 1 (2%) had hydatid cyst of liver. 7 patients (13.4%) of 52 patients in the control group was identified comorbid disease; in 4 of them (7.6%) it was detected that superficial varicose veins in the leg was the most common comorbid disease. 3 patients (5.7%) had hypertension. The diseases in the control group were incidentally detected because there were no complaints in the patients.

Demographic features and comorbidities shown in **Table 2**.

Table 2. Demographic Features and Comorbidities of Case and Control Group

		Case	Control	p
Gender	Male	32	36	
	Female	17	16	>0.05
BMI*	27.8 kg/m^2	27,7 kg/m^2	>0.05	
Comorbidities		%18.3	%13.4	
	Hypertension	%14.2	%5.7	<0.05

*BMI: Body Mass Index

Pulmonary Function Test (PFT) and COPD Staging

In the comparison of the mean PFT scores of the case and control groups, while forced expiratory volume in 1 second (FEV_1)=94, forced vital capacity (FVC)=98, FEV_1/FVC=98.8 were found for the control group. FEV_1; 47.5, FVC; 59.9, FEV_1/FVC; 77.4 were found for the mean PFT scores of the case group. When PFT results of the patient and control group were examined, the mean PFT scores of control group are higher than the case group and this difference was statistically significant for all three values (p<.05).

At presentation to hospital, 17 individuals (39.5%) had stage 2 COPD, 16 patients (37.2%) had stage 3 COPD, 9 patients (20.9%) had stage 4 COPD, and 1 (2.3%) had stage 1 COPD (**Figure 1**)

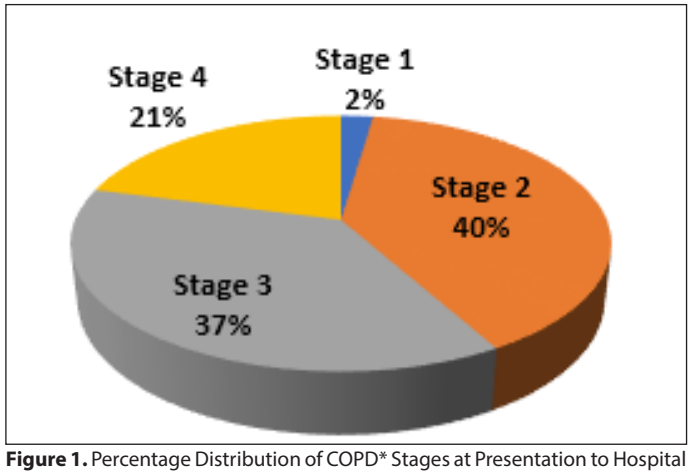

Figure 1. Percentage Distribution of COPD* Stages at Presentation to Hospital
*COPD: Chronic Obstructive Pulmonary Disease

Laboratory Parameters

Arterial blood gases were evaluated and patient and control group comparison results determined that pO_2; 63.5 mmHg, pCO_2; 42.7 mmHg, sO_2; 42.7 was in patient group, while pO_2; 94.6 mmHg, pCO_2; 36.1 mmHg, sO_2; 96.5 was in control group. A statistically significant difference was found in all parameters ($p<.05$).

When the case and control groups were compared for CRP values, respectively, 40.7-3 mg/L was found; CRP was significantly higher in the case group ($p<.05$).

Fibrinogen and D-dimer

When the case and control groups were compared in terms of fibrinogen value, respectively, 387–289.4 mg/dL was found; and once again there was a statistically significant increase in the case group ($p<.05$).

The comparison of D-dimer values between case and control group means, respectively, 1.2–0.18 µg/ml was found, and it was determined significantly higher in the case group ($p<.05$). In addition, in the case group ROC curve analysis was performed to determine the cut-off value for the significant d-dimer result in terms of pulmonary thromboembolism, and d-dimer cut-off value was determined as 0.97 µg/ml. ROC analyze graphic shown in **Figure 2**. When the group of pulmonary thromboembolism was evaluated in itself, d-dimer average was 9.25 µg/ml; d-dimer average of the patients who are in the case group with COPD but not pulmonary thromboembolism was determined as 0,73µg/ml ($p<.05$). D-dimer average (0.73 µg/ml) of patients with COPD in the case group but not with PTE and d-dimer average of the control group (0.18 µg/ml) were compared, the difference was found to be statistically significant ($p<.05$).

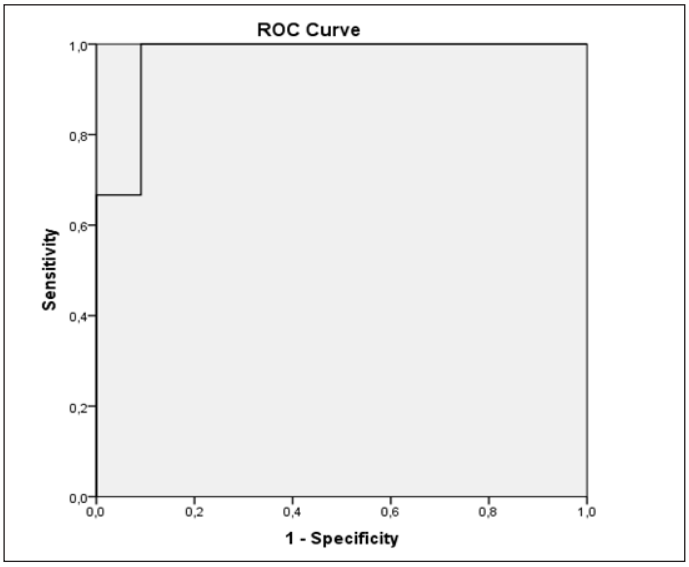

Figure 2. D-dimer of Case Group's ROC Curve Graphic
AUC: 0.97 %95, CI: 0.91-1.00, p=0.007

Pulmonary Thromboembolism

2 patients (4%) were diagnosed with pulmonary thromboembolism by pulmonary computerized tomography (CT); PTE was found in one person by ventilation/perfusion scintigraphy; 3 patients (6%) in the case group were hospitalized due to PTE, but PTE was not detected in any case in the control group.

DISCUSSION

COPD and pulmonary thromboembolism are diseases with high morbidity and mortality. In emergency department presentation of patients with COPD presenting with dyspnea, more severe conditions arise because PTE is not thought together. According to the results of Burden of Obstructive Lung Disease (BOLD) study conducted in twelve countries, it was determined that based on the post-bronchodilator FEV_1/FVC<70% as a fixed rate criterion, the prevalence of COPD has reached 25% in the population over 40 years of age while based on Post bronchodilator FEV_1/FVC with <70% and FEV <80% as GOLD stage II criteria, this rate was 10.1%.[9] In a study conducted in Turkey, it was found that COPD was more common in men.[10]The results of this study were consistent with the literature: 65% were male; it is approximately two times greater than female patients.

According to the results of some studies, metabolic syndrome was found to be more common in patients with COPD.[11] One of the indicators of metabolic syndrome is the increase in body mass index (BMI). In this study, there was no significant difference between the case group and control group when BMI averages were evaluated. It was seen that this situation was incompatible with the literature. It was considered that the reasons of this could be the exclusion those with other systemic diseases such as DM, CHF; and its diet and lifestyle. It is believed that more studies on patients with Isolated COPD in terms of BMI and metabolic syndrome will be beneficial.

According to the results of the study in the literature, hypertension is the most common comorbidity in patients with COPD.[12] According to the results of a study conducted in 2012, 46.1% of the patients had comorbid disease and the most common comorbid disease was hypertension with 25.5% .[13] The results of this study indicated that 18% of patients in the case group have comorbid disease and hypertension in 14.2% of them was the most common accompanying disease, so they were similar to literature.

In literature, according to the results of arterial blood gas parameters when patients with COPD presented to emergency with attack, it was reported that they had hypoxia, low oxygen saturation and hypercarbia.[14] According to the results of a study conducted in 2015, it was found that PaO_2 was significantly lower (hypoxic) than the control group, in patients with COPD presenting with exacerbation.[15] In this study, it was found that hypoxia, hypercarbia and saturation decreased in the case group as a result of mutual evaluation of arterial blood gas parameters. In this case, it was evaluated as compatible with the literature.

There is an inflammatory process in the lung periphery in patients with COPD. The result of this inflammation, Cytokines such as tumor necrosis factor α (TNF-α), interleukin-1 β (IL-1β) and interleukin-6 (IL-6) are released in the systemic circulation, and these cytokines cause an increase in acute phase proteins such as CRP, fibrinogen, serum amyloid A and surfactant protein D. This increase becomes even more significant during attacks.[16] It was reported that CRP, fibrinogen and leukocyte counts increased in patients with COPD and the risk of attacks also increased in these patients.[17] According to the results of the study, it was reported that CRP was significantly higher in patients presenting with COPD exacerbation compared to the control group.[15] This study found similar results with literature.

Thrombin formed by the activation of the clotting system breaks down fibrinogen; this results in the formation of fibrin. Fibrinogen conversion to fibrin occurs in 3 phases (preteolysis (enzymatic), polymerization, stabilization phases) thrombin breaks down this fibrin plaque formed in the plasma. It begins to degrade by specially binding C-terminal lysine of fibrin. E and DD fragments are formed in the final stages of the degradation. The DD fragment is removed from the body by the liver, kidney and reticulo endothelial system. D-dimer values vary from person to person, but the normal range is 0.2-0.5 µg/ml.[18]

Although d-dimer is not regarded among the causes of increase in COPD in sources, converse results have been obtained in recent studies. It has been reported that fibrinogen level has increased in patients with obstructive pulmonary disease, and it is associated with mortality.[19] According to the results of a study published in 2000, it has been indicated that plasma fibrinogen and d-dimer concentration did not show a significant increase in COPD patients and these parameters are useless for identification of risk groups.[20]

It has been reported that fibrinogen and d-dimer levels has increased in patients with COPD exacerbation and regressed with treatment.[21] When the laboratory results in this study examine, in comparison with case and control groups in terms of fibrinogen and d-dimer levels there was a statistically significant increase in case group with COPD exacerbation. Based on these results, it can be said that d-dimer value of COPD disease is increasing. Firstly, case and control group were compared and d-dimer was significantly higher in the case group. Then, the case group was divided into two groups as COPD patients with and without PTE; d-dimer level were measured in patients with isolated COPD and it was found d-dimer level average of patients with isolated COPD was positive as 0.73 µg/ml . For the detection of d-dimer cut-off value of patients with isolated COPD, d-dimer cut-off value was determined as 0.97 µg/ml in patients presenting isolated COPD attack as a result of ROC curve analysis in patients with isolated COPD without PTE. Thus, it was avoided that Pulmonary CT Angiography or V/P Scintigraphy was performed for unnecessary PTE examination in each of d-dimer value determined as positive in patients presenting COPD attack according to population.

In some sources, it has been shown that PTE is accompanied by 28-51% of patients with COPD in post-mortem examination.[7] The results of PTE prevalence study in patients presenting with exacerbation of COPD has indicated that patients with and without PTE had similar symptoms and 18% of patients who were hospitalized with exacerbation had PTE.[22] According to the results of this study, PTE was detected in 3 patients presenting to the emergency departments with COPD exacerbation and they were hospitalized.

Limitations

The difficulty of finding the case group for this study is due to the low number of isolated COPD patients. Because mostly COPD accompanies many comorbidities. In addition, other cases and diseases that raise d-dimer were excluded from the study and the number of cases obtained was in this number due to these reasons.

CONCLUSIONS

It was found that the incidence of PTE was significantly increased in patients presenting with COPD exacerbation. Due to susceptibility to inflammation and coagulation in COPD, it is considered that the probability of d-dimer and PTE is increased. For this reason, PTE should be absolutely included in the differential diagnosis in patients presenting to the emergency department with dyspnea and necessary examinations should be performed for the retraction.

ETHICAL DECLARATIONS

Ethics Comittee Approval: This study was conducted with the Tokat Gaziosmanpasa University Clinical Research Ethic Committee (Decision dated: 02.10.2014, Desicion No: 14-KAEK-133).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Orjinal Araştırma / Original Article

Assessment of Difficult Intubation Predictors in Different Populations of Turkey

Türkiye'nin Farklı Bölgelerindeki Zor Entübasyon Tahminlerinin Değerlendirilmesi

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Abstract

Aim: Difficult tracheal intubation is defined when tracheal intubation requires multiple attempts, in the presence or absence of tracheal pathology. Most importantly, difficult intubation differs between countries and populations. Physicians should be aware of difficult intubation frequencies of their populations. Turkey is a transit country between East and West. Eastern Turkey reflects the Middle East and Asia, while western Turkey has European features. Our objectives were to investigate the frequency of difficult intubation in different regions' populations, and specificity and sensitivity of predictive values.

Method: According to the population in the regions, 24 experienced anesthesiologists from 13 hospitals in 7 regions, were included in the study.

Results: Of 1313 patients, 143 patients (10.89%) were detected as difficult intubation. Mallampati (MLP) III-IV were alone (p = 0.043), and the combination of thyromental distance <6 cm and MLP III-IV (p: 0.018) were statistically significant in difficult and easy intubation patient groups. The specificity was 97.46% in MLP + thyromental combination, and 98.05% in MLP + mouth opening combination. Western region had the shortest measurements in sternomental, thyromental and mouth opening (p <0.05), and had the most difficult intubation frequency compared to the other regions (p: 0.001).

Conclusion: The positive predictive values were increased with increasing combinations, but further research is needed on the predictors of difficult intubation.

Keywords: Anthropometric measurements, airway management, demography, difficult intubation, laryngoscope, predicting difficult intubation

Öz

Amaç: Zor trakeal entübasyon, entübasyon trakeal patolojinin varlığında veya yokluğunda çoklu girişimler gerektirdiğinde tanımlanır. En önemlisi, zor entübasyon ülkeler ve popülasyonlar arasında farklılık gösterir. Doktorlar, popülasyonlarının zor entübasyon sıklıklarının farkında olmalıdır. Türkiye, Doğu ile Batı arasında bir geçiş ülkesidir. Türkiye'nin doğusu Ortadoğu ve Asya'yı yansıtırken, Türkiye'nin batısında Avrupa özellikleri bulunmaktadır. Hedeflerimiz, farklı bölgelerdeki nüfuslarda zor entübasyon sıklığını ve öngörücü değerlerin özgüllüğünü ve duyarlılığını araştırmaktı.

Yöntem: Bölgelerdeki nüfusa göre, 7 bölgedeki 13 hastaneden 24 deneyimli anestezi uzmanı çalışmaya dahil edildi.

Bulgular: 1313 hastanın 143'ünde (%10,89) zor entübasyon saptandı. Mallampati (MLP) III-IV tek başına (p = 0.043) ve tiromental mesafe <6 cm ve MLP III-IV (p: 0.018) kombinasyonu, zor ve kolay entübasyon hasta gruplarında istatistiksel olarak anlamlıydı. Spesifite MLP + tiromental kombinasyonda %97,46 ve MLP + ağız açma kombinasyonunda %98,05 idi. Batı bölgesi sternomental, tiromental ve ağız açıklığında en kısa ölçümlere sahipti (p <0.05) ve diğer bölgelere kıyasla en fazla zor entübasyon sıklığına sahipti (p: 0.001).

Sonuç: Pozitif prediktif değerler artan kombinasyonlarla arttı, ancak zor entübasyonun prediktörleri üzerinde daha fazla araştırmaya ihtiyaç vardır.

Anahtar Kelimeler: Antropometrik ölçümler, demografi, hava yolu yönetimi, laringoskop, zor entübasyon, zor entübasyon prediktif değerleri

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INTRODUCTION

Airway management is one of the vital resuscitative procedures of anesthesia, emergency, and critical care medicine. Difficult intubation occurred more frequently in these departments in proportion to the excess of intubation performed compared to the other departments. American Society of Anesthesiologists defines difficult airway in which a trained anesthesiologist experiences difficulty with facemask ventilation of the upper airway, difficulty with tracheal intubation, or both. Difficult tracheal intubation is defined when tracheal intubation requires multiple attempts, in the presence or absence of tracheal pathology.[1] Unanticipated difficult intubation is one of the most important cause of anesthesia-related morbidity.[2,3] The experience of the anesthesiologist is very essential for the management of difficult intubation and unanticipated difficult intubation situations, and it is recommended to practice existing guidelines.[4,5]

Difficult airway can be predicted in some patient groups such as obese, pregnant, and pediatric patients. But in some patients, it is hard to predict. The frequency of difficult airway has a huge range between 0.05-18%, and 2-3% of them could be very difficult airway.[6,7] The difficult intubation also differs between countries and populations. Difficult intubation ratio was 8% in India[8] and 6% in Europe[9] Turkey is a transit country between East and West. Eastern Turkey reflects the Middle East and Asia, while western Turkey has European features.[10] In the mid-20th century, immigration from Europe had gone to the Western Turkey, while the other immigration from the Middle East and Asia had gone to the Eastern Turkey.[10]

We investigated the difficult intubation predictors indifferent regions of Turkey, which has a mixed demographic structure. Our study is the first multicenter study on the demographic intubation difficulty in Turkey. Our first objective was to investigate the frequency of difficult intubation in different regions' populations, and secondary objective was to assess specificity and sensitivity of predictive values in difficult intubation. Our other objectives were to investigate the regional difference and difficult intubation predictive values.

MATERIAL AND METHOD

This study was a prospective, multicenter study in Turkey between 15.07.2013-15.08.2013. After Haseki Education and Research Hospital Ethics Committee approval (decision No. 23 dated 07.08.2013), we selected the hospitals from Turkey's different regions and examined the distribution of the population by region. We divided the regions as North-West, West, South, South-East, East, and North. According to the population in the regions, 24 experienced anesthesiologists, who had similar experiences on airway management, from 13 hospitals were included in the study. We included at least one hospital from each region and sent the study form to the anesthesiologists who participated in the study. All patients over the age of 16, who had general anesthesia and orotracheal intubation, were included in the study. Patients who were taken to the emergency operation due to head and neck trauma were excluded from the study. The presence of the equipment which would be used in the study (machintosh laryngoscope, chuck to be placed in the tube, Fast Track LMA, Video Laryngoscope or Fiberoptic Bronchoscopy) was confirmed before the study in the selected centers. The patients were classified into the regions according to their place of birth, not their place of residence.

Before the intubation trials, all patients' age, gender, weight, height, body mass index, large tongue, presence of impaired anterior teeth, birthmarks, mallampati (MLP), thyromental (TM) distance, sternomental (SM) distance and mouth openings were measured at the operating table and Cormack Lehane Scores (CLS) during laryngoscopy were recorded on printed forms.

Intubations of all patients were attempted with machintosh laryngoscope. Patients who could not be intubated in the first 3 attempts were with a machintosh laryngoscope and after that trial, a mandrel was inserted into the tube and next intubations were attempted. Patients who could not be intubated with this step were intubated using Fast Track Laryngeal Mask Airway (LMA). After this step, the intubations of patients, who could not be intubated, were attempted with video laryngoscope or fiberoptic bronchoscopy. The patients, who were intubated after 3 trials or/and could be intubated with a mandrel, Fast Track LMA, video laryngoscope or fiberoptic bronchoscope were considered difficult intubation. At the end of the study, all forms were sent to a single-center by post. While patients are being evaluated; first they were divided into two groups as difficult and easy intubation. When evaluating regional differences; the patients were gathered in 6 subgroups according to their birthplace regions.

IBM SPSS Statistics 23 package program was used to evaluate the data. Number, percentage, mean and standard deviation values were given as descriptive statistics. Statistical evaluations were made using chi-square and independent T-test. $p<0.05$ value was considered statistically significant. Specificity and selectivity of predictive values in groups were cawlculated by considering the intersection clusters of patients who were foreseen that intubation would be difficult and patients who had difficult intubation according to a definition.

RESULTS

In 1 month period 1313 patients were included in the study. There was no statistically significant difference between difficult and easy intubation groups in gender (female n:779, 59%), age (mean:43.85±16.5), weight (mean:74.87±15.81), height (mean:165.42±8.49), and body mass index (BMI) (mean: 27.42±5.87). Of all patients 143 (10.89%) were detected as difficult intubation. There was no patient who could not to be intubated (**Table 1**).

Table 1. Characteristics of patients

	Easy intubation (n: 1170)	Difficult intubation (n:143)	Total (n: 1313)
Gender			
Male(n)	468	66	534
Female(n)	702	77	779
Age (year) mean±sd	43.73±16.38	44.76±17.53	43.85±16.5
Height (cm) mean±sd	165.41±8.45	165.48±8.88	165.42±8.49
BMI (kg/m^2) mean±sd	27.42±5.86	27.36±5.95	27.42±5.87
Weight (kg) mean±sd	74.88±15.79	74.73±16.03	74.87±15.81
Pregnancy (n)	70	4	74
Diabetic (n)	98	10	108
Large tongue (n)	96	17	113
Extension limitation of the head (n)	48	10	58
Presence of impaired anterior teeth (n)	82	9	91
TM<6 cm (n)	168	22	190
SM< 12,5 cm (n)	275	34	309
Mouth opening <3cm (n)	8	2	10
CLS iii-iv (n)	104	18	122
MLP iii - iv (n)	105	20	125

BMI: Body Mass Index, TM: Thyromental, SM: Sternomental, CLS: Cormack Lehan Score, MLP: Mallampati

In our study, there was no significant difference between diabetic and non-diabetic patients (p=0.12), and in the evaluation of women, there was no significant difference between pregnant and non-pregnant patients in easy and difficult intubation groups (p=0.09).

Only MLP III-IV were alone statistically significant in difficult and easy intubation patient groups (p=0.043). Anthropometric measurements, such as TM distance (p=0.411), SM distance (p= 0.507), and mouth opening (p=0.299), mouth opening (p=0.299), and Cormack Lehan Score (p= 0.102) evaluated separately, and there was no significant difference between difficult and easy intubation groups. When we evaluated the combination of TM <6 cm and MLP III-IV, a significant difference was found in the patient groups (p=0.018). The specificity was 97.46% in the MLP+TM combination, and it was 98.05% in the MLP+mouth opening combination (**Table 2**).

There was no significant difference in terms of gender, age, height and weight in the distribution of patients divided into regions according to their birth of region. The average values of the anthropometric measurements by region are as given in **Table 3**. There was a significant difference between regions in SM, TM and mouth opening measurements (p<0.05). Western region had the shortest measurements in SM, TM and mouth opening measurements.

There was a significant difference between the regions in difficult intubation (p:0.001). In relation to the shortness of TM, SM and mouth opening measurements which were measured before surgery, the western region had the most difficult intubation frequency compared to other regions.

Table 2. Sensitivity, specificity, positive and negative predictive values of variables

	Sensitivity (%)	Specificity (%)	Positive Predictive Value (%)	Negative Predictive Value (%)
MLP III-IV	14.08	91.03	16.00	89.73
CLS III-IV	12.58	91.11	14.75	89.5
Mouth Opening <3cm	10.5	93.00	15.46	89.47
SM< 12,5 cm	23.77	76.5	11.00	89.14
TM< 6 cm	15.4	85.64	11.60	89.22
MLP+ TM	6.9	97.46	25.00	89.47
MLP+Mouth Opening	2.63	98.05	13.04	90.04

MLP: Mallampati, CLS: Cormack Lehane Score, SM: Sternomental Distance, TM: Thyromental Distance

Table 3. Anthropometric measurements and difficult intubation frequencies in regions

	SM (cm)	TM (cm)	Mouth opening (cm)	Difficult intubation frequency (%)
Total	13.89±2.06	7.22±1.15	4.43±0.88	10.89
North-West	13.99±2.16	7.08±1.32	4.73±0.87	15.44
West	13.16±1.43	6.94±0.82	4.04±0.73	25.33
South	13.31±1.57	7.04±1.13	4.21±1.01	22.58
South-East	13.9±2.11	7.01±1.13	4.16±0.85	7.65
East	14.49±2.24	7.39±1.34	4.65±0.81	10.00
North	13.47±2.04	7.23±1.09	4.46±0.77	7.34
p values	0.002	0.000	0.000	0.001

SM: Sternomental Distance, TM: Thyromental Distance

DISCUSSION

Difficult intubation is an important clinical problem with high mortality. It can be seen in pathological situations or structural disorders. In pathological situations, difficult intubation could be foreseen. But in structural problems, difficult intubation could be hard to notice and have more serious consequences. Predictive parameters should be considered, and anthropometric measurements should be done properly in preoperative evaluations. Evaluation of predictive parameters together gives more significant results than evaluating them individually. Like Rao et al. stated neither the specificity or sensitivity of the TM distance alone was not sufficient[11] and our data were consistent with that. We found the specificity of MLP+TM combination was 97.46%, and the specificity of MLP+mouth opening combination was 98.05%.

It was reported that the evaluation of TM and SM distance measurement with the MLP test, the specificity decreased by 25%. But the selectivity and positive predictive value reached 100% with the evaluation of these parameters together.[12] In addition, Kandemir et al. reported that difficult intubation selectivity increased when MLP test and TM distance were evaluated together.[13]

Shah and Sunderam assessed difficult intubation with the half number of patients in our study. They used the predictors of difficult intubation, which we used in our study, too. They showed a difficult intubation frequency of 8%, and our data were consistent with it.[8] There was another study in France thatshowed a difficult intubation frequency as 9%.[14]

The most specific parameter in our study the combination of MLP+mouth opening. Studies have shown that the MLP score is directly related to difficult intubation.[15] Shah and Sundaram found difficult intubation was 40% in MLP III patients, while it was found 100% in MLP IV patients, and the mouth opening less than 3 cm was found to be significant in difficult intubation.[8]

In the literature, there were some cases, which were evaluated as MLP I in the preoperative assessment, developed inadequate mouth opening secondary to temporomandibular joint disorder after anesthesia induction.[16,17] In our study, we did not see any similar cases.

The frequency of difficult intubation was higher in the Western and Southern regions, which could be considered similar to the Greek population. Because it was shown that Western Turkey has European features.[9] However, our data differ from Zacharopoulos et al.[18] who found that the Greeks had a larger mandible compared to North American Whites. This result was the opposite of our study since easy intubation is directly proportional to the large mandible. Large meta-analyses and demographic studies in which difficult intubation criteria are evaluated in the world have been studied in recent years. England,[19] Thailand,[20] China,[21] Zimbabwe[22] and Saudi Arabia[23] investigated demographic structures. Moreover, a meta-analysis of 50760 cases in the European population was presented in 2005.[24]

Our study had some limitations. Although the number of hospitals was determined by the population distribution before our study, the number of patients was not reached as planned to be included in the study per hospital. Other limitation was about the anesthesiologists' airway management experience. This was a multi-center study, and it was difficult to assess the skill of anesthesiologists on difficult airway management individually. But the participated doctors had similar experience on anesthesiology. Additionally; migration in the mid-20th century event is not the single determinant, for the structure of population living in the area. Over the years, internal migrations (especially from eastern provinces to western) also effect. Due to interregional migration, evaluation of only birthplaces may not involve precise and complete information for the original anatomic/physiological structure of individuals of that region.

CONCLUSION

Although Turkey has a similar difficult intubation frequency with the world average, people from the Western and Southern had a higher risk of difficult intubation. This difference is also seen in anthropometric values. The positive predictive values will increase with increasing combinations. The most specific variables were MLP III-IV and mouth opening <3 cm when evaluated individually. We showed that difficult intubation should be expected in people with a short TM distance and high MLP score, but further research is needed on predictors of difficult intubation.

ETHICAL DECLARATIONS

Ethics Comittee Approval: The study was carried out with the permission of Haseki Education and Research Hospital Ethics Committee (Permission granted 07.08.2013, Decision No. 23).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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The Value of Cerebrospinal Fluid Polymerase Chain Reaction Test in the Diagnosis of Enteroviral Meningitis in Children

Çocuklarda Enteroviral Menenjit Tanısında Beyin omurilik Sıvısı Polimeraz Zincir Reaksiyonu Testinin Önemi

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Abstract

Background: Non-polio enteroviruses (EVs) are emerged as the most common pathogens of aseptic meningitis in children. In this study we aimed to evaluate clinical, laboratory, cerebrospinal fluid (CSF) findings and the usefulness of CSF EV polymerase chain reaction (PCR) on management of pediatric patients diagnosed as EV aseptic meningitis.

Material and Method: This study included the pediatric patients with aseptic meningitis between January 2014 and January 2016.

Results: A total of 23 patients (69.5% boys) diagnosed with EV aseptic meningitis with a median age of 57 months old (range; 1-168 months) were included. The most common months of the patients' admission to hospital were July and May. The most common clinical complaints were womiting (77.2%), fever (73.9%), headache (59%), neck stiffness (36.3%), seizure (22.7%) and altered consciousness (22.7%). CSF pleocytosis was observed in 16 (69.5%) patients and the median CSF white blood cell (WBC) count was 50 cells/mm3 ranged from 0 to 500 cells/mm3. It was found that, CSF cell count was significantly increased with age (p=0.02), whereas acute phase reactant levels and CSF biochemical components were statistically similar according to age (p>0.05). Median duration for hospitalization was 6 days (range: 1-28 days). Eight patients (34.7%) did not receive any antibiotics.

Conclusion: Absence of pleocytosis may be a diagnostic challange in very young infants with aseptic meningitis and CSF cell count significantly increases with age. By using rapid EV-PCR assays in the initial diagnosis of aseptic meningitis, the unnecessary usage of antibiotics in viral meningitis can be reduced and also the duration of hospitalization can be shortened.

Keywords: Aseptic meningitis, children, enteroviruses, polymerase chain reaction

Öz

Amaç: Non-polio enterovirüsler (EV), çocuklarda aseptik menenjitin en sık nedeni olarak ortaya çıkmaktadır. Bu çalışmada EV aseptik menenjit tanısı konulan pediyatrik hastaların klinik, laboratuvar, beyin omurilik sıvısı (BOS) bulguları ve BOS EV polimeraz zincir reaksiyonunun (PZR) hastaların yönetiminde yararlılığını değerlendirmeyi amaçladık.

Gereç ve Yöntem: Bu çalışmaya Ocak 2014 ile Ocak 2016 arasında aseptik menenjit tanısı konulan pediyatrik hastalar dahil edildi.

Bulgular: Ortanca yaşı 57 ay (1-168 ay) olan EV aseptik menenjit tanısı alan toplam 23 hasta (% 69.5 erkek) çalışmaya dahil edildi. Hastaların hastaneye başvurusunun en fazla olduğu aylar Temmuz ve Mayıs aylarıydı. En sık klinik bulgular; kusma (%77,2), ateş (%73,9), baş ağrısı (%59), ense sertliği (%36,3), nöbet (%22,7) ve bilinç değişikliği (%22,7) idi. On altı hastada (%69,5) BOS pleositozu gözlendi ve ortanca BOS beyaz kan hücre sayısı (WBC) 50 hücre / mm3 olup, 0 ile 500 hücre / mm3 arasında değişmektedir. BOS hücre sayısının yaşla birlikte anlamlı derecede arttığı (p = 0.02), akut faz reaktan düzeyleri ve BOS biyokimyasal değerlerinin yaşa göre istatistiksel olarak benzer olduğu bulundu (p> 0.05). Hastanede yatış süresi ortanca 6 gündü (aralık: 1-28 gün). Sekiz hastaya (%34,7) antibiyotik verilmedi.

Sonuç: Aseptik menenjitli çok küçük bebeklerde pleositoz olmaması tanısal bir güçlük olabilir ve BOS hücre sayısı yaşla birlikte önemli ölçüde artmaktadır. Aseptik menenjitin tanısında hızlı EV-PCR analizleri kullanılarak viral menenjitte gereksiz antibiyotik kullanımı azaltılabilir ve ayrıca hastanede yatış süresi kısaltılabilir

Anahtar Kelimeler: Aseptik menenjit, çocuklar, enterovirüs, polimeraz zincir reaksiyonu

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INTRODUCTION

Acute aseptic meningitis is a term of an acute central nervous system (CNS) syndrome which defines a self-limited meningitis of non-bacterial etiology.[1] Although aseptic meningitis is more common than bacterial meningitis in childhood, the total annual incidence of disease is unknown because the disease is not reportable in many developed countries.[1,2] The Centers for Disease Control and Prevention (CDC) reported that the incidence of aseptic meningitis reached from 1.5-4 per 100.000 people over a 10 years period. It is known that the highest number of cases occur in infants, toddlers, and children under 4 years of age.[1] After the recommendation of routine mumps and polio vaccines in childhood routine vaccination schedules in developed countries, the nonpolio enteroviruses (EVs) are emerged as the principal responsible pathogens of aseptic meningitis.[1,3,4] The clinical presentations of enteroviral aseptic meningitis in children is various and distinguish from bacterial meningits is difficult according to clinical signs espceially in infants aged less than 3 months. [3,4] Although aseptic meningitis is frequently reported to be characterized by a cerebrospinalfluid (CSF) mononuclear cell dominant pleocytosis after the early phase of disease [in the first 24 hour of illness polymorphonuclear (PMN) cell dominant pleosytosis is prevalent], the presence of CSF pleocytosis and predominant cells are also variable and age-dependent, making it a diagnostic challenge.[3,4] Also it was reported that the PMN predominance may not be limited to the first 24h of illness that lead to difficulties to disciriminate between aseptic and bacterial meningitis. The diagnosis of EVs infection by the isolation of virus in cell cultures is limited due to the relatively low sensitivity (65-75%) and also expensive costs. The rapid techniques like nucleic acid amplification by reverse transcriptase polymerase chain reaction (RT-PCR) provide more accurate, fast and less expensive results with strong sensitivity and specifity.[4] In this study we aimed to present clinical, laboratory and CSF findings of pediatric patients diagnosed as enteroviral aseptic meningitis. We also aimed to evaluate the usefulness of CSF EV PCR to investigate the responsible pathogen and to describe the effect on management of acute meningitis in children.

MATERIAL AND METHOD

This study retrospectively evaluated the results of patients with a diagnosis of enteroviral meningitis between January 2014 and January 2016. Specimens were tested by using multiplex real- time PCR assay (Fast track diagnosis NEURO9 and Fast track diagnosis Bacterial meningitidis real time PCR kit) for Adenovirus (AdV), Cytomegalovirus (CMV), EV (Polioviruses, Coxackieviruses, Echoviruses, and other enteroviruses), Ebstein- Barr virus (EBV), Herpes simplex virus 1 and 2, Human Herpes virus 6 and 7, Varicella Zoster virus (VZV), Human Parechoviruses and Parvovirus B19, Hemophilus influenzae, *Streptococcus pneumoniae* or *Neisseria meningitidis*. Data regarding age, sex, presence of comorbid disease, admission month and season, illness time before admission, clinical findings, acute phase reactant levels, CSF biochemical component levels, CSF cell numbers and distribution and blood culture and CSF culture results, duration of hospitalization, treatment options and outcomes were recorded.

RESULTS

A total number of 176 specimen were evaluated during the study period and only 23 patients [16 boys (69.5%), 7 girls (30.5%)] diagnosed with EV aseptic meningitis were included in the study. Median age of patients were 57 months old (range; 1-168 months). Two patients (8.6%) were less than 30 days old, four patients (17.3%) were aged between 30 days and <1 year and remaining 17 patients were aged ≥2 years. The most common months of the patients' admission to hospital setting July (n=9) and May (n=7) followed by June (n=2), January (n=2), March (n=1), August (n=1) and September (n=1), respectively. The most common clinical complaints on admission were womiting (77.2%), fever (73.9%), headache (59%), neck stiffness (36.3%), seizure (22.7%) and altered consciousness (22.7%). Six patients [(26.1%), two patients aged <1 month old, two patients aged 1 month to 1 year old, two patients aged >2 years] had no fever on hospital admission. It was known that one patient (4.3%) was following with a diagnosis of primary immune deficiency by the pediatric immunology department.

Acute phase reactants were as follows; median white blood cell count (WBC) was 15100/mm^3 (minimum:6310/mm^3, maximum: 22390/mm^3), median absolute neutrophil percent was 79% (min: 8%, max: 90%), median C-reactive protein (CRP) was 6 mg/dL (min:3mg/dL, max:186 mg/dL), median erythrocyte sedimentaton rate (ESR) was 11mm/h (min: 2 mm/h, max: 44 mm/h). Acute phase reactant levels were statistically similar according to age distribution (p>0.05).

Table 1. Acute phase reactants of patients

Parameter	Median	Minimum	Maksimum
Total leukocyte (/mm^3)	15100	6310	22390
Absolut neutrophil count (%)	79	8	90
CRP (mg/dL)	6	3	186
ESR (mm/h)	11	2	44

The median CSF WBC count was 50 cells/mm^3 ranged from 0 to 500 cells/mm^3. In 12 patients (52.1%) PMN cell predominance was detected. Six of these patients (50%) underwent control lumbar puncture 24 hours after admission and a shift to mononuclear cell dominance was observed. CSF pleocytosis was observed in 16 (69.5%) patients. Two patients aged less than ≤30 days, two patients aged 1 month to 6 months and three patients aged ≥1 year had no CSF pleocytosis. Theese 3 patients aged ≥1 year had undergone lumbar puncture within early phase of their clinical symptoms (two patients

within 24 hours of clinical complaints and one patient within 48 hours). It was found that, CSF cell count was significantly increased with age (p=0.02). The median CSF total protein and glucose values were 32 mg/d L (range: 14-133 mg/dL) and 67 mg/dL (range: 48-89 mg/dL) respectively and these CSF biochemical components were not reveal statistically significant difference by age (p>0.05) (**Table 2**). Blood cultures were performed in 14 (60.8%) patients on admission and none of them yielded any microorganism. All of the patients (100%) were hospitalized with a median duration for hospitalization of 6 days (range: 1-28 days). Duration of hospitalization was statistically similar according to age distribution (p>0.05). One patient with the diagnosis of primary immune deficiency had severe illness. Eleven patients (47.8%) were treated with 3rd generation cephalosporin plus vancomycin, 2 patients (8.7%) were treated with ampicillin plus 3rd generation cephalosporin and 2 patients (8.7%) were treated with 3rd generation cephalosporin alone, while 8 patients (34.7%) did not receive any antibiotics. Five of the patients who had not been commenced antibiotics (62.5%) had no pleocytosis in CSF sample. Two patients (8.7%) were reffered another hospital and remaining 21 patients (91.3%) recovered well acutely with no major acute sequelae. All commenced antibiotics were stopped once CSF EV PCR resulted positive.

Table 2. CSF findings and hospitalization duration of patients according to different age groups

Variable*	Age		p
	<1 year	≥1 year	
CSF white cell count (/mm³)	0 (0-150)	100 (0-500)	0.02
CSF protein (mg/dl)	28 (17-133)	32 (14-76)	0,88
CSF glucose (mg/dl)	68 (57-78)	64 (48-89)	0,61
CRP (mg/dL)	3(3-186)	8 (3-126)	0,35
Total leukocyte (/mm³)	15200 (6300-20900)	14800 (8700-22400)	0,73
Duration of hospitalization	7 (1-28)	5 (1-10)	0,48

*: median (minimum-maximum)

DISCUSSION

Aseptic meningitis is the most common cause of childhood meningitis with an incidence of 1.5-4 per 100.000 people over 10 years period, which is about 20 times greater than bacterial meningitis.[1,2] Although conventional culture methods are the gold standard method for determination of the pathogen in the CNS infection, currently exisiting identification procedures for viruses, including viral cultures and serologic tests have limited practical use because of low sensitivity and poor rapid dignostic effects.[4,5] Nucleic acid amplification tests have been used more frequently worldwide in the diagnosis of meningitis.[2,5] The reported rates in several studies for determination exact viral pathogen of aseptic meningitis are varying according to different reasons including geographic features, age, used PCR method.[6] It is known that approximately in 50% of patients with aseptic meningitis, the pathogen can be documented.[2] In a study from Texas, including a total 509 patients (404 adults and 105 children), it was reported that in 81% percent of patients the etiologies could not been documented. It was found that children were less likely to have an unknown infectious etiology (60.9% vs 85.6%). In this study 78 children had underwent CSF PCR for EV, and 40 of them (51.3%) had positive results for EV. The authors postulated that the reason of low yield in determination of viral etiology in this study, could be explained by underutilization of PCR for the most common viruses and for arboviral serologies in real-lifetime practice.[6] It is known that EV is the most common responsible pathogen in childhood aseptic meningitis regardless of age.[2,3,6] It was reported that, more than 10000 patients with aseptic meningitis caused by EV are reported annually to the CDC.[7] Whereas EVs associated diseases may occur throughout the year in most geographic regions, much higher rates of disease present in summer anf fall in temperate climates.[1,6,7] In this study predominance of EV aseptic meningitis in months May to August was in agreement with those previous reports.

Clinical presentations of EV aseptic meningitis may vary by age, presence of comorbid disease, gestation week for infants.[2,4,8] The severity of illness can vary in a wide range, from mild self-limited illness with fever, irritability, meningeal complaints consisted of headache, neck stiffness, nausea to more severe illness with convulsions or altered consciousness level and death.[4] In a study involving adults and children, 45.8% of patients were male (42.3% of adults and 59% of children) and it was reported that children were less likely to be presented with meningeal complaints (e.g., headache, stiff neck, nausea, photophobia) than adults. Furthermore children were usually submitted to hospital with a nonspescific febrile illness consisted with fever, respiratory symptoms, and leukocytosis in this study.[6] In an another study, including a total 172 patients (60% male predominance, 65 patients were <3 years-old, 58 patients were 3-18 years-old and 49 patients were >18 years), it was reported that, admission to hospital with meningeal complaints (triad of; fever, headache, and neck stiffness), which was present in 46.5 % of total patients and only in 6.1% of children under 3 years old, was more common in adults. A total of 10% of patients had severe forms of disase and 14.5% of patients were transferred to intensive care unit (ICU) due to complications including encephalitis, hypotension or acute respiratory distress syndrome (ARDS). Most of the patients who need care in ICU were infants (23 patients were <3 years-old) and it was statistically signficant. Extra-neurological symptoms like non-specific skin rash were also more commonly found in pediatric patients (18.1% vs. 2%) (8). In the neonatal period (<90 days), EVs are one of the main common cause of nonspecific febrile illness, accounting for approximately 25-60% of febrile illness related hospitalization during year around without seasonal dominance.[2,9] Enteroviral aseptic meningitis, often causes a benign illness which does not result in serious sequela in newborns, unless

presented with multisystem involvement and does not occur in a premature infant.[2] The present study which included only patients aged <18 years revealed a male predominance. Only two patients were admitted to hospital during the neonatal period and almost 75 % of patients were aged >2 years. While neither of the newborns had fever on admission.

The certain diagnosis of EV meningitis in very young infants remains a challange, because clinical presentations in young infants are very non-specific and presence of CSF pleocytosis and PMN cells predominance in CSF do not allow to definitely differentiate between viral and bacterial etiology.[2] However CSF pleocytosis may be absent even in patients with proven EV meningitis especially in infants younger than 90 days. It was estimated that, about 30% of infants younger than 90 days and 40-77% of neonates did not have pleocytosis. [9,10] A study conducted in an urban tertiary care childrens hospital, a total of 154 very young infants who had a positive CSF EV PCR test result were included. Ninety-three (60.4%) of paitents were female and the median age was 36 days (IQR, 19-52 days). It was found that CSF pleocytosis was present in 109 (71%) of patients and CSF pleocytosis statistically increased with age; CSF pleocytosis was present in 59%, 74% and 90% of infants aged 0 to 28, 29 to 56, and 57 to 90 days, respectively. This study also revealed that age and peripheral WBC count were independently associated with CSF pleocytosis. The authors postulated that this differences were as a result of the decreased ability of younger infants to mount a potent inflammatory response to EV infection.[10] In an another study conducted from Canada, it was documented that pleocytosis was absent in 22.3% of children < 30 days of age with proven EV meningitis.[11] In a descriptive study, including 58 patients (35 neonates and 23 children) during six months (March to Seprember), it was revealed that EV PCR was positive in 37.1% and 34.7% of the neonates and children, respectively. Pleocytosis in CSF samples was positive in 51.1% of overall patients whereas in 23% and 75% of EV PCR positive neonates and children, respectively. Furthermore PMN dominance in CSF samples was seen in 50% and 33% of EV positive neonates and children, respectively. Patients with pure enteroviral meningitis were hospitalized for a mean duration of 1.6 days (1-4 days). The authors concluded that, both normal CSF findings and PMN dominancy of CSF was common in neonates and children with EV meningitis (2). In a study from Singapore, a total of 206 children aged younger than 16 years with positive CSF EV PCR, were evalutaed retrospectively. Pleocytosis in CSF was observed in 66 % of children aged ≤90 days, 75 % of aged 90 days–1 year and 94 % of ≥3 years. It was also revealed that early lumbar puncture within 48 hours of symptoms and absence of CSF pleocytosis was also correlated. Protein and sugar ratios of CSF were not discriminatory. All of the patients except one patient received intravenous antibiotics for a median of 2 days. The authors conluded that CSF analysis including EV PCR could avoid unnecessary antibiotic therapy.[3] In the present study all of the neonates had no CSF pleocytosis. Three patients >1 year of age (3/17) who undergoing lumbar puncture within early phase of symptoms had no pleocytosis. Although it was not statistically significant, the rate of CSF pleocytosis positiviy was correlated with age. But CSF biochemical components were not discriminatory. Median duration of hospitalization were a little longer than the previously reported literature.

Although aseptic meningitis is more common than bacterial in all ages during childhood, the majority of neonates and young infants <90 days presenting with fever, even if children are not seriously ill, are frequently hospitalized and emprically treated with antibiotics for potential sepsis while waiting results of culture and/or rapid viral diagnostic tools. These infants often do not have classic signs of aseptic meningitis that may be found in older children and adults.[2,9,12] By rapid detection of EVs in CSF by RT PCR in all cases of aseptic meningitis, the duration of hospitalization can be shortened, the unnecessary usage of antibiotics, the cost of disease and also healthcare associated infections may be reduced.[2,9] In a study aimed to investigate the impact of a rapid CSF EV PCR with time to result of 3 to 6 hours on hospital duration time and duration of antimicrobial treatment in children younger than 3 months of age with aseptic meningitis, a total of 128 children [58 patients before and 70 patients (EV positive in 42 patients, EV negative in 28 patients) after the introduction of rapid CSF EV PCR testing] were inclueded. It was revealed that duration of antimicrobial treatment was significantly shortened in EV positive compared to both EV negative and untested patients. Hospitalization duration was significantly shortened in EV positive compared to EV negative patients (median 3 days vs 4 days), while an overall reduction was not observed between tested and untested group patients.[9] In an another study evaluating the impact of a positive diagnosis using EV PCR, clinical datas of patients were compared between whose positive EV-PCR results were obtained within 24 hr (n=32) and those whose results were obtained after 24 hours (n=14). It was documented that duration of antibiotic treatment (difference: 2.3 days) was reduced between two groups, whereas no statistical difference was observed in the length of hospital stay. The authors underlined that the molecular diagnosis of an illness that producing of concern positively affects management and they concluded that, EV-PCR assay should be performed daily in hospital practice as the part of initial diagnosis and management of meningitis.[12] In this study 34.7% of patients did not receive any antibiotics and all coomenced antibiotics were stopped safely once CSF enterovirus PCR resulted positive. In this study rapid CSF EV PCR testing was thought to provided a reduction in antimicrobial prescription rate and total duration of antimicrobial use.

CONCLUSION

In conclusion, EVs are an important cause of aseptic meningitis especially during summer to fall. Absence of pleocytosis may be a diagnostic challange in very young infants with aseptic meningitis and CSF cell count significantly increases with age. Therefore CSF EV PCR testing should be considered in young febrile infants as a part of septic work up evaluated by lumbar puncture even in the absence of CSF pleocytosis. By using of rapid EV-PCR assays in the initial diagnosis of aseptic meningitis, the unnecessary usage of antibiotics in viral meningitis can be reduced and also the duration of hospitalization can be shortened.

ETHICAL DECLARATIONS

Ethics Comittee Approval: According to the Regulation on Clinical Researches published in the official newspaper with the number 28617 dated 3 November 2015, the ethics committee approval was not obtained in accordance with the article "Retrospective studies are outside the scope of the regulation (article 2- (2))". This study was prepared in accordance with the Law on Protection of Personal Data, by anonymizing patient data and in accordance with the 2013 Brazil revision of the Helsinki Declaration and guidelines for Good Clinical Practice.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Orjinal Araştırma / Original Article

2012-2018 Yılları Arasında Tokat Gaziosmanpaşa Üniversite Hastanesi Acil Servisine Kene Teması İle Başvuran Olguların Epidemiyolojik İncelenmesi

Epidemiological Investigation of the Cases with Tick Contact Admitted to the Emergency Department of Tokat Gaziosmanpaşa University Hospital Between 2012-2018

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Öz

Amaç: Bu çalışmada, 2012-2018 yılları arasında üniversite hastanesi acil servisine kene teması sonucu başvuran hastaların epidemiyolojik açıdan incelenmesi amaçlandı.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel nitelikteki bu çalışmada, Tokat Gaziosmanpaşa Üniversite Hastanesi acil servisine 2012 ve 2018 tarihleri arasında kene teması şikayeti ile başvuran 1258 hastaya ait tıbbi veriler retrospektif olarak incelendi. Çalışmaya dahil edilen 840 hastaya ait veriler analiz edildi. Gruplar arası karşılaştırmalarda Pearson Chi-Square testi kullanıldı.

Bulgular: Hastaların 504'ü (%60) erkek, 336'sı (%40) kadın olup, yaş ortalaması 48,7±19,4 yıl idi. En çok başvuru yapılan ay %33,1 (n=278) ile Haziran ayı, en çok başvurulan yıl %34,3 ile 2014 yılı idi. Başvurular en sık %47,4 (n=398) ile ilçelerden olmuştu. Başvuruların %71,8'inde (n=603) kenenin hastanın kendisi veya yakını tarafından çıkartıldığı saptandı. Kene en sık %33,7 (n=283) ile alt ekstremiteyi tutmuştu. Acile başvuruların %55,1'inin (n=463) hastaneye yatırıldığı ve bunlardan 36'sının (%4,3) vefat ettiği tespit edildi. Mortalite açısından cinsiyet farkı yoktu (p=0,578). Lökopeni, trombositopeni ve anemi sıklığının yüksek olması ile mortalite düzeyi arasında anlamlı fark saptandı (p<0,05).

Sonuç: KKKA hastalığı Tokat ilinde endemik olarak görülmekte olup kene tutunmasıyla başvuran olgularda tam bir fizik muayene yapılarak kenenin vücudun hemen her bölgesine tutunabileceği göz önünde bulundurulmalıdır. Hastaların kene teması yanında ek şikayetleri olması durumunda mutlaka bir sağlık kuruluşuna başvurması sağlanmalıdır.

Anahtar Kelimeler: Kırım-Kongo kanamalı ateşi, kene teması, acil servis

Abstract

Aim: The aim of this study was to investigate the epidemiological aspects of tick contact to the emergency department of university hospital between 2012-2018.

Material and Method: In this descriptive and cross-sectional study, the data of 1258 patients who admitted to Tokat Gaziosmanpaşa University Hospital with tick contact to the emergency department between 2012 and 2018 were examined retrospectively. The data of 840 patients included in the study were analyzed. Pearson Chi-Square test was used for comparisons between groups.

Results: 504(60%) of the patients were male and 336(40%) were female. The mean age was 48,7±19.4 years. The most frequently applied month was June with 33.1%(n=278) and the most applied year was 2014 with 34.3%. The most frequent applications were from the district center with 47.4%(n=398). In 71.8%(n=603) of the applications, it was determined that the tick was removed by the patient himself or his relatives. The most common tick contact was the lower extremity with 33.7%(n=283). It was found that 55.1%(n=463) of the patients admitted to the emergency department were hospitalized and 36 of them (4,3%) died. There was no gender difference in terms of mortality (p=0,578). Leukopenia, thrombocytopenia and anemia were significantly different in terms of mortality (p<0.05).

Conclusion: CCHF is endemic disease in Tokat province. It should be taken into consideration that the tick can attach to almost every part of the body by performing a full physical examination in cases presenting with tick attachment. If patients have additional complaints in addition to tick contact, they should be consulted to a health institution.

Keywords: Crimean-Congo hemorrhagic fever, tick bite, emergency department

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GİRİŞ

Kırım-Kongo kanamalı ateşi (KKKA) Avrupa, Afrika ve Asya'da yaklaşık 50 ülkede endemik olan kene kaynaklı viral zoonotik bir hastalıktır. İnsanlarda akut ve potansiyel olarak fatal seyreden bir enfeksiyona yol açtığı için önemli bir sağlık tehdidi olarak kabul edilmektedir.[1] Tipik şekilde hastalık hemorajik sendromun başlamasından önce spesifik olmayan semptomlarla karakterize olup genel olarak fatalite oranının %5-30 olduğu bildirilmektedir.[2] Türkiye'de ise bu oran, dünyanın diğer bölgelerinden bildirilenlere göre daha düşüktür.[3]

Genellikle ateş ve kanamalarla seyreden KKKA hastalığının bulaşmasında virüsün doğal rezervuarı olan keneler vektör olarak önemli bir rol oynamaktadır. Çok sayıda farklı kene türü bulunmasına karşılık bunlar içinde 30 kadar tür insanlara keneyle ilişkili hastalıkların bulaştırılmasında etkilidir.[4] Türkiye bitki örtüsü çeşitliliği ve subtropikal iklim kuşağında yer alması bakımından kenelerin yaşamasına uygun bir ülkedir.[5] Keneler özellikle hayvancılığın yaygın olarak yapıldığı otlak ve çalılık alanlar başta olmak üzere Türkiye'nin hemen hemen tüm bölgelerinde görülebilmektedir. KKKA hastalığının bulaşmasında sıklıkla rol oynayan kene türlerinin H.marginatum marginatum, H. marginatum rufipes ve H.anatolicum olduğu bildirilmektedir.[6] Keneler halk arasında sakırga, yavsı ve kerni gibi farklı isimlerle bilinmektedir.[7]

Kırım Kongo kanamalı ateşi, en fazla Karadeniz Bölgesi'nin iç kesimleri ile İç ve Doğu Anadolu Bölgelerinin kuzey kesimlerinde görülmekte olup vakaların yaklaşık üçte ikisinin Tokat ilinin de içinde olduğu Kelkit Havzası'nda yer alan illerde olduğu bildirilmektedir.[8,9] Kene teması öyküsü olan kişilerde KKKA seroprevalansı endemik bölgelerde %20 kadar yüksek olabilir. Kırsal bir bölgede yaşamak, kene vektörüne maruz kalma ve KKKA açısından bir risk faktörüdür.[10]

Kırım Kongo kanamalı ateşi virüsü, Bunyaviridae ailesinin Nairovirus cinsinden bir RNA virüsüdür. Afrika, Asya, Güney Doğu Avrupa ve Orta Doğu başta olmak üzere dünya genelinde birçok ülkede hastalık etkenidir.[11,12] KKKA ilk kez 1945 yılında Kırım'da görülmüş, 1956 yılında benzer belirtileri olan hastalık Kongo'da tespit edilmiştir. 1969 yılında her iki bölgede saptanan hastalığın aynı virüse bağlı olduğu gösterilmiş ve hastalık Kırım-Kongo kanamalı ateşi olarak isimlendirilmiştir.[13] Türkiye'de bugüne kadar saptanan ilk viral kanamalı ateş KKKA olup, ilk semptomatik olgu 2002 yılında Tokat ilinden bildirilmiştir.[14]

İklim değişiklikleri kene teması sonucu ortaya çıkan enfeksiyon hastalıklarında artışa neden olmaktadır. KKKA hastalığının ortaya çıkmasını iklim değişiklikleri, çevresel değişiklikler, kenelerin popülasyon yoğunluğunun artması, çiftlik hayvanlarının hareketi ve göçmen kuşlar aracılığıyla virüsle enfekte olmuş kenelerin taşınması gibi faktörler etkilemektedir.[15] Virüs insanlara enfekte kenelerin yapışması ile veya viremik hayvanlara ait kan, doku ve vücut sıvıları ile temasla bulaşabilmektedir. Bunların dışında nozokomiyal ve cinsel yolla bulaşmanın da mümkün olduğu belirtilmektedir.[16,17]

Kırım Kongo kanamalı ateşi virüsüne bağlı hastalık bulgularının görüldüğü bilinen tek konak insandır. KKKA hastalığında inkübasyon, prehemorajik, hemorajik ve konvalesan olmak üzere dört dönemden oluşan klinik seyir görülmektedir.[18] Hastalık ateş, bulantı, kusma, baş ağrısı, miyalji, karaciğer enzimlerinin yükselmesi ve mukokutanöz kanamadan yaşamı tehdit eden yaygın damar içi pıhtılaşması (DIC) ve masif kanamalara kadar değişebilen hemorajik bulgularla karakterizedir.[19] Enfeksiyonun laboratuvar tanısı, kan veya vücut sıvısı örneklerinde viral nükleik asidin "real-time" revers transkriptaz polimeraz zincir reaksiyonu (rtRT-PCR) ile gösterilmesi ve/veya ELISA ile KKKA virüsü IgM antikorlarının pozitifliği ya da IgG serokonversiyonunun saptanmasıyla konulmaktadır.[20] KKKA hastalığına bağlı mortalitenin önlenmesinde erken tanı konulması ve uygun destek tedavisi verilmesi oldukça önemlidir.[9]

Bu çalışmada 2012-2018 yılları arasında Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Araştırma ve Uygulama Hastanesi acil servisine kene teması sonucu başvuran hastalara ait tıbbi verilerin epidemiyolojik açıdan incelenerek klinik bulgular ve laboratuvar sonuçlarının değerlendirilmesi amaçlanmış olup, KKKA hastalığı konusundaki bilgiler güncel literatür eşliğinde tartışılmıştır.

GEREÇ VE YÖNTEM

Tanımlayıcı ve kesitsel nitelikteki bu çalışmada, Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Araştırma ve Uygulama Hastanesi acil servisine Nisan 2012 ve Temmuz 2018 tarihleri arasında kene teması şikayeti ile başvuran tüm yaş gruplarındaki 1258 hastaya ait tıbbi veriler retrospektif olarak incelendi. Çalışmaya dahil edilen kene temaslı hastaların tıbbi kayıtlarına ait dosyalarından yaşı, cinsiyeti, başvurduğu tarih (yıl, ay), yaşadığı yer, başvuru şikayeti, doğum yeri, kenenin tutunduğu yer, kenenin kim tarafından çıkartıldığı, hastanede kaç gün yattığı, hastaneden ayrılış şekli (taburcu, vefat, sevk) kaydedildi. Ayrıca KKKA hastalığının seyri açısından önemli olan lökopeni, trombositopeni ve anemiyi değerlendirmek amacıyla hastaların acil servise başvurusu sırasında yapılan tam kan sayımı analiz sonuçlarından lökosit, trombosit ve hemoglobin değerleri kaydedildi. Tanımlayıcı verileri, KKKA ile ilgili verileri ve acil servise başvurusu sırasındaki tam kan sayımı analiz sonuçları eksik olan 418 hasta çalışma dışında bırakılarak sonuçta 840 hastaya ait veriler değerlendirildi.

Yapılan laboratuvar incelemelerinde; lökosit, trombosit ve hemoglobin düzeyleri değerlendirildi. Lökosit değerleri < 4000/mm^3 ise "lökopeni" ve trombosit değerleri <150.000/mm^3 ise "trombositopeni" olarak kabul edildi. Hemoglobin düzeyleri için ise 6-14 yaşlarda 12 g/dl, erişkin erkeklerde 13 g/dl, erişkin kadınlarda 12 g/dl, gebeler için 11,5 g/dl "anemi" için alt sınır kabul edildi.

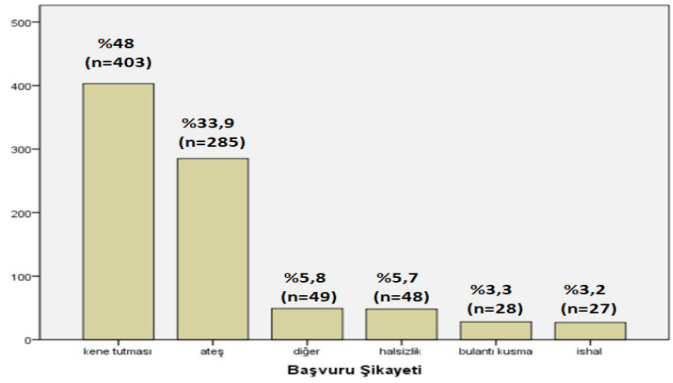
Verilerin analizinde SPSS (Statistical Package for Social Science) v. 20.0 istatistik paket programı kullanıldı. Tanımlayıcı veriler sayı, yüzde ve ortalama±standart sapma olarak gösterildi. Sayımla elde edilen verilerde gruplar arası karşılaştırmalarda farklılıkları tespit etmek için Pearson Chi-Square testi kullanıldı. İstatistiksel anlamlılık düzeyi $p<0,05$ olarak kabul edildi. Çalışma öncesinde Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Etik Kurul onayı (20-KAEK-029) ve Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Araştırma ve Uygulama Hastanesi Başhekimliği'nden kurum izni alındı.

BULGULAR

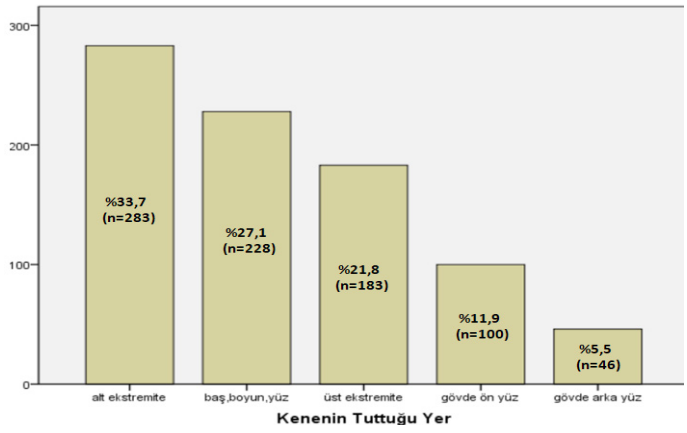
Araştırmaya katılan 840 hastadan 504'ü (%60) erkek, 336'sı (%40) kadın idi. Hastaların yaş ortalaması 48,7±19,4 yıl olarak bulundu. Hastaların yaşları 7 yaş ve 99 yaş arasında değişmekte olup %9,8'i (n=82) 18 yaş ve altında, %32,2'si (n=271) 19-40 yaş arasında, %40,5'i (n=340) 41-64 yaş arasında ve %17,5'i (n=147) 65 yaş ve üzerindeydi. Hastaların başvuru aylarına bakıldığında %0,1'inin (n=1) Ocak, %0,8'inin (n=7) Mart, %6,5'inin (n=55) Nisan, %24,8'inin (n=208) Mayıs, %33,1'inin (n=278, en sık) Haziran, %20,6'inin (n=173) Temmuz, %9,9'unun (n=83) Ağustos, %2,7'sinin (n=23) Eylül, %1,3'ünün (n=11) Ekim ve %0,1'inin (n=1) Kasım ayında başvurduğu tespit edildi. Kene teması ile acile başvuruların yıllara göre dağılımı incelendiğinde, %20,1'inin (n=169) 2012 yılında, %13,3'ünün (n=112) 2013 yılında, %34,3'ünün (n=288, en sık) 2014 yılında, %20,4'ünün (n=171) 2015 yılında, %4,3'ünün (n=36) 2016 yılında, %3,3'ünün (n=28, en az) 2017 yılında, %4,3'ünün (n=36) ise 2018 yılında olduğu saptandı.

Hastaların %83,7'sinin (n=703) Tokat ilinde, %16,7'sinin (n=137) ise Tokat dışında yaşadığı saptandı. Hastaların yerleşim yerlerine bakıldığında, 385'inin (%45,8) il merkezinde, 398'inin (%47,4) ilçe merkezinde (317'si Tokat iline bağlı ilçe merkezlerinden, 81'i ise diğer illere bağlı ilçe merkezlerinden gelmişti) ve 57'sinin (%6,8) kasaba veya köylerde yaşadığı tespit edildi. Hastaların çoğunluğunun dosyalarında meslek kaydının olmadığı görüldüğünden meslekleri hakkında herhangi bir veriye ulaşılamadı. Kenenin kim tarafından çıkarıldığı incelendiğinde %28,2'sinin (n=237) sağlık personeli, %71,8'inin (n=603) kendisi veya yakını tarafından çıkartıldığı tespit edildi.

Hastaların başvuru anındaki şikayetlerine bakıldığında (**Şekil 1**), %48'inin (n=403) kene tutunması şikayeti ile başvurduğu, diğer başvuruların %33,9'u (n=285) ateş, %5,7'sinin (n=48) halsizlik, %3,3'ünün (n=28) bulantı-kusma, %3,2'sinin (n=27) ishal ve %5,8'inin (n=49) diğer şikayetlerle (epistaksis, baş dönmesi, döküntü gibi) olduğu saptandı. Kenenin tuttuğu lokalizasyon incelendiğinde, en sık %33,7 (n=283) ile alt ekstremiteyi tuttuğu belirlendi. Bunu sırasıyla %27,1 (n=228) ile baş, boyun, yüz, %21,8 (n=183) ile üst ekstremite, %11,9 (n=100) ile gövde ön yüzü ve %5,5 (n=46) ile gövde arka yüzü izlemekteydi (**Şekil 2**).



Şekil 1. Kene teması ile acil servise başvuran hastalarda en sık başvuru şikayetleri



Şekil 2. Kene teması ile acil servise başvuran hastalarda kenenin tuttuğu lokalizasyon

Hastaların laboratuvar değerleri incelendiğinde, %17'sinde (n=143) anemi mevcutken %83'ünde (n=697) hemoglobin değerleri normaldi, %56'sında (n=470) trombositopeni, %1'inde (n=8) trombositoz mevcut iken %43,1'inde (n=362) platelet değerleri normaldi, %46,5'inde (n=391) lökopeni, %5,1'inde (n=43) lökositoz mevcut iken %48,3'ünde (n=406) beyaz küre değerleri normaldi. Kene temasıyla acile başvuran hastaların %55,1'inin (n=463) Enfeksiyon Hastalıkları servisine yatırıldığı, 1 gün ile 45 gün arasında yatış olduğu, hastaların 36'sının (%4,3) vefat ettiği (20'si erkek, 16'sı kadın) tespit edildi.

Tablo 1 'de kene teması ile acil servise başvuran hastaların cinsiyetine göre yaş grubu, geldiği yer, yerleşim yeri ve kenenin tuttuğu lokalizasyon açısından karşılaştırılması verilmiştir. Hastaların cinsiyetine göre yaş grubu dağılımı arasında istatistiksel olarak anlamlı fark olduğu saptandı (p=0,019). Her iki cinsiyette de 19-64 yaş arasında diğer yaş gruplarına göre kene teması nedeniyle acil servise başvurunun daha sık olduğu bulundu. Kene teması ile acil servise başvuran hastaların geldiği yer (p=0,775) ve yerleşim yerlerine göre cinsiyet dağılımı arasında ise anlamlı farklılık saptanmadı (p=0,835). Benzer şekilde kenenin tuttuğu lokalizasyon açısından kadın ve erkek cinsiyet arasında anlamlı fark bulunmadı (p=0,728).

Kene teması ile acil servise başvuran hastaların hastanede yatma durumuna göre sık görülen semptomların dağılımı incelendiğinde (**Tablo 2**); ateş (p=0,001), halsizlik (p=0,001) ve ishal (p=0,005) açısından hastanede yatan hastalarda ayaktan tanı ve tedavi yapılanlara göre daha fazla olacak şekilde anlamlı fark saptanmasına karşılık, bulantı-kusma (p=0,078) ve diğer şikayetler (epistaksis, baş dönmesi, döküntü gibi) (p=0,237) ile hastanede yatma durumu arasında anlamlı fark bulunmadı.

Kene teması ile acil servise başvuran hastaların cinsiyetine göre mortalite durumu incelendiğinde (**Tablo 3**); kadınların %4,8'inde, erkeklerin ise %4'ünde hastalığın ölümle sonuçlandığı, kadın ve erkek cinsiyet arasında mortalite açısından anlamlı fark olmadığı tespit edildi (p=0,578).

Tablo 1. Kene teması ile acil servise başvuran hastaların cinsiyetine göre yaş grubu, geldiği yer, yerleşim yeri ve kenenin tuttuğu lokalizasyon açısından dağılımı

Özellikler	Cinsiyet, Sayı (%)*			p
	Kadın (n=336)	Erkek (n=504)	Toplam (n=840)	
Yaş grubu				
Çocuk ve adölesan (≤18 yaş)	21 (%6,3)	61 (%12,1)	82 (%9,8)	0,019
Genç erişkin (19-40 yaş)	106 (%31,5)	165 (%32,7)	271 (%32,2)	
Erişkin (41-64 yaş)	151 (%44,9)	189 (%37,5)	340 (40,5)	
Yaşlı (≥65 yaş)	58 (%17,3)	89 (%17,7)	147 (%17,5)	
Geldiği yer				
Tokat	283 (%84,2)	420 (%83,3)	703 (%83,7)	0,775
Tokat dışı	53 (%15,8)	84 (%16,7)	137 (%16,3)	
Yerleşim yeri				
İl merkezi	158 (%47,0)	227 (%45,0)	385 (%45,8)	0,835
İlçe merkezi	155 (%46,1)	243 (%48,2)	398 (%47,4)	
Kasaba / Köy	23 (%6,8)	34 (%6,7)	57 (%6,8)	
Lokalizasyon				
Alt ekstremite	113 (%33,6)	170 (%33,7)	283 (%33,7)	0,728
Baş, boyun, yüz	89 (%26,5)	139 (%27,6)	228 (%27,1)	
Üst ekstremite	69 (%20,5)	114 (%22,6)	183 (%21,8)	
Gövde ön yüzü	43 (%12,8)	57 (%11,3)	100 (%11,9)	
Gövde arka yüz	22 (%6,5)	24 (%4,8)	46 (%5,5)	
Toplam	336 (%40)	504 (%60)	840 (%100)	

*Sütun yüzdesi

Tablo 2. Kene teması ile acil servise başvuran hastaların hastanede yatma durumuna göre sık görülen semptomların dağılımı

Semptomlar	Hastanede yatma durumu, Sayı (%)*			p
	Evet (n=463)	Hayır (n=377)	Toplam (n=840)	
Ateş	264 (%57)	21(%5,6)	285 (%33,9)	0,001
Halsizlik	38 (%8,2)	10 (%2,7)	48 (%5,7)	0,001
Bulantı / kusma	20 (%4,3)	8 (%2,1)	28 (%3,3)	0,078
İshal	22 (%4,8)	5 (%1,3)	27 (%3,2)	0,005
Diğer (döküntü, epistaksis gibi)	31 (%6,7)	18 (%4,8)	49 (%5,8)	0,237

*Sütun yüzdesi

Tablo 3. Kene teması ile acil servise başvuran hastalarda cinsiyete göre mortalite ilişkisi

	Cinsiyet, Sayı (%)*			p
	Kadın (n=336)	Erkek (n=504)	Toplam (n=840)	
Mortalite				
Evet	16 (%4,8)	20 (%4)	36 (%4,3)	0,578
Hayır	320 (%95,2)	484 (%96)	804 (%95,7)	

*Sütun yüzdesi

Cinsiyete göre lökopeni, trombositopeni ve anemi ilişkisi değerlendirildiğinde (**Tablo 4**); lökopeni (p=0,714) ve trombositopeni (p=0,089) açısından kadın ve erkek cinsiyet arasında anlamlı fark bulunmadı. Anemi açısından ise kadınlarda erkeklere göre daha fazla olacak şekilde anlamlı fark olduğu saptandı (p<0,001). Hastaneye yatma durumuna göre lökopeni, trombositopeni ve anemi ilişkisine bakıldığında (**Tablo 5**); hastaneye yatan hastalarda ayaktan tanı ve tedavi yapılanlara göre daha fazla olacak şekilde lökopeni (p<0,001), trombositopeni (p<0,001) ve anemi (p<0,001) görülme sıklığı açısından anlamlı fark olduğu saptandı. Kene teması acil servise başvuran hastalarda mortalite ile lökopeni, trombositopeni ve anemi ilişkisi incelendiğinde (**Tablo 6**); ölen hastaların %66,7'sinde lökopeni, tamamında (%100) tormbositopeni, %38,9'unda anemi olduğu bulunmuş olup, ölen hastalarda lökopeni (p=0,013), trombositopeni (p<0,001) ve anemi (p<0,001) sıklığının anlamlı şekilde daha yüksek olduğu saptandı.

Tablo 4. Kene teması ile acil servise başvuran hastalarda cinsiyete göre lökopeni, trombositopeni ve anemi ilişkisi

	Cinsiyet, Sayı (%)*			p
	Kadın (n=336)	Erkek (n=504)	Toplam (n=840)	
Lökopeni	159 (%47,3)	232 (%46)	391 (%46,5)	0,714
Trombositopeni	176 (%52,4)	294 (%58,3)	470 (%56)	0,089
Anemi	79 (%23,5)	64 (%12,7)	143 (%17)	<0,001

*Sütun yüzdesi

Tablo 5. Kene teması ile acil servise başvuran hastalarda hastanede yatma durumuna göre lökopeni, trombositopeni ve anemi ilişkisi

	Hastanede yatma durumu, Sayı (%)*			p
	Evet (n=463)	Hayır (n=377)	Toplam (n=840)	
Lökopeni	375 (%81)	16 (%4,2)	391 (%46,5)	<0,001
Trombositopeni	440 (%95)	30 (%8)	470 (%56)	<0,001
Anemi	113 (%24,4)	30 (%8)	143 (%17)	<0,001

*Sütun yüzdesi

Tablo 6. Kene teması acil servise başvuran hastalarda mortalite ile lökopeni, trombositopeni ve anemi ilişkisi

	Mortalite, Sayı (%)*			p
	Evet (n=36)	Hayır (n=804)	Toplam (n=840)	
Lökopeni	24 (%66,7)	367 (%45,6)	391 (%46,5)	0,013
Trombositopeni	36 (%100)	434 (%54)	470 (%56)	<0,001
Anemi	14 (%38,9)	129 (%16)	143 (%17)	<0,001

*Sütun yüzdesi

TARTIŞMA

Keneler dünyanın hemen her yerinde görülebilmekle birlikte özellikle iklim şartlarının uygun olduğu yerlerde ve hayvancılığın yaygın olduğu bölgelerde kene temasının sıklığı artmaktadır. Farklı çalışmalarda kene teması ile acile başvuran olguların Mart ayında başladığı, en fazla yaz aylarında özellikle de Mayıs ve Ağustos ayları arasında sıklığının arttığı belirtilmektedir.[9,12,21-24] Çalışmamızda literatüre benzer şekilde kene teması ile acil servise başvuruların Mayıs, Haziran (en sık, %33,1) ve Temmuz aylarında daha fazla olduğu bulunmuştur. Kene teması ile acile başvuruların yıllara göre dağılımı incelendiğinde ise en sık (%34,3) 2014 yılında, en az (%3,3) 2017 yılında olduğu saptanmıştır. Kene teması ile acil servise başvuruların yıllar içinde azalması halkın bu konuda daha bilinçlenerek kene ile temastan kendini korumayı öğrendiği, kene teması sonrası keneyi kendisinin çıkardığı ve semptomların olmaması durumunda acile başvurmadığı şeklinde yorumlanabilir.

Yapılan farklı çalışmalarda kene ile temas sonucu hastaneye başvuranların köy ve ilçe merkezleri başta olmak üzere çoğunlukla kırsal kesimden geldiği tespit edilmiştir.[8,21,24] Çalışmamızda kene teması nedeniyle acil servise başvuruların %45,8'inin (n=385) il merkezinden, %47,4'ünün (n=398) ilçe merkezinden, %6,8'inin ise (n=57) kasaba ve köylerden başvurduğu tespit edilmiştir. Başvuruların çoğunluğunun ilçe merkezinden olması tarım ve hayvancılıkla uğraşan kişilerin olanaklardan dolayı köy yerine ilçe merkezinde ikamet etmeyi tercih etmesi şeklinde yorumlanmıştır. Literatürde kırsal bölgede yaşamak, kene vektörüne maruz kalma ve KKKA açısından bir risk faktörü olmakla birlikte, hayvan ticareti pazarları genellikle büyük şehirlerin yakınında bulunduğundan, kentsel bölgelerde KKKA seroprevalansının kırsal bölgelere göre daha yüksek olabildiği bildirilmektedir.[10]

Tarla, bağ, bahçe, orman ve piknik alanları gibi kene yönünden riskli alanlara gidilirken, kenelerin vücuda girmesini engellemek amacıyla mümkün olduğunca vücudu örten giysiler giyilmeli, pantolon paçaları çorapların içerisine sokulmalı ve açık renkli kıyafetler tercih edilmelidir. Kene yönünden riskli alanlardan dönüldüğünde kulak arkası, koltuk altları, kasıklar ve diz arkası dahil tüm vücutta kene olup olmadığı kontrol edilmelidir. Kene tutunmuş ise hiç vakit kaybetmeden çıplak el ile dokunmadan vücuda tutunduğu en yakın yerden tutarak uygun bir malzeme ile (bez, naylon poşet, eldiven gibi) çıkarılmalıdır. Kişi keneyi kendisi çıkaramadıysa en yakın sağlık kuruluşuna başvurmalıdır. Kene ne kadar erken çıkarılırsa hastalığın bulaşma riskinin de o kadar azalacağı bilinmektedir.[25] Bazı çalışmalarda kenenin daha çok sağlık personeli tarafından çıkartıldığı belirtilmektedir.[6,26] Önceki yıllarda kenenin öncelikle sağlık çalışanlarınca çıkarılması önerilmekte iken günümüzde keneyle temas süresinin uzamasının mortaliteyi önemli ölçüde artırdığı saptandığı için en kısa sürede uygun şekilde kenenin çıkartılması yaklaşımı mevcuttur. Tokat Devlet Hastanesi'nde yapılan bir çalışmada KKKA ön tanısıyla yatan hastaların %49,1'inin kendisi, %5,7'sinin yakını tarafından kenenin çıkartıldığı bildirilmektedir.[8] Benzer şekilde çalışmamızda da kene teması olan olguların %71,8'inde (n=603) kendisi veya yakını, %28,2'sinde (n=237) ise bir sağlık personeli tarafından kenenin çıkartıldığı saptanmıştır. Bu durum çalışma yapılan bölgenin KKKA açısından endemik bir bölge olması ve halkın kenelere maruziyet açısından bilinçlendirildiğini, aynı zamanda kırsal kesimdeki ulaşım zorluklarından dolayı hastaneye başvuruların kene çıkartılmasından sonra olduğunu düşündürmektedir.

Kene teması olan bireylerde vücudun görünen kısımlarında kenenin saptanması daha kolay iken, görünmeyen kısımlarında ise bu tespit genellikle daha zor olabilmektedir. Bu nedenle kene ısırığı nedeniyle sağlık kuruluşlarına başvuran hastalarda birden fazla bölgede kenenin bulunabileceği düşünülerek tepeden tırnağa dikkatli bir şekilde değerlendirme yapılması gerektiği, ancak bu şekildeki bir muayene ile hastaların vücudunun görünmeyen kısımlarındaki kenenin tespit edilebileceği belirtilmektedir.[26] Literatürde kenenin vücutta en sık yerleştiği yerler incelendiğinde, Al ve ark.[21] en sık baş-boyun ve bacaklara yerleştiğini, Sümer ve ark.[24] ile Taşkesen ve ark.[27] kenelerin en sık bacaklara ve gövdeye yerleştiğini, Yardan ve ark.[26] ise en fazla gövdeye ve kollara yerleştiğini, daha az oranlarda da bacaklar, baş-boyun, genital bölge gibi yerlere yerleştiğini, Edlow ve McGillicuddy [28] kenelerin vücutta sıklıkla saçlı deriye, kulak arkasına ve uyluğa yerleştiğini bildirmişlerdir. Bizim çalışmamızda ise %33,7 (n=283) ile en sık alt ekstremiteye yerleştiğini ve daha sonra sıklık sırasıyla %27,1 (n=228) baş-boyun-yüz, %21,8 (n=183) üst ekstremite, %11,9 (n=100) gövde ön yüz ve %5,5 (n=46) gövde arka yüz yerleşimi olduğu tespit edilmiştir (**Şekil 2**). Kenenin vücutta tuttuğu lokalizasyon açısından cinsiyete göre anlamlı bir fark olmadığı saptanmıştır (p=0,728) (**Tablo 1**). Yapılan bir çalışmada, vücutta baş ve boyun bölgesinde kene tutunması olan KKKA hastalarında mortalitenin anlamlı şekilde daha yüksek olduğu bildirilmektedir.[22]

Kene teması açısından en fazla risk altında bulunan mesleklerin veterinerler, sağlık personeli, hayvancılık yapanlar, mezbahane çalışanları, kasaplar, tarım işçileri ve askerler olduğu belirtilmektedir.[21,23,29] Dünya genelinde, risk grubundaki bireylerde KKKA seroprevalansının toplumdaki diğer normal insanlara göre 7.5 kat daha fazla olduğu bildirilmektedir.[1] KKKA hastalığının aktif çalışma yaşında olan ve bu nedenle kene türlerine daha çok maruz kalan, tarım ve hayvancılıkla uğraşanlar arasında yoğunlaştığı görülmektedir.[8] Çalışmamızda hasta dosyalarından meslek gruplarına ulaşılamadığı için hastaların mesleklerine ait herhangi bir değerlendirme yapılamamıştır. Ancak Tokat ilinde özellikle kırsal kesimde tarım ve hayvancılık yaygın olarak yapılmaktadır. Dolayısıyla çalışmamızdaki hastaların önemli kısmının riskli grupta olduğu düşünülmektedir.

Çalışmamızda kene teması ile acil servise başvuran hastaların cinsiyete göre dağılımı incelendiğinde erkeklerde (%60) kadınlara (%40) göre anlamlı şekilde daha fazla başvuru olduğu bulunmuştur. Cinsiyete göre yaş dağılımına bakıldığında ise ≤18 yaş çocuk ve adolesanlar ile 41-64 yaş erişkinlerde erkeklerde kadınlara oranla daha fazla olup cinsiyete göre yaş

grubu arasında anlamlı fark saptanmıştır (p=0,019) (**Tablo 1**). Literatürde kene teması ile acil servise başvuruların erkeklerde kadınlara göre daha fazla görüldüğü belirtilmektedir.[6,12,21-23,28,30] Bu çalışmalarda elde edilen verilerin aksine Yardan ve ark.[26] tarafından yapılan çalışmada ise kadınlarda kene teması ile acile başvuruların daha fazla görüldüğü bildirilmektedir.

Kırım Kongo kanamalı ateşi hastalığında inkübasyon süresi virüsün bulaşma yoluna bağlı olup kene tutunması sonrasında genellikle 1-3 gün olmak üzere en fazla 9 gün, enfekte kan ya da doku ile temas sonrasında ise 5-6 gün en fazla 13 gündür.[10] Erken dönemde ilk görülen semptom genellikle şiddetli baş ağrısıdır. Daha sonra üşüme ve titreme ile yükselen ateş, baş dönmesi, ense ağrısı, boğaz ağrısı, gözlerde ağrı ve fotofobi, kas, eklem ve sırt ağrıları ortaya çıkarak influenzaya benzer bir klinik tablo oluşur. Başlangıç döneminde bulantı, kusma, karın ağrısı ve ishal olabilir. Hastalarda genellikle huzursuzluk vardır. Hemorajik dönemde peteşi, ekimoz, hemoptizi, hematemez, melena, epistaksis, hematüri, diş eti kanaması, vajinal kanama ve iç organlarda kanamalar ortaya çıkabilir.[25,31,32] Başol ve ark.[33] tarafından Ocak 2012-Ekim 2012 tarihleri arasında Tokat Gaziosmanpaşa Üniversite Hastanesi Acil Servisine kene tutunması şikayeti ile başvuran toplam 251 hastanın detaylı olarak değerlendirildiği çalışmada, hastalar PCR (+) ve PCR (-) olmak üzere iki gruba ayrılmıştır. Hastaların tamamında kene tutunması şikayeti olduğu, daha sonra sırasıyla en sık yorgunluk (%46) ve ateş (%36) semptomları görüldüğü, PCR (+) olan hastalarda en yaygın şikayetin ateş olduğu bildirilmiştir. Ayrıca PCR (+) olan hastalarda PCR (-) olanlara göre lökosit ve platelet değerleri anlamlı şekilde daha düşük iken, AST düzeyi ise anlamlı şekilde daha yüksek olarak bulunmuştur (p<0.01). Bizim çalışmamızda, hastaların başvuru nedenleri arasında ana başvuru şikayeti olan kene tutunması (n=403) (%48) dışında %33,9 (n=285) ile en sık ateş, %5,7 (n=48) halsizlik, %3,3 (n=28) bulantı-kusma, %3,2 (n=27) ishal, %5,8 (n=49) ve diğer semptomlar (epistaksis, baş dönmesi, döküntü gibi) bulunmaktadır. 2000-2018 yılları arasında KKKA konusundaki 971 çalışmanın incelendiği bir derlemede, KKKA hastalarının %43-98'inde ateş olduğu bildirilmektedir.[2]

Çalışmamızda hastanede yatan hastalarda yatmayanlara göre daha fazla olacak şekilde ateş (p=0,001), halsizlik (p=0,001) ve ishal (p=0,005) açısından anlamlı fark olduğu saptanmıştır (p<0,05), bulantı-kusma (p=0,078) ve diğer şikayetler (epistaksis, baş dönmesi, döküntü gibi) açısından ise (p=0,237) anlamlı fark bulunmamıştır (p>0,05) (**Tablo 2**). Çalışmamızda her iki cinsiyette mortalite açısından anlamlı fark olmadığı saptanmıştır (p=0,578) (**Tablo 3**). 2014-2019 yılları arasında, Ankara'da acil servise kene tutunması şikayetiyle başvuran 1592 hastadan KKKA tanısı alan 172 olguya ait verilerin incelendiği retrospektif kohort çalışmasında, bizim sonuçlarımıza benzer şekilde cinsiyete göre mortalite arasında anlamlı fark bulunmamıştır.[22]

Literatürde kene teması ile hastaneye başvuran tüm hastalarda laboratuvar incelemesinde tam kan sayımında lökopeni, trombositopeni ve anemi olup olmadığının araştırılması ve ayrıca AST, ALT, ALP, CPK, total bilirubin, LDH, protrombin zamanı (PT), aktive parsiyel protrombin zamanı (aPTT) düzeylerinin de belirlenmesi gerektiği belirtilmektedir.[27] Bizim çalışmamızda hastaların %46,5'inde (n=391) lökopeni, %56'sında (n=470) trombositopeni, %17'sinde (n=143) anemi olduğu tespit edilmiştir. Cinsiyete göre lökopeni (p=0,714) ve trombositopeni (p=0,089) açısından anlamlı fark görülmezken, anemi açısından kadınlarda erkeklere göre daha fazla olacak şekilde anlamlı fark olduğu saptanmıştır (p<0,001) (**Tablo 4**). Bu durum kadınlarda demir eksikliği anemisinin daha sık görülmesi ile ilişkili olabilir. Hastanede yatan hastalarda ayaktan tanı ve tedavi yapılanlara göre lökopeni (p<0,001), trombositopeni (p<0,001) ve anemi (p<0,001) görülme sıklığının anlamlı şekilde daha yüksek olduğu bulunmuştur (**Tablo 5**). Çalışmamızda mortalite açısından ise ölen hastalarda lökopeni (p=0,013), trombositopeni (p<0,001) ve anemi (p<0,001) sıklığının anlamlı şekilde daha yüksek olduğu saptanmıştır. Özellikle de yatan hastaların %95'inde, ölen hastaların ise tamamında trombositopeni olması KKKA hastalığı açısından dikkat çekici bir bulgudur (**Tablo 6**).

Yılmaz ve ark.[3] tarafından yapılan çalışmada, 2002-2007 yılları arasında Türkiye genelinde KKKA tanısı alan 1670 hastanın %93,2'sinde trombositopeni, %88,9'unda lökopeni geliştiği bildirilmiştir. Çorum'da 2010-2012 yılları arasında KKKA şüphesiyle yatırılan 240 hastanın klinik ve laboratuvar bulgularının incelendiği çalışmada, KKKA hastalarında beyaz küre ve trombosit sayısının anlamlı şekilde daha düşük olduğu bulunmuştur (p<0,05).[9] Ankara'da 2014-2019 yılları arasında KKKA tanısı alan hastalarda mortaliteyi etkileyen faktörlerin araştırıldığı çalışmada ise, KKKA nedeniyle ölen hastalarda lökosit sayısı, INR, AST ve ALT düzeyinin anlamlı şekilde daha yüksek olduğunu, trombosit sayısının ise anlamlı şekilde daha düşük olduğu saptanmıştır (p<0,001).[22] Çalışma sonuçlarımıza benzer şekilde Amasya Devlet Hastanesi acil servisine kene teması hikayesi ile başvuran hastaların retrospektif olarak incelendiği çalışmada, ortalama trombosit sayısının pozitif vakalarda 118,000/mm^3, KKKA nedeniyle ölen vakalarda ise 83,600/mm^3 olarak saptandığı, trombosit sayısının ≤20,000/mm^3 olmasının mortaliteye eşlik eden bağımsız bir risk faktörü olduğu bildirilmektedir.[23]

Hastalığın henüz spesifik bir tedavisi yoktur, temel yaklaşım destek tedavisi şeklindedir. Hastalarda ciddi düzeyde mikrovasküler bozukluk olduğu için agresif sıvı replasmanı yapılmalıdır. Gerektiğinde trombosit süspansiyonu, taze donmuş plazma ve tam kan verilmeli; solunum, dolaşım, diyaliz ve parenteral beslenme desteği sağlanarak sıvı-elektrolit dengesi takip edilmelidir.[11] KKKA hastalığında mortalitenin önlenmesinde erken tanı önemlidir. Acil servise kene teması sonrası başvuran hastalarda ateş ve yorgunluk gibi semptomlar ciddiye alınmalı, lökopeni ve trombositopeni ile birlikte karaciğer enzimlerindeki yükselmenin de dikkate alınması gerektiği belirtilmektedir.[33]

Çalışmamızın bazı kısıtlılıkları mevcuttur. Tek merkeze ait verilerin değerlendirildiği retrospektif bir çalışmadır.

Literatürde kene teması ile başvuran hastalarda bakılması gereken AST, ALT, LDH, CK, INR gibi laboratuvar tetkiklerinin acil servise başvuran birçok hastada istenmemiş olmasından dolayı bu parametreler çalışma dışı bırakılması nedeniyle değerlendirilememiştir. Ayrıca hastaların çoğunluğunun acil servis başvuru kayıtlarında meslek kaydı tutulmadığından dolayı hastaların mesleğine göre herhangi bir değerlendirme yapılamamıştır.

SONUÇ

Kırım Kongo kanamalı ateşi hastalığı Tokat ilinde endemik olarak görülmekte olup kene tutunmasıyla sağlık kuruluşlarına başvuran hastalarda tam bir fizik muayene yapılmalı ve kenenin vücudun hemen her bölgesine tutunabileceği göz önünde bulundurulmalıdır. Halkın kene tutunması ve KKKA hastalığı konusunda farkındalık düzeyini yükseltmek amacıyla düzenli eğitimler verilmesi sağlanmalıdır. Aynı zamanda tüm sağlık çalışanları özellikle de acil servislerde görev yapan hekimler periyodik şekilde yapılacak hizmet içi eğitimlerle kene teması olan olgulara yaklaşım konusunda güncel bilgilerle donatılmalıdır. Kene teması olan tüm hastalarda en kısa sürede kenenin çıkarılması özellikle de ateş, miyalji, halsizlik, kanama gibi ek semptomları olması durumunda mutlaka hızlı bir şekilde bir sağlık kuruluşuna başvurmaları açısından bilgilendirilmeleri sağlanmalıdır.

ETİK BEYANLAR

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Aydınlatılmış Onam: Çalışma retrospektif olarak dizayn edildiği için hastalardan aydınlatılmış onam alınmamıştır.

Hakem Değerlendirme Süreci: Harici çift kör hakem değerlendirmesi.

Çıkar Çatışması Durumu: Yazarlar bu çalışmada herhangi bir çıkara dayalı ilişki olmadığını beyan etmişlerdir.

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Orjinal Araştırma / Original Article

Kırım Kongo Kanamalı Ateşinin Abdominal Ultrasonografi Bulguları

Abdominal US Findings of Crimean-Congo Hemorrhagic Fever

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Öz

Amaç: Kırım Kongo Kanamalı Ateşi, özellikle kene ısırması ve vücut sekresyonları aracılığıyla geçiş gösteren, dünyada ve ülkemizde bazı bölgelerde endemik olarak görülen, klinik olarak genellikle ateş ile seyreden ölümcül viral bir hastalıktır. Bu hastalıktan özellikle akciğerler olmak üzere vücuttaki birçok organ etkilenmektedir. Ancak hastalığa bağlı abdominal organlarda tutulum ile ilgili halen yeterli çalışma bulunmamaktadır. Bu nedenle biz çalışmamızda; Kırım Kongo Kanamalı Ateşi hastalığının ultrasonografi bulgularını literatür eşliğinde tartışmayı amaçladık.

Gereç ve Yöntem: 2012- 2016 yılları arasında serolojik olarak Kırım Kongo Kanamalı Ateşi hastalığı tanısı bulunan 283 hastanın hastanemizde tutulan kayıtları retrospektif olarak değerlendirildi. Bu hastalardan 20'sinde abdominal ultrasonografi incelemesi sonucunda batında bulgu saptandı. Batında bulgu saptanan hastaların ultrasonografi bulguları analiz edildi.

Bulgular: Hastaların 9'u (%45) erkek, 11'i (%55) kadındı. Abdominal ultrasonografi incelemesinde en yaygın görülen bulgular; hepatomegali ve intraabdominal serbest sıvı idi. Safra kesesi duvar kalınlaşması ve splenomegali diğer sık saptanan bulgulardandı. Periportal ekojenite artışı, kas içi hemoraji, kolon duvar kalınlaşması, safra kesesinde çamur, renal ekojenite artışı, renal ektazi ve üreter dilatasyonu ise nadir görülen bulgular arasındaydı.

Sonuç: Çalışmamız Kırım Kongo Kanamalı Ateşinin abdominal ultrasonografi bulguları üzerine yapılmış çok nadir çalışmalar arasındadır. Hastalarımızda hepatomegali, içi serbest sıvı ve safra kesesi duvar kalınlaşması en sık görülen bulgulardır. Hastalık batında hemen hemen tüm organları etkileyebilmekte olup batıniçi bulgular oldukça çeşitlilik göstermektedir. Çalışmamızın ilerde yapılacak daha kapsamlı çalışmalara ışık tutacağı düşünülmektedir.

Anahtar Kelimeler: Kırım Kongo Kanamalı Ateşi, ultrasonografi

Abstract

Introduction: Crimean-Congo Hemorrhagic Fever (CCHF) is one of the deadly diseases, clinically causing viral hemorrhagic fever outbreaks. It is especially transmitted through tick bite and body secretions and accepted as an indigenous disease in certain regions in the world and in our country. Many of the organs, especially the lungs, are affected by this disease. However, current studies are not sufficiently relate the disease and abdominal organ involvement. Therefore, we aim to discuss the ultrasonography (US) findings of the CCHF disease in the context of the literature.

Material and Method: The retrospective analysis of the hospital records of 283 patients, who were serologically diagnosed as CCHF between 2012-2016 was performed. Abdominal ultrasonography examination revealed that, 20 of those patients had findings in the womb. US findings of these 20 patients were analyzed.

Results: Nine patients (45%) were male, and 11 patients (55%) were female. The most common findings of abdominal US examinations were; the hepatomegalia and the intra-abdominal free fluid. Gallbladder wall thickening and splenomegalia were also commonly found in these patients. Periportal hyperechogenicity, intramuscular hemorrhage, colon wall thickening, sludge in gallbladder, renal hyperechogenicity, renal ectasia and ureter dilatation were rarely observed.

Conclusion: Our study is among the exceptional studies on the analysis of abdominal US findings of CCHF. The most commonly observed findings in our patients were the hepatomegalia and the intra-abdominal free fluid. Intra-abdominal findings of the disease were extremely variable. This study will shed light to the future comprehensive studies.

Keywords: Crimean-Congo Hemorhagic Fever, ultrasonography

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GİRİŞ

Kırım Kongo Kanamalı Ateşi (KKKA) genellikle vektörel olarak kenelerle taşınan, yüksek mortalite oranlarına sahip viral bir hastalıktır.[1,2] Hastalık ilk olarak 1944 yılında Kırımda ve yaklaşık 12 yıl sonra Kongo'da görülmüştür. Bu nedenle hastalık ilk görüldüğü yerlerin adını almıştır.[3] Hastalık özellikle ilkbahar sonlarında ve yaz aylarında görülür. Balkanlar, Ortadoğu, Asya ve Afrika hastalığın endemik olarak görüldüğü yerler arasındadır. Ancak Avrupa'da da daha seyrek olarak KKKA rapor edilmiştir. KKKA hastalığına Bunyavirus ailesinden Naiovirus cinsinin bir üyesi neden olmaktadır.[4,5]

Kırım Kongo Kanamalı Ateşinde endotelial hasar, mikrovasküler instabilite ve bozulmuş hemostaz primer patofizyolojiden sorumlu tutulmuştur.[6] Hastalığın başlangıcında ateş, halsizlik, myalji gibi nonspesifik semptomlar görülmektedir. Hastalığın ilerleyen dönemlerinde ise platelet düzeylerinde belirgin düşme nedeniyle ciddi spontan kanamalar ve hipovolemik şok gibi yaşamı tehdit eden klinik durumlar gelişebilir. Hastalığın en sık görülen laboratuar bulguları; plazma hepatik enzim düzeylerinde artış, trombositopeni ve lökopenidir. Hastalık esnasında bazı hastalarda renal veya pulmoner komplikasyonlar görülmesine rağmen hasta hayatta kalırsa tam iyileşme kuraldır.[6] Genellikle semptomların başlangıcından 1-2 hafta sonra gelişen ciddi hemorajiler, şok veya multiorgan yetmezliği hayatını kaybeden hastalarda en sık görülen ölüm nedenidir.[7-9] Kırım Kongo Kanamalı Ateşinin ortalama mortalite oranı %5 civarındadır.[6] Türkiye de son yıllarda hastaların sayısında artış görülmesi, klinisyenler ve radyologların dikkatini bu hastalık üzerinde yoğunlaştırmıştır. Kırım Kongo Kanamalı Ateşi hastalarında başlangıçta radyolojik olarak daha çok pulmoner komplikasyonlar üzerinde durulmuştur. Ancak hastalarda abdominal bulgulara rastlanma sıklığında artış ve bu bulguların çeşitlilik göstermesi nedeniyle gittikçe daha fazla oranda abdominal ultrasonografi (US) ve abdominal bilgisayarlı tomografi (BT) incelemesi yapılmaktadır. Maalesef buna rağmen literatürde hastalığın abdominal bulguları üzerine yapılan çalışmalar halen yeterli değildir. Bu yüzden biz çalışmamızda KKKA hastalarında US'de karşımıza çıkan radyolojik bulguları sunmayı, klinisyenlere ve radyologlara karşılaşabilecekleri abdominal bulgular konusunda fikir vermeyi amaçladık.

GEREÇ VE YÖNTEM

Hastalar

2012- 2016 yılları arasında serolojik olarak KKKA tanısı bulunan 283 hastanın hastanemizde tutulan kayıtları retrospektif olarak değerlendirildi. Çalışmamız için üniversite etik kurulundan onay alındı. Çalışma retrospektif olarak planlandı. Bu nedenle hastalardan onam formu alınmadı. Hastaların bilgileri saklı tutuldu. Hastalar yüksek ateş, boğaz ağrısı, öksürük, halsizlik, abdominal ağrı gibi nonspesifik semptomlarla acil servise başvurmuşlardı. Hastaların %78'inde kene ile temas öyküsü mevcuttu. Kırım Kongo Kanamalı Ateşi hastalığı düşünülen hastalardan alınan plazma materyalleri Ankara Refik Saydam Hifzıssıhha Enstitüsüne gönderilerek incelenmiş ve tanıları konulmuştu. Tüm hastalarda plus polimeraz zincir reaksiyonu veya immunoglobulin M pozitifti. Hastalardan ikisi hastane kaynaklı KKKA hastalığı tanısı aldı. Hastaların 20'sinde (%7,1) bulantı, kusma, abdominal ağrı veya abdominal şişkinlik gibi gastrointestinal şikayetler nedeniyle yapılan abdominal US incelemesinde abdominal bulgular saptandı.

Ultrasonografi incelemesi

İlk başvuru esnasında veya takiplerinde gastrointestinal şikayetler gelişen hastalara en az 6 saat açlık sonrası abdominal US incelemesi yapıldı. Abdominal US incelemesi supin pozisyonda her iki kol başın üzerinde olacak şekilde maksimum inspirasyondaToshibaAplio 500 2012 marka US cihazı ile 3,5 MHZ pvt-375BT marka konveks prob kullanılarak en az 5 yıllık deneyime sahip radyoloji uzmanı tarafından yapıldı. Hastalardan 20'sinde (%7,1) abdominal US incelemesi sonucunda batında bulgu saptandı. Hastaların US bulguları oluşturulan forma kaydedildi. Kronik karaciğer hastalığı, kanser, kronik böbrek hastalığı bulunan hastalar çalışmaya dahil edilmedi.

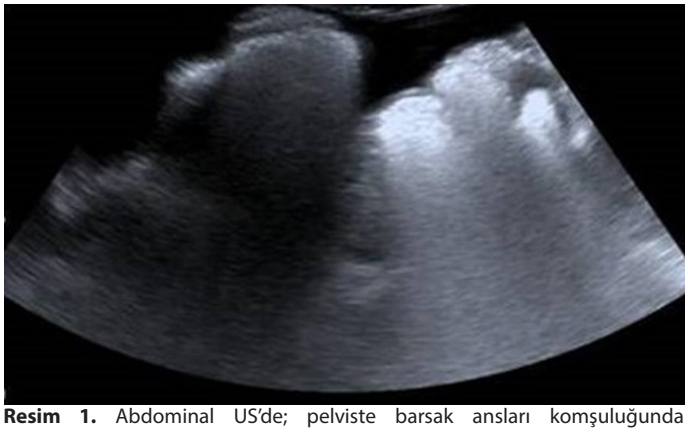
Ultrasonografi bulgularının değerlendirilmesi

Ultrasonografi ile hastalar, hepatomegali, splenomegali, safra kesesi duvar kalınlaşması, intraabdominal serbest sıvı, lokule sıvı, abse, hematom, lenf nodu ve diğer ek abdominal bulgular açısından değerlendirildi. Karaciğer boyutları, konturları, parankim homojenitesi ve parankim ekosu incelendi. Karaciğer boyutları için sağ midklavikular hatta karaciğerin alt hepatik konturundan karaciğer tepesine kadar olan mesafe ölçüldü. Bu ölçüm şekli Börner ve ark.[10] tarafından tanımlanmıştı. Dalak boyutları için standart oblik koronal planda dalağın en alt noktasından dalak kubbesine kadar olan mesafe ölçüldü.[11] Tüm ölçümler milimetre cinsinden kaydedildi. Karaciğer boyutu 16 cm'nin üzerinde ise hepatomegali, dalak boyutu 12 cm'nin üzerinde ise splenomegali olarak tanımlandı.[12] Safra kesesi duvarı için 3 mm'nin üzeri safra kesesi duvar kalınlaşması olarak kabul edildi.[12]

SONUÇ

Çalışmamızda KKKA tanısı olan ve klinik bulgular nedeniyle abdominal US incelemesi yapılan 20 hastanın sonuçları değerlendirildi. Hastalardan 9'u (%45) erkek, 11'i (%55) kadındı. Erkeklerin yaşları 23 ile 79 arasında (ortalama yaş=59,5) kadınların yaşları ise 21ile 70 arasında (ortalama yaş=51,5) değişmekteydi. En sık görülen abdominal bulgular; hepatomegali, intraabdominal serbest sıvı, safra kesesi duvar kalınlaşması ve splenomegaliydi (**Resim 1**).

Safra kesesi lümeninde çamur, batıniçi hematom, periportal ekojenite artışı, renal pelviektazi, barsak duvar kalınlaşması, renal parankimal ekojenite artışı ve üreter dilatasyonu ise nadir görülen bulgulardandı (**Tablo 1**).



Resim 1. Abdominal US'de; pelviste barsak ansları komşuluğunda intraabdominal serbest sıvı görülmekte.

Tablo 1. KKKA hastalarında ultrasonografi işaretleri

	n	%
Hepatomegali	16	80
İntraabdominal serbest sıvı	13	65
Safra kesesi duvar kalınlaşması	6	30
Splenomegali	5	25
Renal pelviektazi	2	10
Safra kesesi lümeninde çamur	2	10
Batıniçi hematom	2	10
Periportal ekojenite artışı	1	5
Kolon duvar kalınlaşması	1	5
Renal ekojenite artışı	1	5
Üreter dilatasyonu	1	5

n:Hasta sayısı

Karaciğer boyutları 16 hastada artmış olup 17 cm ile 19 cm arasında idi. İntraabdominal serbest sıvı ise 13 hastada görülmekteydi. İntraabdominal serbest sıvı en sık perihepatik alanda ve pelvisteydi. Perisplenik alan ve barsak ansları çevreside serbest sıvının sık görüldüğü lokalizasyonlardı (**Tablo 2**).

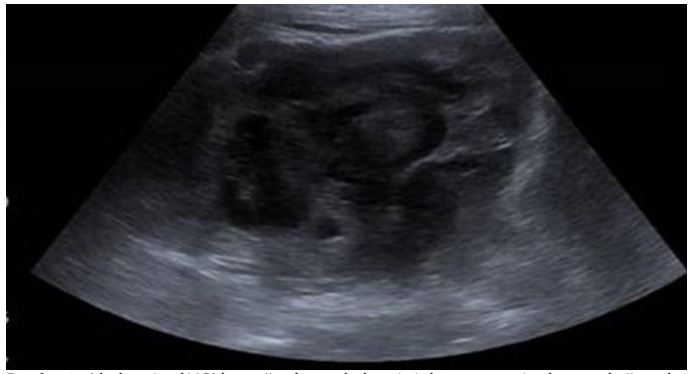
Tablo 2. İntraabdominal serbest sıvının dağılımı

	n	%
Perihepatik sıvı	9	45
Perisplenik sıvı	7	35
Mezenterik sıvı	5	25
Pelvik sıvı	11	55

n:Hasta sayısı

Safra kesesi duvar kalınlaşması 6 hastada saptanmış olup kese duvar kalınlığı 4 mm ile 13 mm arasında değişmekteydi. Splenomegali 5 hastada görülmekte olup dalak boyutları 13 cm ile 19 cm arasında değişmekteydi. İki hastada safra kesesinde çamur mevcut olup her iki hastada da çamura safra kesesi duvar kalınlaşması eşlik ediyordu. Ancak her iki hastada da safra kesesi lümeninde taş saptanmadı. Bu nedenle akalküloz kolesistit olarak yorumlandı. Bir hastada periportal ekojenite artışı mevcut olup, bu hastada ekojenite artışına hepatomegali, splenomegali, safra kesesi duvar kalınlaşması ve intraabdominal serbest sıvı eşlik ediyordu.

Barsak duvarında kalınlaşma görülen bir hastanın daha sonra yapılan BT incelemesinde, kalınlaşmanın transvers kolonda uzunca bir segmentte simetrik olarak devam ettiği, çıkan kolona ve çekuma uzandığı görüldü. İki hastada renal pelviektazi mevcuttu. Bu hastaların birincisinde her iki böbrekte grade 2-3 renal pelviektazi saptandı. Renal pelviektaziye her iki üreterde üreterovezikal bileşkeye kadar devam eden dilatasyonda eşlik ediyordu (sağ üreter çapı 11 mm, sol üreter çapı 12 mm). Her iki böbrek parankim ekojenitesi Grade 1 artmıştı. Hastaya yapılan kontrastsız BT tetkikinde de her iki böbrek ve üreterlerdeki dilatasyon görüldü. Ancak tetkik kontrastsız olduğundan böbrek parankimleri değerlendirilemedi. Diğer hastada ise her iki böbrekte Grade 1 renal pelviektazi mevcut olup her iki üreter normaldi. Hastalardan 3'ünde 1-2 hafta arasında tekrarlayan US incelemeleri yapıldı. Bu hastalardan ikisinde ilk incelemede karaciğer boyutları artmıştı (17 cm, 18 cm). Perihepatik ve perisplenik alanda ise intraabdominal serbest sıvı mevcuttu. 11 gün sonra yapılan US'de ise her iki hastada da karaciğer boyutunda farklılık saptanmamakla beraber intraabdominal serbest sıvının kaybolduğu görüldü. Diğer hastada ise ilk incelemede karaciğer boyutu 17 cm, safra kese duvar kalınlığı ise belirgin artmış olup 13 mm idi. Perihepatik, perisplenik alanda ve pelviste serbest sıvı mevcuttu. Aynı hastada 7 gün sonra yapılan US'de ise intraabdominal serbest sıvı miktarında artış saptandı. Safra kesesi duvar kalınlığında değişiklik saptanmamakla beraber kese lümeninde safra çamurunun oluştuğu görüldü. Sol psoas kasında ise kas ile sınırları ayırtedilemeyen yaklaşık 21x16 mm boyutunda oval şekilli, düzensiz kenarlı, sınırları seçilebilen heterojen, an-hipoekoik, posterior güçlenmesi bulunan kistik lezyon görüldü. Lezyon sol psoas kası hematomu olarak yorumlandı. Bir hastada sağ rektus abdominis kası posterior komşuluğunda, batıniçi yağlı doku içersinde lokalize, barsak anslarını yaylandıran, yaklaşık 113x114 mm boyutunda lobule konturlu, sınırları nispeten seçilebilen, heterojen, hipo-anekoik karakterde, posterior güçlenmesi bulunan intraabdominal hematom tespit edildi. (**Resim 2**).



Resim 2. Abdominal US'de; sağ rektus abdominis kası posterior komşuluğunda, batıniçi yağlı doku içersinde, yaklaşık 113x114 mm boyutunda, hipoekoik ve anekoik alanlar içeren, posterior güçlenmesi bulunan heterojen karakterde intraabdominal hematom.

TARTIŞMA

Kırım Kongo Kanamalı Ateşi Türkiyede özellikle Kelkit vadisi olarak bilinen bölgede yaklaşık 20-30 yıldır endemik olarak görülmektedir. Hastalığın klinik ve laboratuar bulguları, muhtemel patogenezi hakkında birçok çalışma yapılmıştır.[8,13-16]Hastalığın etyopatogenezi henüz tam olarak anlaşılamamakla beraber insana bulaşan virüsün yoğun bir sistemik inflamatuar cevaba neden olduğu bilinmektedir. Virus insanlara genellikle kene ısırması yoluyla bulaşmaktadır. Ancak hastada kene ile temas öyküsü bulunmuyorsa, KKKA bulunan hastaların kan ve sekresyonları ile bulaş, endemik alanlarda yaşama veya seyahat etme, hayvancılık veya çiftçilikle uğraşma gibi olası epidemiyolojik faktörler tanının konmasında önemli rol oynamaktadır.[7,17]

Kırım Kongo Kanamalı Ateşinin patogenezinde vasküler endotelyal hasar önemli yer tutmaktadır. Endotelyal hasar plazma ve albüminin ekstrasellüler alana sızmasına ve sitokinlerin salınımında artışa neden olur.[18] Plazmanın ekstrasellüler alana sızıntısı ise asit, plevral effüzyon ve safra kesesi duvar kalınlaşması ile sonuçlanabilir.[19] Ekstrasellüler alana kapiller plazma sızıntısı bizim hastalarımızda da intraabdominal serbest sıvının ve safra kesesi duvar kalınlaşmasınının yüksek sıklığını açıklayabilir. Çalışmamızda hastalardan birinde intraabdominal serbest sıvıdan örnekleme yapılmış ve serohemorajik vasıfta sıvı aspire edilmiştir. Bu örnekleme de sıvının kapiller sızıntı nedeniyle oluştuğunu desteklemektedir. Ancak hastalarımızdan hiçbirinde parasenteze gerek duyulmamıştır. Platelet düşüklüğü de bu hastalarda parasentez yapılmasının önündeki önemli engellerden biridir. Bizim çalışmamızda da görüldüğü gibi KKKA'de yüksek intraabdominal serbest sıvı sıklığına rağmen hastalar genellikle sıvı drenajına gerek duymaksızın tam olarak iyileşir.[6] Dengue ateşi gibi diğer viral hemorajik ateş yapan hastalıkların radyolojik işaretleri üzerine çalışmalar literatürde mevcuttur.[20] Dengue ateşi hastalığı, patogenezi açısından KKKA ile oldukça benzerlik göstermektedir. Bu hastalarda da pulmoner komplikasyonlar bildirilmiştir. Dengue ateşi ile ilgili yapılan bir çalışmada, bizim KKKA hastalarında yaptığımız çalışmaya benzer şekilde perihepatik ve perisplenik serbest sıvı, perikardial effüzyon ve safra kesesi duvar kalınlaşması saptanmıştır.[21] Dengue ateşinde de bu durum KKKA'de belirtildiği gibi kapiller plazma sızıntısı ile açıklanmıştır. Safra kesesi duvar kalınlaşması, kanama, plevral effüzyon ve intraabdominal serbest sıvı US kullanılarak etkili bir biçimde saptanabilir. Dengue ateşinde safra kesesi duvar kalınlığının US ile 3 mm'den daha fazla olmasının, hipovolemik şoku göstermede spesifitesinin %92 olduğu yönünde yapılmış çalışmalar mevcuttur. Bu çalışmada hastaneye yatış için bu bulgunun bir kriter olarak kullanılabileceği vurgulanmıştır.[22] Dolayısıyla dengue ateşi ile benzer patogenezise sahip KKKA'de bu bulgu hastalığın gidişatı açısından bize yön verebilir. Kırım Kongo Kanamalı Ateşinde safra kesesi duvar kalınlaşmasının genellikle kendini sınırladığı ancak hastanede kalış süresini uzattığı bildirilmiştir.[23]

Çalışmamızda en sık görülen bulguların başına hepatomegali, intraabdominal serbest sıvı ve safra kesesi duvar kalınlaşması gelmektedir. Bu sonuçlar daha önce hastalığın abdominal BT bulguları ile ilgili yapmış olduğumuz çalışmanın sonuçları ile benzerdir.[12] Ancak BT ile yapmış olduğumuz çalışmada en sık görülen bulgu intraabdominal serbest sıvı ve daha sonra hepatomegali olmakla beraber US ile yaptığımız bu çalışmada en sık görülen bulgu hepatomegali 2. sıklıkta ise intraabdominal serbest sıvı olarak bulunmuştur. İntraabdominal serbest sıvı yüzdesi her iki çalışma da birbirine oldukça yakın iken (sırasıyla; %70,6, %65) hepatomegali yüzdesi çalışmamızda oldukça yüksektir (sırasıyla; %56,9, %80). Çalışmamızda hepatomegalinin daha sık görülmesi her iki modalitede boyut ölçümlerinin farklı olarak yapılmasından kaynaklanabilir. Ancak her iki çalışmada da hepatomegali en sık görülen bulgular arasındadır. Hastalığın BT bulguları arasında saptanan barsak duvar ödemi, pankreatit, mezenterik ve omental kirlenme ise çalışmamızda saptanmamıştır. Bu bulguların US'de saptanmayışı özellikle pankreatit ve batıniçi yağlı dokuyu değerlendirmede BT'nin US'ye göre üstün olmasından kaynaklanabilir. Bu bulgular BT'de çok daha kolay bir şekilde saptanmaktadır. Tufan ve ark.[6] da US ile yapmış oldukları çalışmalarında bizim çalışmamızla benzer şekilde bu bulguları tanımlamamışlardır. İnceleme esnasında hastalığın abdominal bulguları hakkında yeterli bilgiye sahip olunmaması ve bu bulguların deneyimli radyologlar arasında bile US'de gözden kaçabilmesi nedeniyle nadir gördüğümüz bu bulgular US bulguları arasında yeralmamış olabilir. Tufan ve ark.[6] US ile yapmış oldukları çalışmada hepatomegali (%40), intraabdominal serbest sıvı (%52) ve safra kesesi duvar kalınlaşması (%36) çalışmamıza benzer şekilde en sık görülen bulgular arasındadır. Bu çalışmada sık bulgular arasında görülen böbrek parankim ekojenitesinde artış ise bizim çalışmamızda oldukça nadir olup sadece bir hastada görülmüştür. Tufan ve ark.[6] yapmış oldukları çalışmada saptanan batıniçi lenf nodlarının boyutlarında artış daha önce yapmış olduğumuz çalışmaya benzer şekilde çalışmamızda saptanmamıştır.

Gittikçe artan hasta sayısı ve hastalarda saptanan bulguların çeşitliliği tüm tıp dallarında olduğu gibi radyolojide de KKKA hastalığına karşı ilgi uyandırmıştır. Hastalığın pulmoner bulgularının daha erken ortaya çıkması ve daha gürültülü olması nedeniyle ilgi başlangıçta özellikle hastalığın akciğer tutulumu üzerine yoğunlaşmıştır. Hastalığın abdominal tutulumu ile ilgili halen sınırlı sayıda çalışma mevcut olup KKKA'nin US bulguları üzerine yapılmış çalışmalar ise oldukça nadirdir.[24,25] Çalışmamızın önemli limitasyonları ise hasta sayısının azlığı, çalışmanın retrospektif olarak planlanması ve hastaların çoğunun düzenli şekilde peryotik incelemelerinin yapılmamasıdır.

Sonuç olarak çalışmamız, özellikle yaz ve bahar aylarında ülkemizde ve dünyada bazı endemik bölgelerde ölümle sonuçlabilen ülkemizde ciddi bir halk sağlığı problemi olan KKKA'nin US bulguları üzerine yapılmış nadir çalışmalardan biridir. Hastalarımızdaki en sık görülen bulgular ise

hepatomegali, intraabdominal serbest sıvı ve safra kesesi duvar kalınlaşmasıdır. Hastalıkta görülen abdominal bulguların çeşitliliği ve hemen hemen tüm batıniçi organların etkilenebilmesi nedeniyle abdominal değerlendirme büyük önem taşımaktadır. US güvenilir, kolay uygulanabilir, non-invaziv bir tanı aracı olması nedeniyle KKKA'nin abdominal bulgularını tanımlamak açısından oldukça kullanışlı bir görüntüleme yöntemidir.

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Aydınlatılmış Onam: Çalışma retrospektif olarak dizayn edildiği için hastalardan aydınlatılmış onam alınmamıştır.

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Orjinal Araştırma / Original Article

Kanser Hastalarında Umutsuzluk ve Manevi Bakım Algısının Değerlendirilmesi

Assessment of Hopelessness and Spiritual Care Perception in Cancer Patients

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Öz

Amaç: Bu çalışma, kanser hastalarında umutsuzluğun ve manevi bakım algısının değerlendirilmesi amacıyla tanımlayıcı ve kesitsel olarak yapıldı.
Gereç ve Yöntem: Bu çalışmanın evrenini, Haziran - Eylül 2019 tarihleri arasında bir üniversite hastanesinin onkoloji servisinde tedavi gören tüm kanser hastaları oluşturdu. Araştırmanın örneklemini ise, kanser hastalığı olup araştırmaya katılmayı engelleyebilecek fiziksel ve zihinsel bir problemi bulunmayan, araştırmaya katılmayı gönüllü olarak kabul eden, soruları yanıtlayabilecek bilişsel yeterliliği sahip, 18 yaş ve üzerinde olan 125 hasta oluşturdu. Veriler araştırmacılar tarafından yüz yüze görüşme tekniği ile "Kişisel Bilgi Formu", " BECK Umutsuzluk Ölçeği" ve "Maneviyat ve Manevi Bakım Dereceleme Ölçeği" kullanılarak toplandı
Bulgular: Hastaların BECK Umutsuzluk Ölçeği puan ortalaması 11,63±5,34, maneviyat ve manevi bakım ölçeği puan ortalaması 66,54±4,90 olarak saptandı. Hastaların yaşı ile gelecek ile ilgili duygular puanı arasında anlamlı, pozitif bir ilişki olduğu görüldü (r=0,183 ve p=0,041). Bekar hastalarla farklı bir kronik hastalığı olanların BUÖ toplam puan ortalamasının, gelecek ile ilgili duygular puan ortalamasının ve gelecek ile ilgili beklentiler puan ortalamasının daha yüksek olduğu saptandı. Katılımcılardan bekar olan, ailesinde başka kanser hastası olan ve farklı bir kronik hastalığı olan hastaların maneviyat ve manevi bakım dereceleme ölçeği-toplam puan ortalaması daha yüksek bulundu (p<0,05). Ayrıca araştırmaya dahil edilen hastaların maneviyat ve manevi bakım algılarıyla umutsuzluk düzeyleri arasında istatistiksel olarak anlamlı ve doğrusal bir ilişki olmadığı sonucuna varıldı (p>0,05).
Sonuç: Kanser hastaların orta düzeyde umutsuzluğa sahip olduğu belirlendi. Hastaların maneviyat ve manevi bakım algıların yüksek düzeyde olduğu bulundu.

Anahtar Kelimeler: Kanser, manevi bakım, umutsuzluk

Abstract

Aims: This study was conducted descriptively and cross-sectionally to evaluate hopelessness and spiritual care perceptions of cancer patients
Material and Method: The population of this study consisted of all cancer patients treated in an oncology department of a university hospital between June and September 2019. The sample of the study consisted of 125 patients who were 18 years or older, who had cancer and had no physical and mental problems that could prevent participation in the study, voluntarily accepted to participate in the study, and had cognitive competence to answer the questions. Data were collected by researchers using the "Personal Information Form", "BECK Hopelessness Scale" and "Spirituality and Spiritual Care Rating Scale" by face to face interview technique.
Results: Patients' BECK Hopelessness Scale score average was determined to be 11.63±5.34 and spirituality and spiritual care scale score average was 66.54±4.90. There was a positive relation between patients' age and their emotions about the future score (r=0.183 and p=0.041). Beck hopelessness total score average, emotions about the future score average and expectations about the future score average were found to be higher in single patients and patients with a different chronic disease. Spirituality and spiritual care graduation scale total score average was found to be higher in single participants, participants with other cancer patients in the family and participants with another chronic disease (p<0.05). Also it was determined that there was no significant and linear relationship between spirituality and spiritual care perception and hopelessness levels of the patients participated in the study (p>0.05).
Conclusions: Cancer patients had moderate hopelessness. Spiritual and spiritual care perceptions of the patients were found to be high.

Keywords: Cancer, hopelessness, spiritual care,

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GİRİŞ

Kanser; psikolojik, sosyal, fiziksel ve manevi boyutları etkileyerek birden fazla belirtiyi içeren, tanı konulduğu andan itibaren uzun vadede tedavi ve bakım gerektiren, dünyada ve ülkemizde görülme sıklığı hızla artan evrensel bir sağlık sorunudur.[1,2] Kanser, yirminci yüzyılın ilk yarısında ölüme sebep olan hastalıklarda sekizinci sırada iken, günümüzde kardiyovasküler hastalıklardan sonra ikinci sırada yer almaktadır.[3]

Kanser hastaları, tanı, tedavi ve palyasyon dönemlerinde belirsizlikle birlikte oldukça yoğun duygusal, ruhsal ve davranışsal problemler yaşamaktadırlar.[4] Bu problemler nedeniyle kanser hastası olan birey umutsuzluk yaşayabilmektedir.[5] Umutsuzluk, bireyin sorunlarını çözmek ya da istediği şeyleri yapabilmek için kişisel herhangi bir seçeneğinin olmadığı ya da amaçlarına ulaşabilmek için kendi enerjisini açığa çıkartamadığı duygusal bir durum olarak ifade edilmektedir.[6] Umut; kanser hastalarının pozitif yaşam enerjisine katkıda bulunmakta, hastalık ve kayıp süresini iyileştirmekte, çaresizlik, belirsizlik ve karamsarlık gibi duyguları önlemekte ve bireylerin hastalık süreciyle daha iyi baş etmelerine, uyumlarına ve iyilik hallerinin sürdürülmesine olanak sağlamaktadır.[7] Yapılan çalışmalarda umut düzeyi yüksek olan hastaların prognozlarının daha iyi ve yaşam kalitelerinin daha yüksek olduğu saptanmıştır.[8,9] Ayrıca kanser hastalarında umudun psikolojik huzursuzluğu azaltıp, daha iyi ağrı kontrolü sağladığı ve ağrının şiddetini azalttığı bildirilmektedir.[10] Kanser hastaların umut düzeylerinin belirlenmesi ve umudu destekleyen bir hemşirelik bakımının geliştirilmesi oldukça önemli bulunmaktadır. Bakım sürecinin her aşamasında olduğu gibi tedavi sırasında da umudun kanser hastalarına güç verdiği, psikolojik destek sağlayıp onları motive ettiği, tedavinin yan etkilerini azalttığı, hastalık sürecine ve tedaviye uyumlarını artırarak daha kaliteli bir bakım süreci sağladığı bildirilmektedir.[11]

Kansere bağlı olarak ortaya çıkan psikososyal sorunlar holistik bakım anlayışı ile ele alınması gerekmektedir.[12] Holistik bakıma göre birey; bedensel, sosyokültürel, mental, emosyonel ve spritüel boyutlarıyla bir bütün olup, bu boyutlar birbirleri ile ilişkili bulunmaktadır. Holistik bakımın sağlık hizmetlerinde sunulmaya başlanması ile birlikte bireylerin manevi boyutu önem kazanmıştır.[13] Modern hemşireliğin kurucusu olan Florence Nightingale de bireylerin sağlığı için manevi gereksinimlerin, fiziksel organlar kadar önemli olduğunu vurgulayarak maneviyatın holistik bir bakım sunulmasındaki önemine dikkat çekmiştir.[14]

Türk Dil Kurumu maneviyatı; "maddi olmayan manevi şeyler (görülmeyen, duyularla sezilebilen, soyut, tinsel)" şeklinde açıklamıştır.[15] Hemşirelik literatüründeki en geniş tanımıyla maneviyat; herhangi bir dini bağlılığın dışında, bireyin hiçbir tanrısal inancı olmadan hayatın anlamı ve amacı için iç huzuru sağlamak amacıyla çaba harcamak şeklinde tanımlanmaktadır.[16] Maneviyat; bireylerin hastalıklarla baş etmesinde, iyilik halinin sağlanmasında, kronik hastalıkların tedavi ve iyileşme sürecinde etkin bir rol oynamaktadır.[17,18] Ayrıca maneviyatın kanser hastalarında, hastalık esnasında ruh sağlığına pozitif bir etkisi olduğu belirtilmektedir.[19] Yapılan bir araştırmada maneviyatın sağlık, iyilik ve yaşam kalitesi üzerinde belirgin etkisi olduğu belirtilmekle birlikte, hastalıkların iyileşmesinde de önemli bir yeri olduğu vurgulanmaktadır.[20] Johnson ve ark.[22] (2011) manevi inancı yüksek olan hastaların umut düzeylerinin daha yüksek olduğunu saptamışlardır. Farklı bir çalışmada ise, maneviyat düzeyi yüksek onkolojik hastalarının, maneviyat düzeyi düşük olan hastalara oranla psikolojik açıdan daha iyi durumda oldukları, daha iyimser oldukları, buna karşılık daha az stres ve kaygı yaşadıkları, daha umutlu olup, daha az intihara teşebbüs ettikleri belirtilmiştir.

Hemşirelik, hastaların umutları ve korkuları hakkında konuşmalarını dinlemek için ayrıcalıklı bir meslek olarak ifade edilmiştir. Onkolojik hastaların bakım ve tedavi sürecinde, hastaların bireysel özellikleri dikkate alınarak bütüncül olarak değerlendirilmelidir.[23] Bu bilgiler ışığında onkoloji hastalarında, maneviyat ve umut ile ilişkisini araştırmalarla ortaya koymak ve holistik bakımının sunumunda önemli rolleri bulunan hemşirelerin bu konudaki farkındalıklarını arttırmak son derece önemli olduğu bildirilmiştir.[13] Bu çalışma, kanser hastalarında umutsuzluğun ve manevi bakım algısının değerlendirilmesi amacıyla yapılmıştır.

GEREÇ VE YÖNTEM

Araştırmanın Yeri ve Özellikleri

Kesitsel tanımlayıcı tipteki bu çalışma bir üniversite hastanesinin onkoloji kliniğinde tedavi gören kanser hastalarının umutsuzluk düzeylerini ve manevi bakım algılarını incelemek amacıyla gerçekleştirildi.

Araştırmanın Evreni ve Örneklemi

Araştırmanın evrenini, Haziran - Eylül 2019 tarihleri arasında bir üniversite hastanesinin onkoloji servisinde tedavi gören tüm kanser hastaları oluşturdu. Araştırmanın örneklemini ise, kanser hastalığı olup araştırmaya katılmayı engelleyebilecek fiziksel ve zihinsel bir problemi bulunmayan, araştırmaya katılmayı gönüllü olarak kabul eden, soruları yanıtlayabilecek bilişsel yeterliliği sahip, 18 yaş ve üzerinde olan 125 hasta oluşturdu.

Veri toplama araçları

Veriler araştırmacılar tarafından yüz yüze görüşme tekniği ile "Kişisel Bilgi Formu", " BECK Umutsuzluk Ölçeği" ve "Maneviyat ve Manevi Bakım Dereceleme Ölçeği" kullanılarak toplandı.

Kişisel Bilgi Formu: Araştırmacılar tarafından geliştirilen bu form hastaların cinsiyet, yaş, medeni durum, eğitim durumu, aile tipi, çalışma durumu ve ailede başka kanser hastasının varlığı gibi demografik özellikleri içeren sorular ile hastalık tanısı, hastalık süresi ve başka bir kronik hastalığın varlığı gibi hastalıkla ilgili özellikleri içeren sorulardan oluşmaktadır.

BECK Umutsuzluk Ölçeği (BUÖ): Beck tarafından 1974 yılında geliştirilen bu ölçeğin Türkçe geçerlilik ve güvenilirlik çalışmasını 1991 yılında Seber ve 1994 yılında ise Durak

& Palabıyıkoğlu yapmıştır.[24-26] Bireyin geleceğe yönelik beklentilerini ve karamsarlık düzeyini ölçmeyi amaçlayan 20 maddeli bir ölçektir. Ölçekte gelecekle ilgili duyguları içeren maddeler "1, 6.9.13.15"; güdü kaybı ile ilgili maddeler "2.3.9.11.12.16.17.20"; gelecek beklentisiyle ilgili maddeler "4.7.14.18" olarak belirlenmiştir. On bir "doğru", dokuz "yanlış" yanıtı içeren ölçek anahtarlarına göre, her uyumlu yanıt için "1", uyumsuz yanıt için "0" puan verilmektedir. Elde edilen "aritmetik" toplam "umutsuzluk" puanını oluşturmaktadır. BUÖ den alınabilecek 0-3 puan umutsuzluğun olmadığını, 4-8 hafif umutsuzluk, 9-14 orta derecede umutsuzluk ve 15 ve üstü ciddi umutsuzluk olduğunu göstermektedir.[26] Ölçeğin geçerlilik güvenirlik çalışmasında Cronbach Alpha değeri 0,86 olarak bildirilmiştir.[25] Çalışmamızda ölçeğin Cronbach alfa değeri 0,94 olarak bulundu.

Maneviyat ve Manevi Bakım Dereceleme Ölçeği (MMBDÖ): McSherry ve ark.[27] tarafından maneviyat ve manevi bakım kavramlarının algılanma düzeyini değerlendirmek amacıyla geliştirilmiş 17 maddeli üç boyutlu bir ölçektir.Ergül ve Temel tarafından ölçeğin Türkçe geçerlilik ve güvenirliği yapılmıştır.[28] Beşli likert tipli bir ölçek olup ölçekteki maddeler "1-Kesinlikle Katılmıyorum, 2- Katılmıyorum, 3- Kararsızım, 4- Katılıyorum ve 5- Tamamen Katılıyorum" şeklinde puanlanmaktadır "3., 4., 13. ve 16." Maddeler ise ters puanlanmaktadır. Ölçek puanlamasında kesme noktası bulunmamaktadır. Ölçek "maneviyat ve manevi bakım (6., 7., 8., 9., 11., 12., ve 14 maddeler)", "bireysel bakım (1., 2., 10. ve 15". maddeler)" ve "dinsellik (4., 5., 13. ve 16 maddeler)" alt boyutlarından oluşmaktadır. Ölçek üç boyutlu olmasına karşın değerlendirmede alt boyutları dikkate alınmamaktadır. Ölçekten alınabilecek en yüksek puan 69 olup puanın yüksek olması maneviyat ve manevi bakım algılarının pozitif yönde yüksek olduğunu göstermektedir. Ölçeğin Cronbach alfa değeri 0,76 olarak verilmiştir.[28] Çalışmamızda ölçeğin Cronbach alfa değeri 0,41 olarak bulundu.

Verilerin Değerlendirilmesi

Araştırma sonucunda elde edilen verilerin değerlendirilmesi bilgisayar ortamında SPSS 25 paket programında yapıldı. Değişkenlere ilişkin tanımlayıcı istatistikler sayı, yüzdeler, aritmetik ortalama ve standart sapma olarak verildi. Sayısal değişkenlerin (yaş, kullanılan ölçek genel ve alt boyut puanları) normallikleri Kolmogorov Smirnov testi ile kontrol edildi. Veriler Independent Samples t test, Mann Whitney U testi, ANOVA testi, Kruskall Wallis, Pearson Korelasyon Katsayısı kullanılarak değerlendirildi. kullanıldı. Elde edilen bulgular %95 güven aralığında, %5 anlamlılık düzeyinde değerlendirildi.

Araştırmanın Etik İlkeleri

Araştırma Van Yüzüncü yıl Üniversitesi Klinik Araştırmalar Etik Kurulu'ndan 15/05/2019 tarih 2019/05-01 sayı ile onay ve araştırmanın gerçekleştirildiği kurumdan yazılı izin alındı. Ayrıca araştırmaya katılan bireylerden de araştırmanın amacı açıklandıktan sonra sözlü onam alındı. Ölçeklerin geçerlik ve güvenirlik çalışmasını yapan yazarlarından yazılı izin alındı.

BULGULAR

Tablo 1'de araştırmaya dahil edilen hastaların sosyo-demografik ve hastalıkla ilgili bilgileri incelendi. Araştırmaya dahil edilen 125 hastanın %56'sı erkek ve yaş ortalaması 57,91±13,92 olarak saptandı. Eğitim durumları incelendiğinde; %48'i okur yazar değil iken %33,6'sının ilköğretim, %14,4'ünün lise ve %4'ünün ise üniversite ve üzeri olduğu görüldü.

Tablo 1. Hastaların Tanımlayıcı Özelliklerinin Dağılımı

		n	%
Cinsiyet	Kadın	55	44
	Erkek	70	56
Eğitim Durumu	Okur yazar değil	60	48
	İlköğretim	42	33,6
	Lise	18	14,4
	Üniversite ve üzeri	5	4
Medeni Durum	Evli	70	56
	Bekar	55	44
Çalışma Durumu	Çalışıyor	7	5,6
	Çalışmıyor	118	94,4
Biriyle Yaşama Durumu	Yalnız	38	30,4
	Eşim ile	65	52
	Akrabalarım ile	22	17,6
Sosyal destek Durumu	Evet	56	44,8
	Hayır	69	55,2
Ailede Başka Kanser Hastasının Olma Durumu	Evet	90	72
	Hayır	35	28
Klinik Tanı	Mide kanseri	33	26,4
	Kolon kanseri	20	16
	Akciğer kanseri	14	11,2
	Meme kanseri	11	8,8
	Lenf kanseri	9	7,2
	Pankreas kanseri	7	5,6
	Gırtlak kanseri	7	5,6
	Over kanseri	6	4,8
	Testis kanseri	6	4,8
	Cilt kanseri	6	4,8
	Prostat kanseri	3	2,4
	Rahim kanseri	3	2,4
Hastalık Süresi	0-6 ay	17	13,6
	7 ay-1 yıl	62	49,6
	2-5 yıl	44	35,2
	5 yıl ve üzeri	2	1,6
Farklı Kronik Hastalık Durumu	Evet	76	60,8
	Hayır	49	39,2
Farklı Kronik Hastalık	Diyabet	15	19,74
	Kr. Gastrit	16	21,05
	Hipertansiyon	28	36,84
	Astım	17	22,37
Yaş ortalaması (Ort ±SS)	57,91±13,92		

Tablo 2. incelendiğinde araştırmadaki hastaların MMBDÖ puan ortalamasının 66,54±4,90 olduğu görülmektedir. Araştırmadaki hastaların BUÖ puan ortalamasının ise 11,63±5,34 olduğu saptandı.

Tablo 2. Hastaların MMBDÖ ve BUÖ Puan Ortalamaları

	Ort.	SS	Min.	Maks.
BUÖ– Toplam	11.63	5.34	2.00	20.00
Gelecek ile ilgili duygular	3.26	1.89	0.00	5.00
Motivasyon kaybı	4.04	2.20	0.00	8.00
Gelecek ile ilgili beklentiler	3.47	1.46	0.00	5.00
MMBDÖ– Toplam	66.54	4.90	46.00	75.00

Araştırmaya katılan hastaların yaşı ile gelecek ile ilgili duygular puanı arasında anlamlı, doğrusal, aynı yönlü ve zayıf bir ilişki olduğu görüldü (r=0,183 ve p=0,041). Yaş ile BUÖ, motivasyon kaybı, gelecek ile ilgili beklentiler ve MMBDÖ puanları arasında istatistiksel olarak anlamlı bir ilişki bulunamadı (her biri için p>0,05).

Araştırmaya dahil edilen hastaların medeni durumlarına ve farklı bir kronik hastalığın olmasına göre gelecek ile ilgili duygular puan ortalamaları arasında istatistiksel olarak anlamlı fark olduğu tespit edildi; buna göre bekar hastaların ve farklı bir kronik hastalığı olanların gelecek ile ilgili duygular puan ortalaması anlamlı düzeyde yüksek bulundu. Ayrıca bireylerin kiminle yaşadıklarına göre gelecek ile ilgili duygular puan ortalamaları arasındaki farkın da anlamlı olduğu; bu farkın yalnız-eşim ile ikilisinden kaynaklandığı ve yalnız yaşayan bireylerin gelecek ile ilgili duygular puan ortalaması, eşi ile yaşayanlara göre daha yüksek olduğu görüldü. Yine araştırmaya dahil edilen bireylerin hastalık teşhis zamanı bakımından gelecek ile ilgili duygular puan ortalamaları incelendiğinde; 7 ay-1 yıl ve 2-5 yıl sürede teşhis konulan bireylerin gelecek ile ilgili duygular puan ortalaması, 0-6 ayda teşhis konulan bireylere göre anlamlı düzeyde yüksekti (**Tablo 3**, her biri için p<0,05).

Tablo 3. Hastaların Demografik ve Bazı Klinik Bilgileri Bakımından BUÖ Toplam ve Alt Boyut Puanlarının Karşılaştırılması.

		Gelecek ile ilgili duygular	p	Motivasyon kaybı	p	Gelecek ile ilgili beklentiler	p	BUÖ	p
Cinsiyet	Kadın	3,18±1,96	0,711	4,07±2,18	0,876	3,45±1,61	0,774	11,53±5,61	0,964
	Erkek	3,31±1,85		4,01±2,23		3,49±1,35		11,71±5,15	
Eğitim Durumu	Okur yazar değil	3,18±1,94	0,579	4,13±2,13	0,140	3,4±1,56	0,091	11,57±5,49	0,132
	İlköğretim	3,07±1,93		3,62±2,17		3,29±1,38		10,83±5,16	
	Lise	3,61±1,85		4,17±2,38		3,78±1,31		12,39±5,33	
	Üniversite ve üzeri	4,4±0,55		6±1,87		4,8±0,45		16,4±2,7	
Medeni Durum	Evli	2,89±1,86	0,006*	3,81±2,29	0,183	3,16±1,57	0,014*	10,69±5,54	0,032*
	Bekar	3,73±1,84		4,33±2,07		3,87±1,22		12,84±4,84	
Çalışma Durumu	Çalışıyor	3,57±1,9	0,744	4,29±2,69	0,790	3,71±1,6	0,595	12,57±6,24	0,587
	Çalışmıyor	3,24±1,9		4,03±2,18		3,46±1,46		11,58±5,3	
Biriyle Yaşama Durumu	Yalnız	3,84±1,78	0,044**	4,45±2,16	0,141	3,89±1,13	0,186	13,08±4,55	0,138
	Eşim ile	2,98±1,84		3,66±2,23		3,29±1,48		10,8±5,47	
	Akrabalarım ile	3,05±2,08		4,45±2,06		3,27±1,8		11,59±5,87	
Aile Tipi	Çekirdek	3,09±1,99	0,511	4,11±2,45	0,815	3,37±1,53	0,633	11,43±5,89	0,966
	Geniş	3,38±1,82		3,99±2		3,55±1,41		11,79±4,91	
Sosyal Destek Durumu	Evet	3,48±1,81	0,231	4,52±2,1	0,028*	3,73±1,47	0,044*	12,59±5,12	0,064
	Hayır	3,07±1,95		3,65±2,22		3,26±1,43		10,86±5,42	
Ailede Başka Kanser Hastasının Olma Durumu	Evet	3,44±1,88	0,054	4,09±2,14	0,683	3,68±1,34	0,026*	12,08±5,16	0,166
	Hayır	2,77±1,86		3,91±2,37		2,94±1,64		10,49±5,69	
Hastalık Süresi	0-6 ay	2,06±1,92	0,024**	3,41±2,58	0,101	3,12±1,45	0,215	9,06±5,63	0,042**
	7 ay-1 yıl	3,4±1,87		4,1±2,26		3,42±1,48		11,89±5,44	
	2-5 yıl	3,43±1,8		4,05±1,88		361±1,45		11,93±4,8	
	5 yıl ve üzeri	5±0		7,5±0,71		5±0		19±1,41	
Farklı Kronik Hastalık Durumu	Evet	3,75±1,71	0,001*	4,41±1,97	0,015*	3,84±1,29	0,001*	12,97±4,6	0,002*
	Hayır	2,49±1,92		3,47±2,42		2,9±1,54		9,55±5,76	
Farklı Kronik Hastalık	Diyabet	3,6±1,8	0,832	4,53±1,92	0,898	3,8±1,42	0,877	12,87±4,5	0,709
	Kr. gastrit	3,94±1,73		4,69±1,92		4±1,26		13,63±4,7	
	Hipertansiyon	4±1,39		4,36±2,08		3,89±1,2		13,36±4,32	
	Astım	3,29±2,11		4,12±2,03		3,65±1,41		11,82±5,22	

*. p<0,05 ve Mann Whitney U testi kullanıldı. ** Kruskall Wallis testi kullanıldı.

Araştırmaya dahil edilen hastalarda sosyal desteği olanların, farklı bir kronik hastalığı bulunanların motivasyon kaybı puan ortalamaları arasında istatistiksel olarak anlamlı fark olduğu tespit edildi. Katılımcılarından bekar olanların, sosyal desteği olan, farklı bir kronik hastalığı olan ve ailesinde başka kanser hastası olan hastaların gelecek ile ilgili beklentiler puan ortalaması anlamlı düzeyde daha yüksek olduğu saptandı (**Tablo 3**, her biri için p<0,05).

Araştırmaya katılan bekar olan ve farklı bir kronik hastalığı olan bireylerin BUÖ puan ortalaması anlamlı düzeyde daha yüksek olduğu saptandı. Aynı şekilde bireylerin hastalık teşhis zamanı bakımından BUÖ puan ortalamaları arasında istatistiksel olarak anlamlı fark olduğu; buna göre teşhis zamanı 5 yıl ve üzeri olan bireylerin BUÖ puan ortalaması, teşhis zamanı 0-6 ay, 7 ay-1 yıl ve 2-5 yıl olan bireylere göre daha yüksek olduğu tespit edildi (**Tablo 3**, her biri için p<0,05). Diğer karşılaştırmalar da ise istatistiksel olarak anlamlı bulgulara rastlanmadı (**Tablo 3**, her biri için p>0,05).

Katılımcılardan bekar olan, ailesinde başka kanser hastası olan ve farklı bir kronik hastalığı olan hastaların maneviyat ve manevi bakım dereceleme ölçeği-toplam puan ortalaması anlamlı düzeyde daha yüksek bulundu (**Tablo 4**, her biri için p<0,05). Diğer karşılaştırmalar incelendiğinde herhangi bir anlamlı farklılık bulunamadı (**Tablo 4**, her biri için p>0.05).

Araştırmaya dahil edilen hastaların maneviyat ve manevi bakım algılarıyla umutsuzluk düzeyleri arasında istatistiksel olarak anlamlı ve doğrusal bir ilişki olmadığı sonucuna varıldı (p>0,05).

Tablo 4. Hastaların Demografik ve Bazı Klinik Bilgileri Bakımından MMBDÖ Puanlarının Karşılaştırılması

		MMBDÖ Toplam	p
Cinsiyet	Kadın	66,71±4,54	0,850
	Erkek	66,4±5,2	
Eğitim durumu	Okuryazardeğil	67,13±4,82	0,455
	İlköğretim	66,57±3,74	
	Lise	64,5±6,9	
	Üniversiteveüzeri	66,4±5,81	
Medeni durum	Evli	65,79±4,87	0,016*
	Bekar	67,49±4,83	
Çalışma durumu	Çalışıyor	65,14±9,89	0,525
	Çalışmıyor	66,62±4,51	
Biriyle Yaşama Durumu	Yalnız	66,95±5,25	0,334
	Eşimile	66±5	
	Akrabalarımile	67,41±3,9	
	Geniş	67,41±3,99	
Sosyal Destek Durumu	Evet	66,77±4,81	0,645
	Hayır	66,35±5,01	
Ailede Başka Kanser Hastasının Olma Durumu	Evet	67,37±3,97	0,021*
	Hayır	64,4±6,33	
Hastalık Süresi	0-6ay	63,47±7,26	0,112
	7ay-1yıl	66,6±4,8	
	2-5yıl	67,45±3,41	
	5yılveüzeri	70,5±2,12	
Farklı Kronik Hastalık Durumu	Evet	67,43±4,35	0,009*
	Hayır	65,14±5,41	
Farklı Kronik Hastalık	Diyabet	67,27±3,61	0,839
	Kr,gastrit	66,75±5,73	
	Hipertansiyon	67,32±4,54	
	Astım	68,41±3,2	

*p<0,05 ve Mann Whitney U testi kullanıldı,

TARTIŞMA

Bu çalışma kanser hastalarında umutsuzluğun ve manevi bakım algısının incelenmesi amacıyla yapıldı. Çalışmada kanser hastaların BUÖ toplam puan ortalaması 11,63±5,34 olarak saptandı (**Tablo 2**). Bu çalışma sonucunda hastaların orta düzeyde umutsuzluğa sahip oldukları söylenebilir. Bu çalışmaya benzer şekilde Mystakidou ve ark.[29] (2008) ve Somasundaram ve ark.[30] (2016) palyatif bakım tedavisi alan kanser hastalarıyla yaptıkları çalışmada, hastaların BUÖ puan ortalamasını sırasıyla 9,93±7,38 ve 12,37±7,06 olarak saptamıştır. Bu çalışmanın aksine Tan ve Karabulutlu'un[31] (2005), Madani ve ark.[32] (2019) ve Nehir ve ark.[33] (2019) kanser hastalarıyla yaptığı çalışmada sırasıyla BUÖ puan ortalaması 6,5±3,6, 5,93±4,71 ve 8,20±6,72 olarak saptanmıştır. Yıldırım ve ark.[34] (2009) metastatik ve terminal dönem kanser hastalığı olmayan hastalarla yaptığı çalışmada da BUÖ puan ortalaması 5,20±4,39 olarak saptanmıştır. Bu çalışmada BUÖ puanının benzer çalışmalara göre yüksek olmasının sebebi örneklemde yer alan bireylerin yaş ortalamasının yüksek olmasından kaynaklı olabilir. Ayrıca hastalar yeterli sosyal destek aldıklarını ifade etmiş olmalarına rağmen; sosyal desteğin depresyon ve umutsuzluk gibi negatif duyguları azatlığı düşünülürse[35] hastaların aldıkları sosyal desteğin yetersiz olduğu söylenebilir. **Tablo 2**'de, gelecekle ilgili duyguların 3,26±1,89, motivasyon kaybının 4,04±2,20 ve gelecekle ilgili beklentiler puan ortalamasının 3,47±1,46 olduğu görülmektedir. Bizim çalışmamızın aksine Nehir ve ark.[33] (2019) kanser hastalarıyla yaptıkları çalışmada gelecekle ilgili duyguların 1,80±1,99, motivasyon kaybının 3,04±2,83 ve gelecekle ilgili beklentiler puan ortalamasının 2,67±1,77 olduğu saptanmıştır. Bu sonuçlara bakıldığında bu çalışmadaki hastaların daha umutsuz olduğu görülmektedir.

Bu çalışmada yaş ile "gelecek ile ilgili duygular" alt boyut puanı arasında anlamlı bir ilişki olduğu görüldü (r=0,183 ve p=0,041); ve buna göre bireylerin yaşı arttıkça gelecek ile ilgili duygularının da arttığı söylenebilir. Bu çalışma ile benzer şekilde Chan ve Li[36] (2002) yaşla birlikte umutsuzluğun artığını saptamıştır. Ancak bu çalışmanın aksine yapılan bazı çalışmalarda ise yaş ile BUÖ puanı arasında önemli negatif bir ilişki olduğu ve yaş artıkça umutsuzluğun azaldığı saptanmıştır.[37-39] Ayrıca çalışmamızda yaş ile BUÖ toplam puanı, "motivasyon kaybı" ve "gelecek ile ilgili beklentiler" alt boyut puan ortalaması arasında önemli bir ilişki olmadığı saptandı (**Tablo 2**; p>0,05). Bizim çalışmamıza benzer şekilde Yıldırım ve ark.[34] (2009) ve Öztunç ve ark.[35] (2013) yaptığı çalışmada da yaş ile BUÖ puanı arasında önemli bir fark bulunmamıştır.

Bu araştırmada medeni durum ile BUÖ toplam puanı, "gelecek ile ilgili duygular" ve "gelecek ile ilgili beklentiler" alt boyut puan ortalaması arasında önemli bir ilişki olduğu ve bekar bireylerin daha umutlu olduğu saptandı. Bu sonuca bekar hastaların aile sorumluluklarının ve gelecekle ilişkili kaygılarının daha az olması gibi durumlarından kaynaklanabileceği düşünülmektedir. Bu araştırmada yalnız yaşamayanların yalnız yaşayanlara göre "gelecek ile ilgili duygular" alt boyut puan ortalaması daha düşük bulunup daha fazla umutlu oldukları

saptandı. Bener ve ark.[39] (2017), Duggleby ve ark.[40] (2013) ve Rustoen ve Wiklund[41] (2000) çalışmasında da bu çalışma bulgusuna benzer sonuçlar saptanmıştır. Yapılan çalışmalarda sosyal desteğin kanser tanısı alan bireylerin umudu üzerinde önemli bir faktör olduğu ve sosyal destek ile umut arasında pozitif bir ilişki olduğu görülmüştür.[33,42,43] Ancak bu çalışmada sosyal desteği olanların olmayanlara göre daha fazla umutsuzluk içinde olduğu saptandı. Literatürün aksine bu çalışmada elde edilen bulgulara göre, sosyal desteklerinin yeterli düzeyde olmadığını göstermektedir.

Bu çalışmada ailesinde başka kanser hastasının olma durumu ile "gelecek ile ilgili beklentiler" alt boyut puan ortalaması arasında önemli bir ilişki olduğu ve ailesinde başka kanser hastası olan hastaların daha umutsuz olduğu saptandı. Bu bireyler ailesinde kanser vakasını ve sürecini yaşadıklarından dolayı geleceğe umutlu bakmayabilirler.

Bu araştırmada hastalık süresi ile BUÖ toplam puanı ve "gelecek ile ilgili beklentiler" alt boyut puan ortalaması arasında önemli bir ilişki olduğu ve hastalık süresi artıkça hastaların daha umutsuz olduğu saptandı. Gümüş ve ark.[44] (2011) yaptığı çalışmada, kronik hastalığın doğası olarak uzun süren tedavi süreci ve yan etkilerden dolayı hastalarda pozitif algılarda azalmaya ve umutsuzluğa sebep olduğu belirtilmektedir.Bu sonuç çalışmamızın bulgusunu destekler niteliktedir. Bizim çalışmamızın aksine Fadıloğlu ve ark.[35] (2006) meme kanserli hastalarla yaptığı çalışmada, Vellone ve ark.[45] (2006), Aslan ve ark.[46] (2007) Öztunç ve ark.[47] (2013) kanser hastalarıyla yaptıkları çalışmada hastalık süresi ile umutsuzluk arasında bir ilişki olmadığı bulunmuştur. Literatürde kanser hastalarının hastalık sürecinin her aşamasında çeşitli ve karmaşık davranışsal duygusal ve ruhsal tepkileri gösterebildikleri bulunmuştur.[48,49] Bu sonuç; çalışmadaki hastaların yaşadıkları bölgenin sosyokültürel yapısının farklı olmasından kaynaklı olabilir.

Çalışmada kanser hastalarında, başka bir kronik hastalığın olma durumuna göre BUÖ toplam puanı, gelecek ile ilgili duygular, motivasyon kaybı ve gelecek ile ilgili beklentiler alt boyut puan ortalaması daha yüksek bulunup hastaların daha umutsuz olduğu saptandı. Ercan'ın[50] (2016) yaptığı çalışmada farklı bir kronik hastalığın olma durumunun umutsuzluğu artırdığını bildirilmektedir. Farklı çalışmalarda da başka kronik hastalığı olan bireylerin motivasyon kayıplarının daha fazla olduğu tespit edilmiştir.[51,52] Birden fazla kronik hastalık durumunda, bireyler farklı semptomlarla baş etmek, farklı tedavileri sürdürmek ve fonksiyonel sınırlılıklar oluşturması nedeniyle kişilerde umutsuzluk, gelecek ile ilgili duygu ve beklentileri azalttığı ve motivasyon kaybı oluşturabileceği düşünülmektedir.

Çalışmada kanser hastaların MMBDÖ toplam puan ortalaması 66,54±4,90 olarak saptandı (**Tablo 2**). Hastaların yüksek düzeyde maneviyat ve manevi bakıma sahip oldukları söylenebilir. Doğan'ın[53] (2018) kronik hastalığı olmayan yaşlı bireylerle yaptığı çalışmada MMBDÖ toplam puan ortalaması 52,07±9,81 olduğu ve orta düzeyde maneviyat ve manevi bakım sergilendiği görülmektedir. Yazgan'ın[54] (2014) kanser hastası olan ve olmayan bireylerle yaptığı çalışmada; kanser hastası olan bireylerin dini tutumunun kanser hastası olmayan bireylerden daha olumlu olduğu bildirmiştir.Üstündağ'ın[55] (2013) kanser hastalarında yaptığı çalışmada; bireylerin %92,2'sinin şifa bulmak için kültürel ve dini uygulamalara başvurduğunu ifade etmiştir. Literatürde kanser hastalarının dini uygulamaları fazla kullandığını belirten farklı çalışmalar da yer almaktadır.[56,57] Daştan ve Buzlu'nun[19] (2010) meme kanserli hastalar üzerinde manevi bakımı tartıştıkları derlemelerinde, manevi bakımın kanser hastaları üzerinde yaşam kalitesini arttırıcı ve umut duygularını geliştirici etkisinin yüksek olduğu sonucuna varmışlardır.

Çalışmamızda bekar kanser hastaların maneviyat ve manevi bakım toplam puan ortalamasının evlilere göre daha yüksek olduğu belirlendi (**Tablo 4**, p:0,016). Bizim çalışmamızın aksine Doğan'ın[53] (2018) kronik hastalığı olmayan yaşlı bireylerle, Şahin ve Özdemir'in[58] (2016) hemşirelerle ve Jadidi ve ark.[59] (2015) yaşlı bireylerle yaptıkları çalışmada evli bireylerin maneviyat ve manevi bakım toplam puan ortalamasının bekarlara göre yüksek olduğu saptanmıştır. Bu sonuç; hastaların kendi dünya görüşü ve maneviyat ve manevi bakım kavramlarını yorumlarına bağlı subjektif bir kavram olmasıyla açıklanabilir.[28]

Çalışmamızda ailesinde başka kanser hastası olanların maneviyat ve manevi bakım toplam puan ortalamasının ailesinde başka kanser hastası olmayanlara göre daha yüksek olduğu belirlendi (**Tablo 4**, p:0,021). Yapılan bir çalışmada kanserli hastalara bakım verenlerin manevi duygularının kuvvetli olduğu gösterilmiştir.[60,61] Ailesinde kanser hastası olan bireylerin yaşamlarında oluşan olumsuzluklar ve artan stres ile baş etmek için manevi uygulamalara yöneldikleri böylece maneviyatlarının iyi düzeyde olduğu bildirilmiştir.[62] Ayrıca maneviyat, ölüm korkusu gibi büyük sorunlarla mücadele ederken bireylere yaşam umudu vererek ve hayattan anlam çıkarmalarına yardımcı olmakta; ölümün ve yaşamın sırrını anlama becerisi kazandırmaktadır.[53] Bu sonuç; bireylerin yakınlarının sağlık sorunlarından etkilendiği bundan dolayı manevi boyuta daha fazla önem verdikleri ve yakınlarının manevi gereksinimlerine duyarlı oldukları düşünülebilir.

Çalışmamızda başka bir kronik hastalığı olanların maneviyat ve manevi bakım toplam puan ortalamasının başka bir kronik hastalığı olmayanlara göre daha yüksek olduğu belirlendi (Tablo 4, p:0,009). Wallace ve O'Shea[63] (2007) maneviyatın kronik hastalıklarla başa çıkmaya yardımcı olduğunu ifade etmiştir. Modjarrad[64] (2004) maneviyatın, hastalıkları giderdiği ve zorluklarla baş etmeyi kolaylaştırdığını bildirmiştir. Grant[65] (2004) ise; maneviyatın bireylere iç huzur ve başa çıkma enerjisi verdiğini, kendini tanımayı kolaylaştırdığını ve fiziksel rahatlama sağlamaya yardımcı olduğunu vurgulamıştır. Bireylerin sahip oldukları dini inançları ve kültürel değerleri hastalık ile baş etme mekanizmasında kullandıkları söylenebilir.

Çalışmamızda kanser hastaların maneviyat ve manevi bakım algılarıyla umutsuzluk düzeyleri arasında istatistiksel olarak önemli bir ilişki olmadığı sonucuna varıldı (p>0,05). Bizim çalışmamızın aksine literatürde yapılan çalışmalarda maneviyat

ve umutsuzluk arasında ters bir ilişki olduğu yani maneviyat arttıkça umutsuzluğun azaldığı belirtilmektedir.[19,53,66-68] Bizim çalışmamızdaki bu farklılığın sebebi hastaların maneviyat ve manevi bakım algıları yüksek olsa da hastalıkla baş etme yöntemi olarak maneviyatı yeteri kadar kullanamamalarından ve bu konuda yeterli destek görmemelerinden kaynaklandığı ve buna bağlı umutsuzluk düzeylerinin yüksek olduğu söylenebilir. Literatürde akıl, beden ve ruh arasında uyumsuzluğun yaşandığı kriz zamanlarında, hemşirelerin bireyin kaygılarını dinleme, empati yapma gibi manevi bakım girişimlerinde bulunmasının hastaların ağrı ve anksiyetesini azalttığı,[69-71] fizyolojik, psikolojik ve mental rahatlığı ve iletişimi artırdığı, iyileşme sürecini olumlu etkilediği belirlenmiştir.[71,72] Bu nedenle hemşirelerin bireyin kendini güçlü hissetmesine, hastalıklarla ve getirdiği sorunlarla manevi baş etme stratejileri geliştirmesine ve bu stratejileri uygulamasına destek olması sağlanabilir.

SONUÇ

Sonuç olarak; Çalışmamızdaki kanser hastaların orta düzeyde umutsuzluğa sahip olduğu belirlendi. Hastaların medeni durumu, biriyle yaşama durumu, ailesinde başka kanser hastasının olma durumu, başka bir kronik hastalığın varlığı, teşhis edilme zamanı ve sosyal desteğin olma durumu ile umutsuzluk düzeyi arasında istatistiksel olarak önemli fark olduğu tespit edildi. Hastaların maneviyat ve manevi bakım algıların yüksek düzeyde olduğu bulundu. Ailesinde başka kanser hastasının olma durumu ve başka bir kronik hastalığın varlığı ile maneviyat ve manevi bakım düzeyi arasında istatistiksel olarak önemli fark olduğu tespit edildi. Ayrıca çalışmamızda hastaların maneviyat ve manevi bakım algılarıyla umutsuzluk düzeyleri arasında istatistiksel olarak önemli bir ilişki olmadığı saptandı.

Bu sonuçlar doğrultusunda,

- Bakım verilen bireylerin; maneviyat algısını etkileyen faktörler göz önünde bulundurması önerilmektedir.
- Hemşirelik girişimleri bireylerin maneviyatına gereken önemi verecek şekilde planlanmalıdır.
- Hemşirenin başkalarının manevi gereksinimlerini fark edebilmesi için, öncelikle kendi maneviyatını keşfetmesi gerektiği göz önüne alındığında bu konuda hizmet içi eğitimler verilerek bilgi, beceri ve yaklaşımlarının artırılması önerilebilir.
- Hastaların sosyal desteklerinin güçlendirilmesinin sağlanması önerilebilir.
- Çalışmanın daha geniş ve farklı örneklem gruplarıyla yapılması önerilebilir.

Araştırmanın Sınırlılıkları: Araştırma, Van ilinde onkoloji kliniğinde yatan hastalar ile sınırlıdır ve bu araştırmanın sonuçları çalışmada yer alan grubun dışındaki hastalara genellenemez.

ETİK BEYANLAR

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Emziren Annelerin Anne Sütü Saklama Koşullarına İlişkin Bilgi ve Tutumlarının Değerlendirilmesi

Evaluation of Knowledge and Attitudes of Breastfeeding Mothers About Storage Conditions of Breast Milk

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Öz

Amaç: Çalışma, emziren annelerin anne sütü saklama koşullarına ilişkin bilgi ve tutumlarının değerlendirilmesi amacıyla yapıldı.

Gereç ve Yöntem: Kesitsel ve tanımlayıcı tipte yapılan bu çalışmada Nisan-Temmuz 2019 tarihleri arasında 200 anne örnekleme alındı. Veriler, araştırmacılar tarafından anne sütü sağma ve saklama koşulları ile ilgili literatür bilgisine dayalı hazırlanan bir form aracılığı ile toplandı. Anne sütü saklama ile ilgili 25 sorunun altısı negatif ifade, 19'u pozitif ifade şeklinde oluşturuldu. Doğru cevaplar bir (1) puan, yanlış ve bilmiyorum cevapları sıfır (0) puan olarak kodlandı ve 0-25 arasında doğru cevap sayıları elde edildi. İstatistiksel analizde sayı, yüzde ve ortalamanın yanısıra Mann Whitney U testi ve Kruskal Wallis Varyans analizi kullanıldı.

Bulgular: Çalışmaya katılan emziren annelerin %76'sı sütün oda havasında üç saat, %74'ü buzdolabında üç gün, %71.5'i ise derin dondurucuda üç ay saklanabileceğini ifade etti. Emziren annelerin %54'ü sağılan sütün cam kaplarda, %74'ü süt saklama poşetlerinde, %25'i çelik kaplarda, %34'ü ise sert plastik kaplarda saklanabileceğini belirtti. Annelerin %97'si süt saklama kaplarına tarih ve saat yazılması gerektiğini, %70'ii çözündürülen anne sütünün ılık su dolu bir kapta ısıtılması gerektiğini, %95'i kullanılan kabın temizliğinin kaynar su ile yapılması gerektiğini, %44.5'i kullanılan kabın temizliğinin bulaşık makinasında yapılabileceğini bildirdi.

Sonuç: Annelerin çoğunluğu, sağılan anne sütünü uygun saklama koşullarına yönelik soruları doğru cevaplasa da bazı annelerin saklama yeri, süresi, saklama kaplarının seçimi, temizliği ve dondurulan sütün çözdürülmesi gibi pek çok aşamada, sütün saklanmasına yönelik hatalı uygulamalar yaptığı saptandı. Annelere sütün saklanmasına yönelik doğru uygulamaların yapılmasında sağlık personeline önemli görevler düşmektedir.

Anahtar Sözcükler: Anne sütü, emzirme, saklama

Abstract

Aim: The cross-sectional and descriptive study was conducted in order to evaluate the knowledge and attitudes of breastfeeding mothers about breast milk storage conditions.

Material and Method: Between April and July 2019, 200 mothers were included in the study. Data were collected by researchers using a form prepared based on the literature knowledge on breast milking and storage conditions. Of the 25 questions related to breast milk storage, six were formed as negative expression and 19 as positive expressions. Correct answers were coded as one (1) point, wrong and I do not know answers were coded as zero (0) points and correct answer numbers between 0-25 was obtained. In the statistical analysis, the Mann Whitney U test and Kruskal Wallis variance analysis were used as well as number, percentage, and average.

Results: 76% of breastfeeding mothers who participated in the study stated that milk could be stored for three hours in the room air, 74% for three days in the refrigerator and 71.5% for three months in the freezer. Fifty four percent of breastfeeding mothers stated that milk could be stored in glass containers, 74% in milk storage bags, 25% in steel containers and 34% in hard plastic containers. Ninety seven percent of the mothers stated that date and time should be written in milk storage containers, 70% of them should be heated in a container filled with warm water, 95% should be cleaned with boiling water, 44.5% should be cleaned with dishwashing machine.

Conclusion: Although the majority of the mothers who participated in the study answered the questions about the proper storage conditions of the breast milk, some mothers made faulty practices for the storage of milk in many stages such as storage location, duration, selection of storage containers, cleaning and thawing of frozen milk. Health personnel has important duties in making the right practices for the storage of milk for mothers.

Keywords: breast milk, breastfeeding, preservation

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GIRIŞ

Yeni doğan bebeğin büyüme ve gelişmesi için besleyicilik ve immünolojik içeriği bakımından en önemli besin kaynağı anne sütüdür. Birleşmiş Milletler Çocuklara Yardım Fonu (UNICEF) bebeklerin doğumdan sonra ilk altı ay süresince sadece anne sütü almasını ve iki yaşına kadar emzirmeye devam edilmesini önermektedir.[1] Dünya Sağlık Örgütü (DSÖ) 2025 yılına kadar bütün dünyada emzirmenin iyileştirilmesini desteklemektedir. Buna karşın dünya genelindeki bebeklerin yalnızca %38'i ilk altı ay boyunca sadece anne sütü ile beslenmektedir.[2] Türkiye Nüfus ve Sağlık Araştırmaları (TNSA) 2018 verilerine bakıldığında ise altı aydan küçük çocukların %41'i anne sütü ile beslenmiştir.[3]

Annelerin bebeğini emzirerek taze süt vermesi ideal olan ve tavsiye edilendir. Fakat anne ya da bebekten kaynaklı nedenlerden dolayı bebeklerin emzirilmesi bazen mümkün olamaz.[4] Örneğin çalışan annelerin birçoğu doğum sonrası ilk 4-6 ay içinde işine başlamak zorunda kalmaktadır.[5,6] Bebeğin prematüre olması, zayıf emme refleksi veya emme refleksinin olmaması ya da bebeğin yoğun bakımda olması gibi nedenlerle anne bebeğini emziremez.[7]

Annenin bebeğinden uzak kaldığı bu gibi durumlarda, anne sütünün uygun koşullarda saklanması gerekir.[8] Sütün immünolojik içeriğini kaybetmemesi, besleyiciliği ve sütte mikroorganizma gelişiminin önlenmesi bakımından sağılan anne sütünün uygun şartlarda saklanması oldukça önemlidir. Bu yüzden emziren annelerin sütlerini hangi kaplarda sakladığı, saklama kaplarının hijyenini nasıl sağladığı ve saklanan sütü hangi yöntemlerle çözündürdüğü bebeğin sağılan sütün yararından tam olarak faydalanabilmesi adına oldukça önemlidir.[9]

Emzirme Tıp Akademisi (Academy of Breastfeeding Medicine [ABM])'nin klinik protokolüne göre sağılan anne sütü; oda sıcaklığında 3-4 saat, buzdolabında 72 saat, derin dondurucularda ise altı ay güvenle saklanabilir.[9] Ülkemizde Sağlık Bakanlığı, oda sıcaklığında üç saat, buzdolabında üç gün, derin dondurucularda ise üç ay güvenle saklanabileceğini önermektedir.[10]

Anne sütünün içeriğindeki değişiklikler sütün sağılmasıyla birlikte başlar. Sağılan süt üzerinde saklanma ısısı, buzdolabı ve dondurucu veya sterilizasyon gibi etkenlerin hepsinin değişik etkileri vardır. Eritme ve ısıtma için mikro dalganın veya aktif olarak ısıtmanın etkileri de farklı olabilir. Saklanan sütte bir kontaminasyonun olması veya zararlı mikroorganizmaların üremesi, anne sütünün saklanmasıyla ilgili en büyük korkudur.[11] Laktoperoksidaz ve lizozim gibi önemli süt enzimlerinin bakteriyostatik etkileri vardır. Bu savunma faktörlerinin önemi ise anne sütü ve mama ile beslenen bebeklerin mortalite ve morbidite oranlarının karşılaştırılmasıyla gösterilmiştir. Bebekler için bu faktörlerin varlığı ve koruyuculuk etkileri sütün saklanma şekliyle ilişkilidir.[5]

Anne sütünün saklanma koşullarına ilişkin literatürde birçok çalışma bulunmaktadır. Tayvan'daki bir araştırmada 14 sağlıklı emziren anneden anne sütü örneği alınmıştır. Sekretuar immunoglobulin A, lizozim, laktoferrin ve leptin düzeyleri 40 ºC ve 60 ºC'de 30 dakika ısıtmadan sonra proteinlerdeki değişiklikler gözlemlenmiştir. Belirtilen dereceye kadar ısıtmak sekretuar immunoglobulin ve A laktoferrin içeriğinde bir değişiklik yapmazken, lizozom oranını arttırmıştır. Leptin düzeylerinde ise bir değişiklik gözlenmemiştir.[12] Başka bir çalışmadaysa 18 sağlıklı emziren anneden 42 süt örneği toplanmış ve dokuz farklı saklama kabında saklanmıştır. İki gün boyunca -20 ºC'de dondurulan süt örnekleri çözdürülüp yeniden incelenmiştir. Depolama, dondurma ve çözdürme işlemlerinden sonra yağ içeriklerinde anlamlı bir azalış, karbonhidrat ve protein içeriklerindeyse anlamlı bir artış olmuştur.[13]

Literatürde anne sütünün saklanmasının güvenli olduğu belirtilmektedir. Bu araştırmanın anne sütünün saklanmasına yönelik doğru veya yanlış uygulamaların belirlenmesinde önem taşıyacağı düşünülmektedir. Ülkemizde ise bu konuya yönelik yapılmış birkaç çalışma olmakla beraber sayısı azdır. Bu nedenle çalışma, emziren annelerin anne sütü saklama koşullarına ilişkin bilgi ve tutumlarını değerlendirmek amacıyla yapılmıştır.

GEREÇ VE YÖNTEM

Tanımlayıcı ve kesitsel olan çalışmanın evrenini İstanbul'da Anadolu yakasında bir aile sağlığı merkezine kontrol amacı ile gelen, ayrıca Avrupa ve Anadolu yakasında iki Eğitim ve Araştırma Hastanesinin Kadın Doğum Kliniğinde yatan ve doğum yapmış anneler oluşturdu. Çalışmaya olasılıksız gelişigüzel örnekleme yöntemi ile 1 Nisan-31 Temmuz 2018 tarihleri arasında 200 anne alındı.

Verilerin toplanması: Veriler, literatür bilgisine dayalı[6,8,9,11,12,14,15] araştırmacılar tarafından oluşturulan 25 soruluk bir anket formu ile toplandı. Anne sütü saklama koşulları ile ilgili sorulardan altısı negatif ifade, 19'u pozitif ifadeden oluştu. Doğru cevaplar bir (1) puan, yanlış ve bilmiyorum cevapları sıfır (0) puan olarak kodlandı ve doğru cevap sayıları 0-25arasında değerlendirildi. Çalışmaya; 18 yaş ve üzeri, bebeğini anne sütü ile besleyen, iletişimi güçleştirecek bir engeli bulunmayan, çalışmaya katılmaya gönüllü, anne sütünü sağmak ve saklamak durumunda olan anneler alındı.

Çalışmanın Etik Yönü

Çalışmaya başlanmadan önce, Çalışma için Bakırköy Dr. Sadi Konuk Eğitim ve Araştırma Hastanesi Klinik Araştırlamlar Etik Kurulundan 16.04.2018 tarihli 2018-07 sayılı etik kurul onayı alınmıştır. Tüm katılımcılar çalışmanın amacı ve çalışmaya katılmanın tamamen gönüllüğe bağlı olduğu konusunda bilgilendirildi, sözlü ve yazılı onamları alındı. Tüm annelere anketler doldurulduktan sonra, anne sütünü saklama koşulları hakkında bilgi verildi.

Verilerin istatistiksel analizi

Çalışmada elde edilen verilerin analizinde SPSS (Statistical Package for social Sciences) for Windows 23.0 programında sayı, yüzde, ortalamanın yanı sıra Mann Whitney U testi ve Kruskal Wallis Varyans analizi kullanıldı. Sonuçlar %95 güven aralığında ve 0,05 anlamlılık düzeyinde değerlendirildi.

BULGULAR

Annelerin yaş ortalaması 28,66±5,22, %45'i lise mezunu, %17,5'inin çalıştığı, %50,5'inin aylık gelirinin 2001-4000 TL arasında olduğu saptandı. Çalışmaya katılan annelerin sosyo-demografik özellikleri **Tablo 1**'de yer almaktadır.

Tablo 1. Annelerin demografik özellikleri

	Ort±SD medyan (Min-Max)	n	%
Yaş	28,66±5,22 - 28 (18-43)		
Çocuk sayısı	1,87±0,86 - 2 (1-6)		
Eğitim durumu			
Okuryazar		6	3,0
İlkokul		37	18,5
Ortaokul		36	18,0
Lise		90	45,0
Üniversite ve üzeri		31	15,5
Çalışma durumu			
Çalışıyor		35	17,5
Çalışmıyor		165	82,5
Gelir durumu			
2000 TL altı		59	29,5
2001-4000 TL arası		101	50,5
4001 TL ve üzeri		40	20,0
Sağlık güvencesi			
SGK		147	73,5
Yeşil kart		44	22,0
Özel sigorta		2	1,0
Ücretli		7	3,5
Sigara kullanımı			
Evet		51	25,5
Hayır		130	65,0
Bırakmış		19	9,5
Kronik bir hastalık			
Yok		165	82,5
Var (Yüksek Tansiyon, şeker hastalığı, kalp hastalığı vs.)		35	17,5

Anne sütünü saklama ve sağma koşullarıyla ilgili bilgisi olanların oranı %67,5'dir. Annelerin %47,5'i bu konuda eğitim aldıklarını, %69,6'sı bilgi kaynağının hemşire/ebe olduğunu belirttiler (**Tablo 2**). Anne sütü saklama ve sağma ile ilgili ifadelere verilen yanıtlar incelendiğinde en fazla oranda doğru yanıtlanan "Anne sütü sağılmadan önce eller yıkanmalıdır (%97,5)", "Anne sütünü saklama kaplarına mutlaka tarih ve saatin yazılması gerekir (%97)" ve "Isıtılan anne sütünün sıcaklığı el bileğinin iç kısmına birkaç damla süt damlatılarak kontrol edilir (%95,5)" ifadeleridir. "Buzluktan çıkarılan süt, buzdolabında çözdürülmelidir (%20,5)" ifadesi en az bilinen cevaplar arasında yer almıştır (**Tablo 3**).

Tablo 2. Anne sütü saklama ve sağma ile ilgili bilgiler

Özellikler	n	%
Anne sütünü saklama koşullarıyla ilgili eğitim alan	95	47,5
Anne sütünü saklama koşullarıyla ilgili eğitim almayan	105	52,5
Anne sütünü saklama ve sağma koşullarıyla ilgili bilgisi olan	135	67,5
Anne sütünü saklama ve sağma koşullarıyla ilgili bilgisi olmayan	65	32,5
Anne sütünü saklama ve sağma koşullarıyla ilgili bilgi kaynağı* (n=135)		
Hemşire-Ebe	94	69,6
Televizyon	6	4,4
Kitaplar	7	5,2
İnternet	24	17,8
Diğer:	4	3,0

*Yüzdeler n üzerinden alınmıştır.

Anne sütünü saklama ve sağma koşullarıyla ilgili ifadelere verilen doğru cevap sayılarının, eğitimi üniversite ve lisansüstü olanlarda, ilkokul ve lise mezunu olanlardan istatistiksel olarak anlamlı oranda yüksek olduğu saptandı (Kw=19,890). Ayrıca geliri 4000 TL ve üzeri olanların doğru cevap sayıları da istatistiksel olarak anlamlı oranda daha yüksekti (Kw=19,771) (**Tablo 4**).

Tablo 4. Sosyo-demografik özellikler ve anne sütü saklama koşulları ile ilgili bilgilerin değerlendirilmesi

	Ort±Ss	
Eğitim durumu		
Okuryazar	13,00±3,94	19,890 P=0,001 K w
İlkokul	13,27±4,57	
Ortaokul	14,58±3,61	
Lise	13,78±4,58	
Üniversite ve üzeri	17,29±2,20	
Çalışma durumu		
Çalışan	14,82±4,32	Mu=2636,0 P= 0,417
Çalışmayan	14,25±4,28	
Gelir durumu		
2000 TL altı	13,81±4,64	19,771 Kw 0,000
2001-4000 TL arası	13,61±4,23	
4001 TL ve üzeri	17,02±2,54	
Anne sütünü saklama ve sağma koşullarıyla ilgili eğitim		
Alan	16,64±2,87	Mu=2118,50 P=0,000
Almayan	12,28±4,30	
Anne sütünü saklama ve sağma koşullarıyla ilgili bilgisi		
Var	16,52±2,90	Mu=567,00 P=0,000
Yok	9,84±2,98	

Tablo 3. Annelerin anne sütü saklama ve sağma ile ilgili ifadelere verilen yanıtlar

İfadeler	Doğru cevaplar s (%)	Yanlış cevaplar s (%)	Bilmiyor s (%)
1. Anne sütü sağılmadan önce eller yıkanmalıdır.	**195 (97,5)**	0 (0)	5 (2,5)
2. Anne sütü ocakta ısıtılmaz.	**157 (78,5)**	29 (14,5)	14 (7,0)
3. Anne sütü mikrodalga fırında ısıtılabilir.	59 (29,5)	**112 (56,0)**	29 (14,5)
4. Buzluktan çıkarılıp çözündürülen süt24 saat içinde kullanılmalıdır.	**104 (52,0)**	32 (16,0)	29 (14,5)
5. Çözündürülen anne sütü bir kabın içine koyulan ılık suyun içinde ısıtılmalıdır.	**140 (70,0)**	25 (12,5)	35 (17,5)
6. Anne sütü oda sıcaklığında 3 saat saklanabilir.	**152 (76,0)**	8 (4,0)	40 (20,0)
7. Anne sütü buzdolabında sadece 3 gün saklanabilir.	**148 (74,0)**	8 (4,0)	44 (22,0)
8. Anne sütü derin dondurucuda 3 aydan fazla saklanamaz	**143 (71,5)**	11 (5,5)	46 (23,0)
9. Buzdolabının veya derin dondurucunun orta rafında ve arka tarafta saklanmalıdır.	**91 (45,5)**	50 (25,0)	59 (29,5)
10. Anne sütü ısıtıldıktan sonra yeniden dondurulabilir.	19 (9,5)	**162 (81,0)**	19 (9,5)
11. Anne sütü ısıtıldıktan sonra yeniden buzdolabına konmamalıdır.	**157 (78,5)**	23 (11,5)	20 (10,0)
12. Anne sütünün cam kaplarda saklanması gerekir.	**108 (54,0)**	42 (21,0)	50 (25,0)
13. Anne sütünü saklamak için üretilen süt saklama poşetlerini kullanmak gerekir.	**188 (94,0)**	5 (2,5)	7 (3,5)
14. Anne sütünün çelik kaplarda saklanması son derece güvenilirdir.	50 (25,0)	**94 (47,0)**	56 (28,0)
15. Anne sütünü saklamak için üretilen sert plastik kapları kullanılabilir.	74 (37,0)	**94 (47,0)**	32 (16,0)
16. Anne sütü plastik pet şişelerde saklanabilir.	5 (2,5)	**160 (80,0)**	35 (17,5)
17. Anne sütünü saklama kaplarına mutlaka tarih ve saatin yazılması gerekir.	**194 (97,0)**	2 (1,0)	4 (2,0)
18. Saklama kaplarının mutlaka kaynar suyla yıkanması gerekir.	**190 (95,0)**	5 (2,5)	5 (2,5)
19. Saklama kabı bulaşık makinesinde yıkanabilir.	**89 (44,5)**	60 (30,0)	51 (25,5)
20.Saklanan sütü buzdolabındaki en eski sütten başlayarak kullanmak gerekir.	**136 (68,0)**	15 (7,5)	49 (24,5)
21.Isıtılan anne sütünün sıcaklığı el bileğinin iç kısmına birkaç damla süt damlatılarak kontrol edilir.	**191 (95,5)**	5 (2,5)	4 (2,0)
22.Süt ısıtılıp bebek beslendikten sonra artan süt bir sonraki beslenmede ısıtılıp yeniden verilebilir.	13 (6,5)	**109 (54,5)**	78 (39,0)
23.Dondurucudan çıkarıp çözdürülen süte yeni sağılan süt eklenebilir.	13 (6,5)	**116 (58,0)**	71 (35,5)
24.Anne sütünün saklandığı kaplar ağzına kadar doldurulmamalıdır.	**101 (50,5)**	47 (23,5)	52 (26,0)
25.Buzluktan çıkarılan süt, buzdolabında çözündürülmelidir.	**41 (20,5)**	65 (32,5)	94 (47,0)

Koyu yazılı rakamlar doğru cevaplardır.

TARTIŞMA

Emziren annelerin anne sütü saklama koşullarına ilişkin bilgi ve tutumlarını değerlendirmek amacıyla yapılan bu çalışmaya toplam 200 anne katıldı. Çalışma sonuçlarına bakıldığında kadınların %70'inden fazlasının anne sütünün oda sıcaklığında üç saat, buzdolabında üç gün, derin dondurucuda ise üç ay saklanabileceğini ifade ettiği görülmektedir. Literatürde de anne sütünün oda sıcaklığında (10–29 ºC) 3-4 saat, derin dondurucuda (<-17 ºC) 3 ay, buzdolabında (≤4 ºC) 3 gün güvenle saklanabildiği ayrıca son derece temiz koşullarda derin dondurucuda en fazla 12 ay, buzdolabında ise en fazla 5-8 gün saklanabileceği bildirilmektedir.[9] Lawrence'ın[16] yapmış olduğu bir çalışmada, annelerin büyük bir çoğunluğu sağılan anne sütünün 72 saate kadar buzdolabında saklandığını belirtmişlerdir. İngiltere'de yapılan başka bir araştırma ise annelerin büyük bir çoğunluğu sütün buzdolabında ve derin dondurucuda saklanması için önerilen süreyi doğru olarak yanıtlamıştır.[17] Çalışmanın sonucu literatür ile uyumlu olup, çalışmamıza katılan kadınların yaklaşık %73,8'i anne sütünün oda sıcaklığında nasıl saklanacağı konusunda bilgi sahibidir. Az sayıda annenin ise bilgilerinin yetersiz olduğu saptanmıştır. Örneklem grubundaki annelerin eğitim düzeylerinin çoğunlukla lise ve yükseköğretim düzeyinde olmasının bu sonuca etkisi olabilir.

Anne sütünün, derin dondurucu veya buzdolabının arka tarafında ya da orta rafında saklanması gerekmektedir.[15] Çalışmamızda annelerin yaklaşık üçte birinin anne sütünün buzdolabı veya derin dondurucunun orta rafında ya da rafın arka tarafında saklanması gerektiğini bilmediği, %25'inin ise yanlış bildiği saptanmıştır. Sağılan anne sütünün buzdolabının neresinde saklanması gerektiğine ilişkin annelerin bilgi düzeylerinin yeterli olmadığı görülmektedir. Sütün buzdolabının kapağında ya da ön bölümlerinde saklanması, daha yüksek ısıda kalmasına ve daha çabuk bozulmasına neden olduğu için yanlış bir uygulamadır.[8] Annelerin bu konuda bilgilendirilmesi çok önemlidir.

Sağılan anne sütünün hangi kaplarda saklanması gerektiğiyse diğer bir önemli konudur. Anne sütünün saklanmasında en çok cam kapların kullanılması önerilmektedir.[18] Fakat literatüre bakıldığında son dönemlerde anne sütünün saklanmasında

plastik ürünlerin de kullanılabileceği belirtilmektedir. Polietilen süt saklama poşetleri ve polipropilen süt saklama kapları anneler tarafından daha çok tercih edilmektedir.[19] Sert kaplarda sızıntı ve dökülme, plastik süt saklama poşetlerine göre daha az olmaktadır. Ayrıca sütün içeriğindeki bazı maddeler yumuşak plastikle etkileşime girerek sütün immünolojik içeriğinde bozulmaya sebep olduğu için uzun süreli saklamalarda plastik süt saklama poşetleri için önerilmemektedir. Bu poşetler, anne sütünün daha kısa süreli (72 saatten daha az) saklanmasında kullanılması tavsiye edilmektedir.[20] Çalışmamızda anne sütünün saklanmasında plastik süt saklama poşetlerinin, cam kaplara ve sert plastik kaplara göre daha fazla tercih edildiği görülmüştür. Bunun yanı sıra anne sütünün çelik kaplarda ve pet şişelerde de saklanabileceğini ifade eden anneler olmuştur. Fakat bu kaplar sütün immünolojik içeriğini bozabileceği için saklamak için uygun değildir. Plastik gıda kaplarında yer alabilen sağlığı tehdit edici kimyasallar endokrin fonksiyonlara zarar verebilir ve gelişim bozukluklarına yol açabilir.[18] Plastik gıda kaplarında sağlığı tehdit bazı eden maddeler; vinil klorür, 1,3-butadien, formaldehit, melamin, di-2-etilhekzil ftalat, stiren ve bisfenol A'dır. Bu tehlikeli maddelerin gıdalara geçişi, plastiğin kimyasal özelliğine depolama ısısına ve saklama süresi gibi faktörlere göre değişebilir.[18] Takci ve arkadaşlarının yaptığı bir çalışmada (2013) anne sütünün buzdolabında kısa süreli saklanmasında (48 saat) polipropilen kapların polietilen süt saklama poşetlerine göre E.Coli'ye karşı bakterileri yok etme aktivitesinin daha çok olduğunu saptamışlardır.[19] Bir başka çalışmada ise anne sütü buzdolabında (4 ºC) saklandıktan sonra çelik saklama kaplarında cam saklama kaplarına göre sütün içeriğinde daha az sayıda fonksiyonel hücre olduğu gözlemlenmiştir.[21] Yeni yapılan bir araştırmada anne sütünü dondurma sonrasında sert plastik kaplarla yumuşak plastik kaplar arasında yağ içeriğinin kaybı bakımından anlamlı bir farklılık bulunmamıştır. Araştırmacılar, anne sütünün 30 güne kadar saklanmasında, yumuşak plastiklerin yağ kaybı ya da kontaminasyon gibi sağlığı tehdit eden etkiler olmadan sert plastik kapların yerine kullanılabileceğini bildirmiştir.[22]

Bu çalışmada annelerin %97'si süt saklama kaplarına tarih ve saat yazılması gerektiğini belirtmiştir. Bir başka çalışmada ise annelerin %42,9'u kaplara tarih ve saat yazmadığını bildirmiştir.[7] Süt saklama süresinin geçmemesi için kapların üzerine mutlaka tarih ve saat yazılmalıdır.[8] Çalışmanın sonucuna bakıldığında annelerin %95'i saklama kaplarının temizliğinin kaynar su ile yapılması gerektiğini, %44,5'i ise bulaşık makinasında yıkanması gerektiğini bildirmiştir. Saklama kaplarının temizliği açısından her iki uygulamada güvenlidir ve çalışmaya katılan annelerin çoğunun bu konuda bilgi sahibi olduğu görülmektedir. Bunun yanı sıra annelerin yaklaşık %30 u ise saklama kabının bulaşık makinesinde yıkanmasının yanlış olduğunu belirtmiştir. Bulaşık makineleri, sıcak suyla yeterli temizliği sağlayabildiğinden güvenle kullanılabilir. Bulaşık makinesinin kullanılmadığı durumlarda kapların yıkandıktan sonra mutlaka kaynatılması gerekmektedir. Emzirme Tıp Akademisi 'nin klinik protokolüne göre saklama kapları sıcak sabunlu suyla yıkanıp durulanmalı ve sonrasında kaynatılmalıdır.[9]

Saklanan anne sütü kaynatılmamalı ve mikrodalgada kesinlikle çözdürülmemelidir. Çünkü mikrodalga fırın ya da sütü kaynatma, sütün immünolojik içeriğine zarar verir. Dondurulmuş anne sütünü çözmenin en güvenli yolu sütü bir gece önceden buzdolabının rafına koymaktır. Buzdolabından çıkarılan anne sütü ise akan ılık suyun altına tutularak veya ılık su dolu bir kabın içine oturtularak ısıtılabilir (benmari). Çözdürülüp ısıtılan anne sütü ise yeniden dondurulmamalıdır.[9] Çalışmada annelerin büyük çoğunluğu dondurulmuş anne sütünün mikrodalga veya ocakta ısıtılmasının hatalı bir uygulama olduğunu bildirmiştir. Az sayıda anne ise dondurulmuş anne sütünün ısıtılmasında ocak veya mikrodalga fırının kullanılabileceğini ifade etmiştir. Annelerin %47'si ise dondurulmuş sütün buzdolabında çözdürülmesi gerektiğini bilmediğini belirtmiştir. Yapılan başka bir çalışmada dondurulan anne sütünün uygun şekilde ısıtılmasında doğru uygulama yapan annelerin oranı (%97,4) yanlış uygulama yapanların oranına (%2,6) göre daha fazladır.[8] Labiner-Wolf ve Fein[17] çalışmalarında, dondurulmuş sütü çözündürmede annelerin mikrodalga fırını kullandıkları saptanmıştır. Dondurulmuş anne sütünü ısıtmada yapılan hatalı uygulamalar sütün yapısında bozulmaya ve sütte bakteri üremesine neden olur. Bu da bebeğin sağlığını olumsuz yönde etkiler. Bundan dolayı hatalı uygulamalara yönelik girişimlerin önüne geçmek için anneleri bilgilendirme aşamasında ebe ve hemşirelere önemli görevler düşmektedir.

Beslenme sonrasında kalan sütün kullanılmaması önerilmektedir.[23] Bu çalışmada annelerin %54,5'i beslenmeden sonra artan sütün yeniden kullanılmayacağını, %39'u ise bilmediğini ifade etmiştir. Yine çalışmada annelerin %52'si buzluktan çıkarılıp çözdürülüp buzdolabında saklanan sütün 24 saat içinde kullanılması gerektiğini söylemiştir. Sağlık bakanlığı anne sütü sağma ve saklama rehberinde; uygun koşullarda çözdürülen sütün buzdolabında 24 saat saklanabileceği ve beslenme sonrası artan sütün bir daha kullanılmaması gerektiği bildirilmektedir.[10] Saklanan anne sütünün çözdürülüp ısıtılma işlemi bebeğin sağlığı açısından oldukça önemli bir konudur. Uygun koşullarda çözdürülmeyen ve ısıtılmayan anne sütünün besleyicilik değeri azalır, immünolojik özellikleri kaybolur ve mikroorganizmalar üreyebilir. Ebe ve hemşirelerin bu konuya dikkat çekmesi ve anne sütünü doğru ısıtma-çözdürme teknikleri açısından anneleri bilgilendirmesi oldukça önemlidir.

Çalışmada annelerin %68'i saklanan sütün kullanımında en eski sütten başlayarak kullanılması gerektiğini bildirmiştir. Türkiye Neonatoloji Derneği Sağlıklı Term Bebeğin Beslenmesi Rehberinde (2018) saklanan anne sütünün buzdolabındaki en eski tarihli sütten başlanarak kullanılması gerektiği tavsiye edilmektedir.[15] Çalışmamızın sonucunda annelerin %68'inin bu konuda bilgili olduğu görülmektedir. Bu önemli bir uygulamadır ve annelerin bu konuda bilgili olması sevindiricidir.

Çalışmada, üniversite mezunu olanların anne sütü saklama koşullarını içeren soruları istatistiksel olarak anlamlı oranda daha fazla bildikleri saptanmıştır. Ayrıca, gelir durumu yüksek olanların ve anne sütü saklama ve sağma koşullarıyla ilgili eğitim alanların doğru cevap sayılarının istatistiksel olarak anlamlı oranda daha yüksek olduğu belirlenmiştir. Çakmak ve Dengi'nin çalışmasında da gelir düzeyi yüksek ve çalışan annelerin anne sütünü saklama ve emzirme konusundaki bilgi düzeylerinin yüksek olduğu saptanmıştır.[24] Eğitim seviyesi ve gelir düzeyi arttıkça araştırmanın ve bilgiye erişimin de daha fazla olduğu düşünülmektedir.

SONUÇ

Araştırmaya katılan annelerin çoğunluğu, sağılan anne sütünün uygun şartlarda saklama koşullarını bilmektedir. Bununla birlikte, sütün saklanma süresi, nerede saklanacağı, saklama kaplarının seçimi, temizliği ve dondurulmuş sütün çözdürülmesi gibi pek çok aşamada annelerin hatalı uygulamalar yaptığı saptanmıştır. Gebelere ve emziren annelere özellikle anne sütünü saklama koşullarına yönelik eğitimlerin ve kitapçıkların verilmesi yararlı olabilir. Ayrıca kurumlarda anne sütü ile beslenmeye yönelik hizmet içi programların sürekli olması ve hemşire ve ebelerin bu programlara katılımının desteklenmesi hatalı uygulamaları azaltabilir.

ETİK BEYANLAR

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Aydınlatılmış Onam: Bu çalışmaya katılan hasta(lar)dan yazılı onam alınmıştır.

Hakem Değerlendirme Süreci: Harici çift kör hakem değerlendirmesi.

Çıkar Çatışması Durumu: Yazarlar bu çalışmada herhangi bir çıkara dayalı ilişki olmadığını beyan etmişlerdir.

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Yazar Katkıları: Yazarların tümü; makalenin tasarımına, yürütülmesine, analizine katıldığını ve son sürümünü onayladıklarını beyan etmişlerdir.

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Case Report / Olgu sunumu

Laparoskopik Kolesistektomi Sonrası Gelişen Ciddi bir Komplikasyon: Akut Batına Neden Olan Dev Biloma

A Serious Complication Following Laparoscopic Cholecystectomy: A Giant Biloma Causing Acute Abdomen

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Öz

Laparoskopik kolesistektomi sonrası gelişebilecek komplikasyonlar nadirdir. Enfeksiyon, kanama ve safra yolları hasarı bu komplikasyonlar arasında sayılabilir. Biloma, safra yollarının travmatik veya spontan hasarı sonrası intrahepatik veya ekstrahepatik yerleşim gösterebilen içi safra dolu iyi sınırlı, kapsüllü ya da kapsülsüz kistik bir lezyonudur. Laboratuvar bulguları spesifik olmayan bu hastalığın teşhisi tipik öykü (sağ üst kadran ağrısı, ateş, geçirilmiş cerrahi veya abdominal travma öyküsü) ve doğrulayıcı radyolojik görüntü ile konur.

Biz bu olgu sunumu ile akut karın etiyolojisinde laparoskopik kolesistektomi işlemi sonrasında gelişebilecek cerrahi bir bilomanın da düşünülmesi gerektiğini vurgulamak istedik.

Anahtar Kelimeler: Biloma, laparoskopik komplikasyon olan kolesistektomi, post operatif komplikasyonlar, reoperasyon

Abstract

Possible complications are rare after laparoscopic cholecystectomy. Infection, bleeding and damage to the biliary tract complications are among these. A biloma is a well-demarcated, encapsulated or not, intrahepatic or extrahepatic bile collection secondary to iatrogenic, traumatic or spontaneous injury of the biliary tree. Laboratory findings are nonspecific. The diagnosis is usually suspected on the basis of a typical history (right upper quadrant abdominal pain, fever and recent abdominal trauma or surgery) and is confirmed by detection of typical radiologic features.

With this case report, we wanted to emphasize that in acute abdominal etiology, a surgical biloma that may develop after laparoscopic cholecystectomy should also be considered.

Keywords: Biloma, laparoscopic cholecystectomy, postoperative complications, reoperation

GİRİŞ

Günümüzde en sık yapılan abdominal cerrahilerden biri de kolesistektomidir. Açık ve laparoskopik olarak 2 yöntemi mevcuttur. Biloma, safra yollarının travmatik veya spontan hasarı sonrası intrahepatik veya ekstrahepatik yerleşim gösterebilen içi safra dolu iyi sınırlı, kapsüllü ya da kapsülsüz kistik kitle lezyonudur (1). Biloma cerrahi sonrasında gelişebilen nadir bir komplikasyondur. Koledokolitiasis sonrası spontan gelişebilse de en sık iyatrojenik kökenlidir (2). Laparoskopi öncesi komplikasyon olarak majör safra yolları hasarı ve tüm safra sistemi hasarı açık cerrahilerde %0,1 iken laparoskopik cerrahi ile bu oran %0,6-1,5 olarak saptanmıştır (3). Post-laparoskopik kolesistektomi biloma insidansı iki büyük çalışmada %2,5 saptanmıştır (4,5). Biloma kliniğinde genelde bulantı, kusma, ateş ve karın ağrısı vardır. Laparoskopik kolesistektomi sonrası lezyonların çoğu yedi gün içinde oluşur (4). Ortalama teşhis süresi genelde 1-2 hafta kadardır (6). Laboratuvar bulguları spesifik olmayan bu hastalığın teşhisi tipik öykü ve doğrulayıcı radyolojik görüntü ile konur. Tedavide ultrasonografi (USG) eşliğinde perkütan drenaj açık cerrahi komplikasyonlarını azaltmıştır. Eğer kistik kolleksiyon iyi sınırlı keskin hatlarla çevre dokudan ayrılmışsa cerrahi girişim olarak subkostal laparotomi de uygun bir tedavi seçeneğidir (7).

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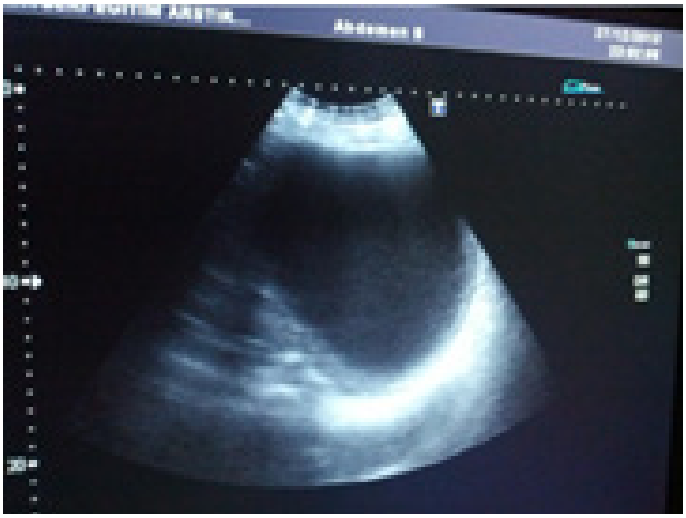
OLGU SUNUMU

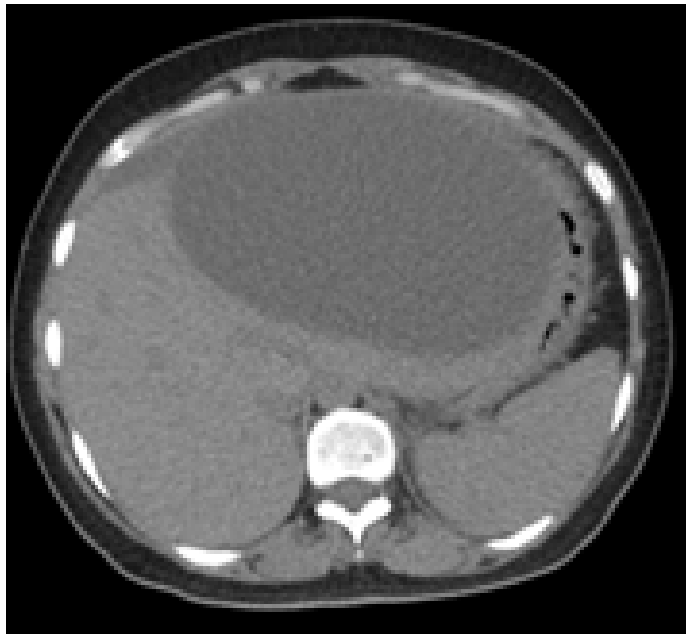
27 yaşında kadın hasta yaklaşık iki hafta önce başlayan ancak son üç gündür şiddeti giderek artan karın ağrısı ve eşlik eden bulantı, kusma şikâyetleri ile acil servisimize başvurdu. Hasta nın hikâyesinde yirmi beş gün önce taşlı kolesistit nedeni ile laparoskopik kolesistektomi ameliyatı olduğu öğrenildi. Geçirilmiş ameliyat öyküsünden başka herhangi bir ek hastalığı bulunmayan hastanın karın muayenesinde sağ üst kadranda ve epigastrik bölgede ciddi hassasiyet ve istemli defans mevcuttu. Genel durumu orta- kötü olan hastanın vital bulgularında tansiyon: 90/60 mmHg, nabız: 110/dakika, ateş 37,8 °C olarak saptandı. Akut batın bulguları olan hastaya semptomatik olarak sıvı replasmanı ve profilaktik antibiyoterapi başlandı. Laboratuvar tetkiklerinde: tam kan sayımında, hemoglobin 10,2 g/dl, hematokrit %33, lökosit 14,5x103/uL, platelet 488x103/uL saptandı. Biyokimya tetkiklerinde: AST 55 U/L (0-41), ALT 95 U/L (0-45) ve GGT 273 U/L (0-40), kalsiyum 8,3 mg/dl (8,4-10,6), sodyum 132 mmol/L (135-148) ve direkt bilirubin 0,6 mg/dL (0-0,3) saptandı.

Gebelik testi negatif saptandı. PA akciğer grafisi normal olan hasta mevcut klinik tablo ve öykü göz önünde bulundurularak safra yolları patolojisi (akut kolanjit, akut pankreatit) ön tanısı ile batın USG'ye yönlendirildi. Yapılan USG de kese lojundan başlayarak mide lojuna uzanım gösteren kalın cidarlı yaklaşık 18x15 cm boyutlarında biloma ile uyumlu olabilecek kistik kitle lezyonu saptandı (**Şekil 1**).



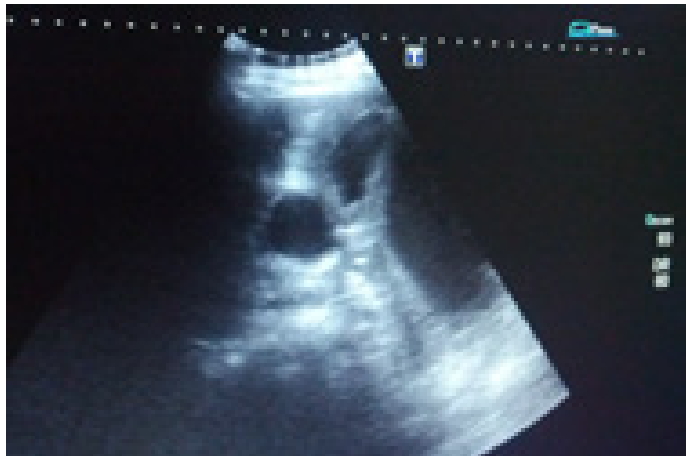
Şekil 1. Ultrasonografide kese lojundan başlayarak mide lojuna uzanım gösteren kalın cidarlı yaklaşık 18 x15 cm boyutlarında bilioma ile uyumlu olabilecek kistik kitle lezyonu

Lezyonun boyutlarını ve lokalizasyonunu netleştirmek amacı ile hastadan kontrastlı batın bilgisayarlı tomografi (BT) İstendi. Hastanın batın BT'sinde karaciğer sol lobu düzeyinde ekstrahepatik yerleşim gösteren septa içeren yaklaşık 20x11x16 cm boyutlarında biloma ile uyumlu kistik kitle lezyonu saptandı (**Şekil 2**).



Şekil 2. Tomografide karaciğer sol lobu düzeyinde ekstrahepatik yerleşim gösteren septa içeren yaklaşık 20x11x16 cm boyutlarında bilioma ile uyumlu kistik kitle lezyonu. Tanımlı lezyon mideyi sol laterale ve pankreası da posteriora doğru belirgin baskılamıştır

Tanımlı lezyonun mideyi sol laterale ve pankreası da posteriora doğru belirgin baskıladığı görüldü. Ayrıca kese lojunda 40x33 mm boyutunda biloma ile uyumlu bir diğer kistik oluşum saptandı (**Şekil 3**).



Şekil 3. Kese lojunda 40x33 mm boyutunda bilioma ile uyumlu kistik oluşum

Hasta genel cerrahiye konsülte edildi. İleri tetkik ve tedavi amacı ile genel cerrahi servisine yatırıldı. Hemodinamik olarak perkütan drenaj yapılamayan hastaya acil exploratif cerrahi uygulandı. Exploratif cerrahi uygulanan hasta komplikasyon gelişmemesi neticesinde genel cerrahi kliniğinden post-op 5. günde taburcu edilmiştir.

TARTIŞMA

Laparoskopik cerrahinin açık cerrahiye göre kısalmış hastanede kalım süresi, azalmış enfeksiyon riski, azalmış morbidite ve hızlı iyileşme süresi gibi birçok avantajlarının yanında ameliyat yerini tam olarak koymadaki zorluk ve karın içi organlarda yapışıklık olan vakalarda zorluk yaşanması gibi dezavantajları vardır. Bu açıdan bu olguda laparoskopik cerrahi sonrası gelişen biloma kayda değerdir. Laparoskopik kolesistektomi sonrası oluşabilecek biloma lezyonlarının çoğu 7 gün içinde oluşur (4). Ortalama teşhis süresi genelde 1-2 hafta kadardır ancak semptom ve bulguların geç ortaya çıkması nedeni ile bilomanın teşhisi ortalama 16,8 güne kadar uzayabilir (6,8). Bizim hastamızın şikâyetleri tipik olarak ameliyattan on gün sonra başlamasına rağmen biloma tanısı ameliyattan yirmi beş gün sonra başvurduğu acil servisimizde konulabilmiştir. Verilerin ışığında hastanın şikâyetlerinin erken dönemde başlamasına rağmen geç dönemde tanı alması hastanın post-op kontrollerinin yetersiz olduğunu düşündürmektedir. Mevcut klinik ve laboratuvar bulguların ışığında safra yollarına ait patolojiyi destekleyen vakamızda ilk radyolojik tanı yöntemi olarak USG'yi tercih ettik. Bu açıdan safra yolları ile ilgili hastalıkları göstermede olduğu gibi vakamızda saptanan bilomanın teşhisinde USG non-invaziv olması, hızlı uygulanabiliyor olması ve ucuz olması nedeni ile ilk yapılması önerilen radyolojik görüntüleme yöntemidir ve bu yöntem ile tek veya birkaç adet iyi sınırlı anekoik keskin sınırları olan lezyonlar USG'nin ses dalgalarını güçlendirici etkisi kullanılarak gösterilebilir (9-10). Biloma lezyonları genelde kapsülsüzdür. Kalın cidarlı çerçeve benzeri yapılarının olması ve içinde septalı bir yapı göstermesi uzun süre beklemiş bilomaların göstergesidir. Bizim vakamızda saptanan lezyon da 20x11x16 cm boyutlara ulaşan subfrenik yerleşimli içinde septa formasyonu gösteren, kalın cidarlı ekstra hepatik dev bir bilomaydı.

Tanıda, USG tanıda tek başına yeterli değildir. Ultrasonografik bulguların tanı keskinliği klinik ve anamnez ile güçlendirilmelidir (9). Bizim vakamızda da hasta yirmi beş gün önce kolesistektomi olmuş ve ameliyattan 10 gün sonra bulantı, kusma,ateş ve karın ağrısı gibi tipik şikayetleri başlamıştır. Bu kilinik ve anamnezin ultrasonografik bulgularımızın tanıdaki gücünü arttırdığın düşünüyoruz. Ayrıca, ek tanı yöntemi olarak BT biloma lezyonlarının varlığını doğrulayabilir. Bunun yanında tanı yöntemleri içinde bilgisayarlı tomografinin safra yollarına ait patolojiyi göstermede yetersiz oluşundan dolayı şüpheli olgularda ve/veya tomografinin çekilemediği durumlarda manyetik rezonans görüntüleme (MRI) bilomayı saptamada veya ayırıcı tanıda (safra yolları anatomisi ve patolojisini, karaciğerin fokal lezyonlarını göstermede) kullanılabilir (11). Bizim olgumuzda, lezyonun tipik lokalizasyonda olması, klinik ve anamnez eşliğinde ultrasonografik bulguların BT ile desteklenmesi neticesinde tanımızın yüksek ihtimal biloma olduğuna karar verildi.

Tedavide, transkutanöz ve endoskopik ultrasonografi (EUS) eşliğinde drenaj ve cerrahi olarak konulan drenaj kateterleri bulunur (12,13). Bizim hastamıza hemodinamik durumundan dolayı acil eksploratif cerrahi uygulanmıştır.

SONUÇ

Sonuç olarak, laparoskopik kolesistektomi sonrası safra yolu hasarı sonrasında oluşabilecek dev biloma komplikasyonu akılda tutulmalı; iyi öykü, fizik muayene ve uygun görüntüleme yöntemi ile erken tanı ve uygun tedavi ile morbidite ve mortalite oranları azaltılmalıdır.

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Finansal Destek: Yazarlar bu çalışmada finansal destek almadıklarını beyan etmişlerdir.

Yazar Katkıları: Yazarların tümü; makalenin tasarımına, yürütülmesine, analizine katıldığını ve son sürümünü onayladıklarını beyan etmişlerdir.

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Case Report / Olgu sunumu

The Pediatric Case of a Recently Defined Syndrome: Shrunken Pore Syndrome

Yeni Tanımlanmış Bir Sendrom olan Shrunken Pore Sendromlu Çocuk Hasta

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Abstract

Introduction: Creatinine was started to be used as a marker of glomerular filtration rate (GFR) in 1920's. Later in the 1990s, cystatin C was shown to be superior to creatinine in assessing GFR. In some patients, glomerular filtration of cystatin C was found to be low compared to creatinine, and it was hypothesized that glomerular pores may have been shrunken in these patients. For the group of patients having a cystatin C based estimation of GFR (eGFR cystatin C) to creatinine-based estimation of GFR (eGFR creatinine) ratio of ≤60%, the pathophysiological classification is defined as Shrunken Pore Syndrome.

Case: A 16-month-old female patient was admitted to Ege University Pediatric nephrology clinic with the diagnosis of neurogenic bladder secondary to meningomyelocele. She had a history of antenatal meningomyelocele, and hydrocephalus diagnosed as Arnold Chiari type 2. On postnatal day 1, she had undergone meningomyelocele sac excision and ventriculoperitoneal shunt operation. There was no history of pyelonephritis. Systemic examination revealed a dysmorphic facial appearance, operation scar on her back and syndactyly of the toes, and paraplegia on neurological examination. In laboratory examination; urea: 24 mg/dL, creatinine: 0.3 mg/dL, parathormone: 47 ng/mL, cystatin C: 1.4 mg/L (RR: 0.53-0.95), blood β2 microglobulin: 2716 ng/mL. Patient's eGFRcystatin C: 107 ml/min/1.73m^2 and eGFRcreatinine: 188 ml/min/1.73m^2. Shrunken Pore Syndrome was considered due to the difference between the patient's eGFRcystatin C value and eGFRcreatinine value.

Conclusion: Shrunken Pore Syndrome has no known treatment; however, it is important to diagnose these patients because of accompanying risks such as increased cardiac mortality. With the usage of cystatin C as a marker of GFR, possible mortality risks can be predictable and preventive measures can be taken early on.

Keywords: Shrunken pore syndrome,cystatin C, creatinine, GFR, glomerular filtration rate

Öz

Giriş: Sistatin C bazlı tahmini Glomerüler filtrasyon hızı (GFR) ölçümleri son dönem böbrek yetmezliği, kardiyovasküler bulgular ve mortaliteyi öngörmede kreatinin bazlı ölçümlerden üstün olup; cinsiyet, yaş ve kas kitlesinden bağımsızdır. Bazı olgularda sistatin C'nin filtrasyonunun, kreatinine göre daha az olduğu gözlemlenmiş ve bunun porların daralmasından kaynaklandığı kanıtlanmıştır. Sistatin C bazlı tahmini GFR (eGFRsistatin C), kreatinin bazlı tahmini GFR'nin (eGFRkreatinin) %60'ına eşit veya bunun altında olması patofizyolojik olarak 'Shrunken Pore Sendromu' olarak tanımlanmıştır. Bu yazıda Shrunlen Pore sendromlu bir kız olgudan bahsedildi.

Olgu: 16 aylık kız hastanın meningomiyelosel ve nörojenik mesane ile Ege Üniversitesi Çocuk Nefroloji polikliniğine başvurdu. Özgeçmişinde antenatal meningomyelosel ve hidrosefali nedeniyle Arnold Chiari tip 2 tanısı, postnatal 1. günde meningomyelosel kesesi eksizyonu ve ventrikülöperitoneal şant operasyonu mevcuttu. Piyelonefrit öyküsü yoktu. Fizik bakısında; dismorfik yüz görünümü, parapleji, belde operasyon skarı, ayak parmaklarında sindaktili mevcuttu. Laboratuvar incelemesinde; üre:24 mg/dL, kreatinin: 0,3 mg/dL, parathormon: 47 ng/mL, Sistatin C 1,4 mg/L (RA:0,53-0,95), kan beta 2 mikroglobulin: 2716 ng/mL idi. Hastanın eGFRsistatin C: 107 ml/ dk/1,73m^2 ve eGFRkreatinin: 188 ml/dk/1,73m^2 idi. Hastada eGFR sistatin C değeri ile eGFRkreatinin değeri arasındaki farktan dolayı Shrunken Pore Sendromu düşünüldü.

Sonuç: Shrunken Pore Sendromlu hastalarda artmış kardiyak mortalite riski belirtildiğinden; GFR belirteci olarak sistatin C'nin kullanılması, hem kardiyak riskli hastaları hem de hastalığın gerçek prevalansını belirlemeyi sağlamakta önem taşımaktadır.

Anahtar Kelimeler: Shrunken pore sendromu, glomerüler filtrasyon hızı, GFR, sistatin C, sistatin C GFR

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INTRODUCTION

Creatinine was started to be used as a marker of glomerular filtration rate (GFR) in 1920's. Later in the 1990s, cystatin C was shown to be superior to creatinine in assessing GFR. Cystatin C-based estimated GFR (eGFR cystatin C) calculations give us the most realistic results regardless of race, sex, age and muscle mass. However, the most accurate results are gathered with both cystatin C and creatinine calculations. In addition, it is reported that cystatin C-based predictive measurements are superior to creatinine-based measurements in predicting end-stage renal disease, cardiovascular findings, hospitalization and mortality.[1] Creatinine with a molecular weight of 113 Da and cystatin C of 13343 Da is normally filtered freely through the glomerular membrane. In some patients, glomerular filtration of cystatin C was found to be low compared to creatinine, and it was hypothesized that glomerular pores may have been shrunken in these patients. For the group of patients having a cystatin C based estimation of GFR (eGFR cystatin C) to creatinine-based estimation of GFR (eGFR creatinine) ratio of ≤60%, the pathophysiological classification is defined as Shrunken Pore Syndrome.[2] Shrunken pore syndrome is defined thoroughly in adult patients, however there is only one literature on Shrunken pore syndrome in children and no case reports. In this paper, we report and discuss, in accordance with the literature, a pediatric patient with newly defined Shrunken pore syndrome.

CASE

A 16-month-old female patient admitted to Ege University Pediatric nephrology clinic with the diagnosis of neurogenic bladder secondary to meningomyelocele. She was hospitalized because of high cystatin C levels detected in routine check-ups. She had a history of antenatal meningomyelocele, and hydrocephalus diagnosed as Arnold Chiari type 2. On postnatal day 1, she had undergone meningomyelocele sac excision and ventriculoperitoneal shunt operation. The patient then underwent repeated shunt revision operations. There was no history of pyelonephritis. In the family history, the mother had type 2 diabetes mellitus and hypothyroidism. On physical examination; her weight was 11 kg (50-75p), height was 71 cm (<3p), blood pressure was 100/65 mmHg (90-97p). Systemic examination revealed a dysmorphic facial appearance (deeply located eyes, bitemporal stenosis), operation scar on her back and syndactyly of the toes, 1/6 systolic murmur on cardiologic examination, and paraplegia on neurological examination. In laboratory examination; hemoglobin:11.3 g/dL (RR: 11-13), hematocrit: 34.31% (RR: 37-53.7) leukocyte: 11.6 103/µL (RR:6-17) neutrophils: 6.27 103/µL (RR: 2-6.9), platelet: 387 103/µL (RR: 142-424), urea: 24 mg/dL (RR: 10.7-57.7), creatinine: 0.3 mg/dL (RR: 0.3-1.0), uric acid: 4.5 mg/dL (RR: 1.9-5.4), total protein: 6.6 g/dL (RR: 5.2-7.4) albumin: 4.1 g/dL (RR: 3.1-4.8), AST: 30 U/L (RR: 18-63), ALT: 18 U/L (RR: 10-32), Na : 134 mmol/L (RR: 132-143), K: 4.7 mmol/L (RR: 3.2-5.7), Cl: 103 mmol/L (RR: 98-116), CRP: 0.2 mg/dL (RR: 0-0.5), cystatin c: 1.4 mg/L (RR: 0.53-0.95), blood β2 microglobulin: 2716 ng/mL (RR: 651-2295) In routine urine examination: density: 1015 g/mL, pH: 6.5, leukocyte: 1/hpf (RR:0-5), erythrocyte: 1/hpf (RR:0-5), spot urine protein/creatinine: 0.39 g/g creatinine (RR: <0.40), spot urine beta 2 microglobulin: 84.8 mg/g creatinine (RR: <300), FENa: 1.3%, FEK: 15.9%, TPR: 83 mmHg (RR:65-110). Urine culture was negative. Patient's eGFRcystatin C value: 107 ml/min/1.73m^2 (RR: 93-207) and eGFRcreatinine value: 188 ml/min/1.73m^2 (RR: 87.9-122.5). On ultrasound examination; the right kidney was 57 mm (3-10p) and the left kidney was 58 mm (3-10p) in length, with an average parenchymal thickness of 8 mm on the right and 7 mm on the left. Renal parenchyma scintigraphy with Technetium 99m revealed, kidneys were of normal shape and size and radiopharmaceutical involvement was within normal limits. The contours were also appeared regular. The contribution of the right kidney to the total renal function was 48% and of the left kidney was 52%. The patient had post voiding residues and was diagnosed with neurogenic bladder and a combined treatment of clean intermittent catheterization, amoxicillin and oxybutynin was prescribed. Shrunken Pore syndrome was considered due to the difference between the patient's eGFRcystatin C value and eGFRcreatinine value. Electrocardiogram results: ASD sekundum 7-8 mm, at the pulmonary arteries maximum 17 mmHg gradient was found. Ejection fraction was 69%.

DISCUSSION

Shrunken pore syndrome is defined by a difference of 60% or less in eGFRcreatinine/ eGFR cystatin c ratio. In this paper, we reported a child with shrunken pore syndrome who had no other renal abnormalities. In patients with Shrunken Pore Syndrome, creatinine ratios of other low molecular weight proteins such as beta 2 microglobulin, parathyroid hormone, brain natriuretic peptide, amylase, lipase, prealbumin, albumin, alpha 1 acid glycoprotein and retinol binding protein, were also high.[3] The clearance of each of these proteins is done by glomerular filtration and this clearance decreases proportionally with the shrinkage of glomerular pores. The mechanism that gives the syndrome its name, explains this simultaneous increase of all these proteins in the blood panel.[4] In our case our patient had an eGFRcystatin c of 107, which is 57% of the eGFRcreatinine value of 188. Our patient also has a such high blood beta 2 microglobulin level as 2716 ng/mL. The patient underwent renal ultrasonography, urodynamic testing and DMSA testing to rule out other renal abnormalities.

Since shrunken pore syndrome is very recently defined in pediatric patients, there is only one study[5] that shows the prevalence levels in the pediatric group, and it states the prevalence in children as 4.8%. With a regular use of cystatin c as a marker of GFR, shrunken pore syndrome can be diagnosed more frequently, and more data can be collected. Moreover; literature on adult patients also show a link

between high cardiac mortality and shrunken pore syndrome. [2] Our patient also underwent ECO testing to determine an abnormality of the heart due to a suspicion on physical examination, but the results were normal. Tests such as carotid intima media thickness (CIMT), pulse wave velocity (PWV) and augmentation index (AIx) are considered to be the cursor of the clinical or subclinical atherosclerotic vascular diseases [6]. We tried to assess AIx and PWV but the patient being too small did not allow measurements. It can be suggested that when a child is diagnosed with shrunken pore syndrome, these tests can also be checked to assess the cardiovascular health of the child and moreover, these tests can be useful in follow-ups to prevent future cardiac problems.

CONCLUSION

Shrunken pore syndrome has no known treatment; however, it is important to diagnose these patients because of accompanying risks such as increased cardiac mortality. Use of cystatin c as a marker of GFR and a regular control of eGFRcystatin C will help determine possible shrunken pore patients. Thus, possible mortality risks can be predictable and preventive measures can be taken early on.

ETHICAL DECLARATIONS

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Case Report / Olgu sunumu

Tracheobronchopathia Osteochondroplastica: A Case Report

Trakeobronchopathia Osteochondroplastica: Bir Olgu Sunumu

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Abstract

Tracheobronchopathia osteochondroplastica is a rare, benign condition characterized by the presence of multiple cartilaginous and / or bony submucosal nodules protruding into the tracheobronchial lümen. In general, Tracheobronchopathia osteochondroplastica is diagnosed incidentally during bronchoscopy or autopsy and is not associated with a specific disease. It can be asymptomatic or present with non-specific respiratory symptoms. We present a case of a 62 year-old female patient who was diagnosed with Tracheobronchopathia osteochondroplastica by Flexible bronchoscopy and thorax CT performed to investigate chronic cough.

Keywords: Tracheobronchopathia osteochondroplastica, Flexible bronchoscopy, cough

Öz

Trakeobronkopati Osteokondroplastika trakeobronşial lümen içine uzanarak kemik ve/veya kıkırdak submukozal nodüllerle karakterize, nadir, benign bir durumdur. Genel olarak, Trakeobronkopati Osteokondroplastika bronkoskopi veya otopsi sırasında tesadüfen teşhis edilir ve spesifik bir hastalıkla ilişkili değildir. Trakeobronkopati Osteokondroplastika, asemptomatik olabilir veya spesifik olmayan solunum semptomları ile mevcut olabilir. Kronik öksürüğü araştırmak için yapılan Fleksibl Bronkoskopi ve toraks BT ile tanı konulan 62 yaşında kadın hasta sunuldu.

Anahtar Kelimeler: Trakeobronkopati osteochondroplastica (TO), Fleksibl bronkoskopi, öksürük

INTRODUCTION

Tracheobronchopathia osteochondroplastica (TO) is an uncommon benign condition affecting the lumen of the tracheobronchial tree and characterized by abnormal chondrification and ossification of cartilages.[1] Because of the absence of cartilage in this region of the airway, these nodules involve the anterior and lateral walls of the trachea and the bronchus, sparing the posterior membranous wall.[2] The nodular lesions are sessile, calcified and vary in diameter between 1-10mm.

Tracheobronchopathia osteochondroplastica is a chronic disease, with male prevalence (male;female=3;1), and predominantly manifesting between the fifth and seventh decades of life.[3,4] In general, TO is diagnosed incidentally during bronchoscopy or autopsy and is not associated with a specific disease. Chronic cough is the most common complaint and about 54% of patients with TO complain.[5] In this study, we present a case of TO which was detected incidentally in a CT scan performed to investigate chronic cough.

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CASE PRESENTATION

62-year-old female patient was admitted to hospital with the dry cough and occasional shortness of breath for 4 years. He had been treated with the diagnoses of acute bronchitis and/or asthma for several occasions and numerous antitussive prescriptions were given as well. She had never smoked. The patient's respiratory voices were normal and there was no other feature in the resume.

Laboratory studies, complete blood count, biochemical results, and erythrocyte sedimentation Arterial blood gases, pulmonary function tests and current-volume curve was normal. Current and previous posteroanterior chest radiographs were not suggesting any abnormality.

To investigate the underlying causes of chronic dry cough, a thorax CT was performed, which demonstrated multiple nodules lesions at the different levels of the trachea, and also in the right main bronchus. No significant luminal narrowing was observed, and typically the posterior membranous wall of the trachea was normally observed (**Figure 1**).

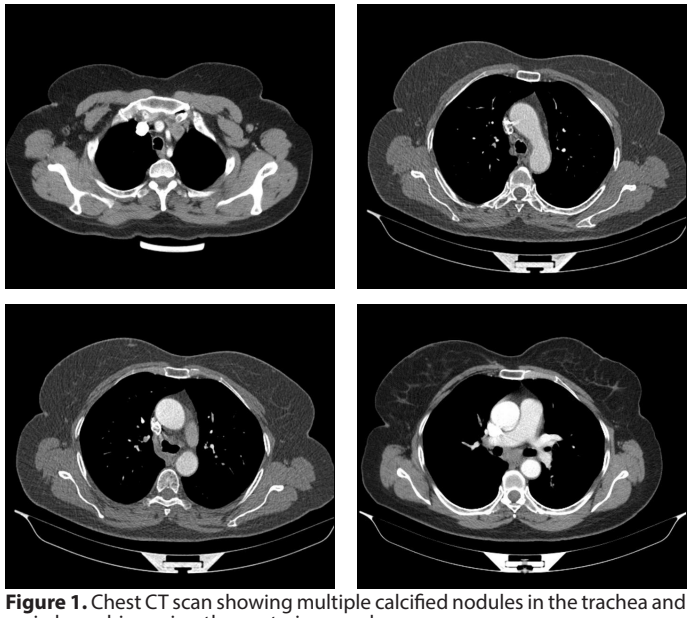


Figure 1. Chest CT scan showing multiple calcified nodules in the trachea and main bronchi, sparing the posterior membrane.

Flexible bronchoscopic (FB) examination of the patient is localized on the anterior and lateral walls of the trachea, a large number of white colored, hard-structured and irregularly appearing nodular lesions were detected. The number of nodules were decreasing while going down through the main bronchi (**Figure 2**). The biopsy was performed difficult because of the nodules lesions were hard-structured. Histopathological examination showed fragments of normal cartilage and bone formation with normal mucos (**Figure 3**).

Taking together the thorax CT, FB and biopsy findings, the diagnosis of TO was established. No specific treatment for TO was offered to patient. The patient remains under clinical follow-up with management of symptoms.

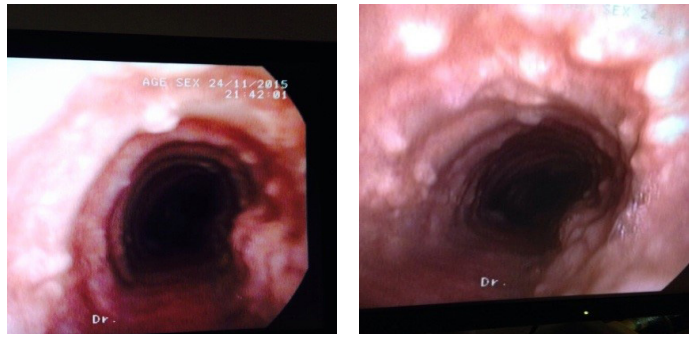
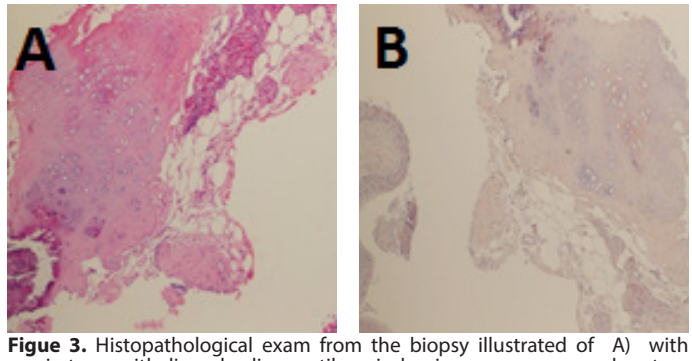


Figure 2. Flexible bronchoscopy showing nodular deformities along multiple nodules from anterolateral wall of trachea and main bronchi protruded into the lumen



Figue 3. Histopathological exam from the biopsy illustrated of A) with respiratory epithelium, hyaline cartilage in benign appearance and mature bone tissue. (Hematoxylin-Eosin x100); B) Amyloid staining was not observed. (Congo-red x100)

DISCUSSION

Tracheobronchopathia osteochondroplastica is a rare and benign disorder with characterization of multiple sub-mucosal osseous and cartilaginous nodules in the anterior and lateral wall of trachea and bronchus It is usually diagnosed in patients aged over 50 years, but one case in a 9-year-old child.[5] Although chronic infection, congenital anomaly, chemical or mechanical irritation, degenerative or metabolic abnormalities, and genetic predisposition are considered factors contributing to development, the cause of the disease is currently unknown.[6] Our case is over 50 years old and there were no etiologically conceivable exposures. In addition, no calcium metabolism disorder was detected.

Majority of the patients with TO are asymptomatic. Chronic cough and dyspnea are the most frequent presentations. Other presentations include hemoptysis, dry throat, recurrent lower respiratory tract infection.[1] In our case, chronic cough was the most frequent respiratory symptom. Chest radiograph is usually normal. The chest CT imaging may demonstrate multiple submucosal irregular, sessile and calcified nodules involving the anterior and lateral wall of the tracheobronchus, usually sparing the posterior membranous.[7,8]

Flexible bronchoscopy is the most valuable tool for establishing the diagnosis. Diagnosis is ultimately dependent on the bronchoscopic finding of sessile submucosal nodules

protruding into the lumen of the trachea and main bronchi, with a beaded or "rock garden" appearance. Obtaining a bronchoscopic forceps biopsy may prove to be difficult owing to the stony hard nature of the nodules. Although biopsy is not necessary for diagnosis of this disorder, it may be helpful to exclude disorders included in the differential diagnosis of nodularity within the trachea. The differential diagnosis of TO includes amyloidosis, sarcoidosis, calcificating lesions of tuberculosis, papillomatosis, tumors of bronchial and tracheal.[9] The characteristic sparing of the posterior wall may help to differentiate the TO from tracheobronchial amyloidosis. Histopathological analysis from the bronchoscopic biopsy specimens shows heterotopic bone formation with abnormal cartilage proliferation and calcium deposits. Histopathological picture may help to rule out other diseases such as amyloidosis, mucoepidermoid carcinoma, papillomatosis, sarcoidosis. In our case, the diseases included in the differential diagnosis were excluded by histopathological evaluation of bronchoscopic biopsy.

No specific therapy for TO is currently available. Treatment is only symptomatic. Patients with TO could be simply followed for prolonged periods of time. Surgical removal, laser ablation or radiotherapy, or stent implantation should be performed only in cases of the airway narrowing by the lesions.[10]

In conclusion, TO is a rare and benign trachea and bronchi disease, characterizing by submucosal ossified and cartilaginous nodules. Thorax CT and FB should be performed to reveal the rare underlying causes of chronic cough patients

ETHICAL DECLARATIONS

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Status of Peer-review: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Derleme / Review

Tip 1Alerjik Reaksiyonların Klinik Görünümleri

Clinical Manifestations of Type 1 Allergic Reactions

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Öz

Atopik veya anafilaktik tip olarak da adlandırılan Tip I alerjik reaksiyonları; Ig E aracılı acil hipersensitivite reaksiyonlarıdır. Alerjen olarak adlandırılan belirli bir antijene yutma, solunum, enjeksiyon veya doğrudan temas ile tekrar maruz kalınmasıyla tetiklenen reaksiyonlardır. IgE antikorları, histamin granülleri içeren mast hücrelerine ve bazofillere bağlanır. Aynı alerjene daha sonra maruz kalmak, bağlı IgE'nin degranülasyona yol açmasına ve histamin, lökotrien, prostaglandinler gibi mediatörlerin salgılanmasına neden olur. Reaksiyon lokal veya sistemik şekilde görülebilir. Tip I aşırı duyarlılık reaksiyonları sonucu oluşan klinik tablolar; ürtiker, anjiyoödem, anafilaksi,atopik egzema, anafilaksi, besin ve ilaç alerjileri, alerjik astım, alerjik rinit ve alerjik konjonktivit şeklinde gruplandırılır. Bu derlemenin amacı günlük dermatoloji pratiğinde sık ve nadir karşılaşığımız tüm tip 1 alerjik reaksiyonların klinik görünümlerini gözden geçirmek ve bu hastalıkların oluş mekanizmasıyla klinikleri arası bağlantı kurmak hedeflenmiştir.
Anahtar Kelimeler: Tip 1, alerjik, reaksiyonlar

Abstract

Type 1 allergic reactions, also called atopic or anaphylactic type are IgE-mediated emergency hypersensitivity reactions. These are reactions triggered by re-exposure to a specific antigen called an allergen by ingestion, inhalation, injection or direct contact. IgE antibodies bind to mast cells and basophils containing histamine granules. Subsequent exposure to the same allergen leads to degranulation of the bound IgE and secretion of mediators such as histamine, leukotriene, prostaglandins. The reaction can be seen locally or systemically. Clinical manifestations of type I hypersensitivity reactions; urticaria, angioedema, anaphylaxis, atopic eczema, anaphylaxis, food and drug allergy, allergic asthma, allergic rhinitis and allergic conjunctivitis are grouped. The aim of this review is to review the clinical manifestations of all type 1 allergic reactions that are common and rare in daily dermatology practice, and to establish a connection between these mechanisms and the clinics.

Keywords: Type 1, allergic, reactions

Aşırı duyarlılık reaksiyonları; bir antijen/alerjene karşı abartılı/istenmeyen uygunsuz immün tepkiler olarak tanımlanır. Coombs ve Gell tarafından aşırı duyarlılık reaksiyonları (ADR) 4 tip olarak sınıflandırılmıştır. Tip I: Anafilaktik tip duyarlılık / IgE aracılı tip I alerji: En sık görülen tiptir. Tip II: Sitotoksik tip duyarlılık, Tip III: İmmünkompleks reaksiyonları ve Tip IV: Gecikmiş tip aşırı duyarlılık reaksiyonları şeklindedir. Bazı yazarlar, daha sonra Coombs ve Gell sınıflandırmalarında değişiklikler /ilave kategoriler önermişlerdir.[1,2]

Tip I Aşırı Duyarlılık: Atopik / Anafilaktik tip duyarlılık olarak da adlandırılır. Alerjen olarak adlandırılan belirli bir antijene tekrar maruz kalınmasıyla tetiklenen alerjik bir reaksiyondur. Polen, hayvan kepekleri veya toz akarları gibi çevresel proteinler gibi çeşitli allerjenlere cevap olarak bağışıklık sistemi tarafından üretilen IgE antikorları aracılık eder. IgE antikorları, histamin granülleri içeren mast hücrelerine ve bazofillere bağlanır. Aynı alerjene daha sonra maruz kalmak, bağlı IgE'nin degranülasyona yol açmasına ve histamin, lökotrien, prostaglandinler gibi mediatörlerin salgılanmasına neden olur. Alerjene maruziyet yutulması, solunması, enjeksiyonu / doğrudan temas ile oluşur. Reaksiyon lokal veya sistemik olabilir. Başlıca etkileri vazodilatasyon ve düz kas kasılmasıdır. Semptomlar hafif bir reaksiyondan anafilaktik şoktan ani ölüme kadar değişebilir. Alerjenler; küçük 10-40 kDa ağırlığında, spesifik protein bileşenleridir. Düşük dozda alerjen özellik gösterirler ve genelde çoğu antijen Th 2 immünitesini arttırır. Bu proteinler, sindirim enzimleri, taşıyıcı proteinler ve polen tanıma proteinleri gibi birçok biyolojik fonksiyona sahiptir.

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Tip I aşırı duyarlılık/Atopik veya anafilaktik tip alerjiler, Ig E aracılı acil hipersensitivite reaksiyonlarıdır. Bu patolojik mekanizmalar sonucunda karşılaştığımız klinik tablolar:

- Ürtiker
- Akut kontakt ürtiker
- Oral alerji sendromu
- Anjioödem
- Anafilaksi
- Atopik dermatit
- Besin alerjileri
- İlaç alerjileri
- Alerjik astım
- Alerjik konjonktivit
- Alerjik rinit

şeklinde sıralanabilir.[1-3]

İlaç alerjileri: Advers ilaç reaksiyonları; Tip A ve Tip B olmak üzere ikiye ayılır. Tip A reaksiyonları %85-90 oranında görülür, genellikle doza bağımlı, bir ilacın bilinen farmakolojik özelliklerinden tahmin edilebilir özelliktedir. Tip B reaksiyonları hipersensitivite / aşırı duyarlılık reaksiyonlarıdır, dozdan bağımsız olarak kabul edilir. Advers ilaç reaksiyonlarının %10-15'ini oluşturur. Duyarlı hasta grubunda meydana gelir ve ilacın farmakolojik etkilerinden farklı belirti ve semptomlara sahiptir. İmmun aracılı (alerjik) ve immun aracılı olmayan (non alerjik) şeklinde ikiye ayrılır. İlaç aşırı duyarlılık reaksiyonlarının büyük çoğunluğuna immünolojik mekanizma aracılık eder. Başlangıcı genellikle ilaca maruz kaldıktan sonraki bir saat içinde olur. Belirtiler tedavi ile hızla düzelir. En sık ürtiker ve anjiyoödem olmak üzere, pruritus /flaşing, oküler kaşıntı ve yırtılma, hapşırma ve burun akıntısı, nefes darlığı, hırıltılı solunum, ronküsler, karın ağrısı gibi gastrointestinal belirtiler, hipotansiyon ve anafilaksi görülebilir. Tip I reaksiyonlarında en sık etken ilaçlar; Beta-laktam antibiyotikler, nonsteroidal antiinflamatuar ilaçlar, iyotlu kontrast madde, nöromüsküler bloke edici ajanlar, kinolonlar, platin içeren kemoterapötik ajanlar, setuksimab ve rituksimab gibi kimerik antikorlar içeren yabancı proteinleri içeren biyolojik ajanlardır.[4-6]

Besin alerjileri: Tip 1 alerjik reaksiyonlar grubunda yer alan diğer bir sınıf besin alerjileridir. Besin alerjisi ve besin intoleransı ayırımı iyi yapılmalıdır. Besin alerjisi ciddi yaşamı tehdit edici bir durumdur.[7] Gıdalarla ilgili advers reaksiyonlar, genel popülasyonun %20'sinde yaygın bir sorun teşkil eder. Bu advers reaksiyonlar da alerjik (immünolojik) ve alerjik olmayan (immünolojik olmayan) gıda reaksiyonları olarak iki kısımda incelenir. Alerjik (immünolojik); IgE aracılı reaksiyonlar; en ciddi reaksiyonlardır ve gecikmeli (IgE aracılı olmayan) reaksiyonlar olmak üzere gruplandırılır. Alerjik olmayan (immünolojik olmayan) gıda reaksiyonları ise en yaygın görülen gıda reaksiyonudur. Gıda reaksiyonlarının çoğu alerjik değildir ve çoğunlukla laktoz intoleransı gibi gıda intoleransları ile ilgilidir. Gıda intoleransı belirtileri gastrointestinal sistem ile sınırlıdır.[8,9] Besin alerjisi, bir yiyeceğe (genellikle yutulması) maruz kaldıktan sonraki anormal immünolojik cevaptan kaynaklanır. Doku mast hücrelerinden ve dolaşımdaki bazofillerden mediatör salınımının yol açtığı düşünülmektedir. IgE kaynaklı gıda alerjik reaksiyonları başlangıçta hızlıdır, tipik olarak alım süresinden dakikalar-2 saat içinde başlar. Belirtiler cilt, solunum ve gastrointestinal ve kardiyovasküler sistemi içerebilir. Hemen tedavi edilmezse, IgE aracılı reaksiyonlar ölümcül olabilir. En sık olarak Ig E aracılı tip 1 alerjik reaksiyon yapan besinler yumurta beyazı, inek sütü, yer fıstığı, soya fasulyesi, buğday, balık, kabuklu deniz ürünleri, kivi, muz ve kuruyemişlerdir. Yiyecek alerjenlerinin çoğu proteinlerdir. Karbonhidrat alerjenleri, sığır eti ve kuzu gibi kırmızı etlere, yutulduktan 3-6 saat sonra gecikmiş semptomlara neden olan alerjik reaksiyonlarda tarif edilmiştir.[10] Akut ürtiker ve anjiyoödem gıda alerjeni aldıktan sonra birkaç dakika içinde çıkan, besin alerji reaksiyonlarının en sık görülen kutanöz belirtileridir. Besinler ayrıca akut kontakt ürtikere de yol açabilir. Ancak gıda alerjileri kronik ürtikerde nadir görülen bir nedendir. Günlük ataklar şeklinde görülen kronik ürtiker hastalarında tip 1 alerjik reaksiyonlara sık rastlanılmaz. Kronik ürtikerli hastalarda daha sık olarak gıda ve gıda katkı maddeleri ile oluşan psödoalerjik reaksiyonlar rol oynar. Bu reaksiyonlar daha geç ortaya çıkar. Besin alerjilerinde görülebilecek diğer belirtiler; orofarengeal semptomlar ve solunum yolu semptomları; astım, alerjik rinit ve konjonktivit, göğüste sıkışma, nefes almada zorluk, wheezeing ve stridor şeklindedir. Gastrointestinal semptomlar; bulantı, karın ağrısı, karın krampları, kusma, ishal gibi IgE aracılı gastrointestinal semptomlar, gıda alerjeni nedeniyle anafilakside belirgindir. Gastrointestinal sanafilaksi, semptomlar izole olduğunda görülür. Kardiyovasküler sisteme ait taşikardi ve hipotansiyon ve anafilaksi görülebilir.[7-10]

Gıda ile ilişkili egzersiz anafilaksisi: Tip 1 alerjik reaksiyon neticesinde ortaya çıkar. Nadirdir, bazı gıdaların egsersiz öncesi yenmesi ile anaflaksi oluşur. Kaşıntı, ürtiker, anjioödem, dispne, hipotansiyon ve şok görülür. En sık neden olan gıdalar; buğday, kereviz, kabuklu deniz ürünleri, yer fıstığı, kuruyemişler ve domates, karides ve tavuktur. En sık neden buğdaydır, içindeki omega 5-gliadin temel alerjen maddedir. Klinik tablo, alerjik reaksiyona neden olan gıdanın alımı ve egzersizin bir arada olduğu zaman ortaya çıkar. Tanı; öyküye ilaveten spesifik Ig E'nin gösterilmesi ile konulur. Egzersiz öncesi 3 saat, sonrası 1 saati kapsayan zaman diliminde allerjen gıdalardan sakınmak gerekir.[11]

Bazı gıda alerjisi bozuklukları, hem IgE hem de IgE aracılı olmayan bileşenlere sahip olabilir. Bu şekilde hem IgE hem de IgE aracılı olmayan bileşenlere sahip karışık tip bozukluklar; atopik dermatit ve eozinofilik gastrointestinal bozukluklardır. Eozinofilik gastrointestinal bozuklukları; intestinal sistemin eozinofilik infiltrasyonuna eşlik eden gastrointestinal disfonksiyon semptomlarıdır. Eozinofilik özofajit ve eozinofilik gastroenteriti içerir.[12]

Ürtiker: Mast hücreleri, immünolojik veya immünolojik olmayan faktörlerle aktive edilebilir. İmmünolojik tetikleyiciler arasında, IgE aracılı acil aşırı duyarlılık reaksiyonu, mast hücre aktivasyonunun klasik mekanizmasıdır. Tip 1 alerji sonucu oluşan ürtiker tiplerine, bazı akut veya epizodik ürtiker, gıda ile

ilişkili akut ürtiker ve latexe bağlı kontakt ürtiker örnek olarak verilebilir. 6 haftadan daha uzun süren, ancak haftada ikiden daha az atak varsa epizodik KÜ olarak adlandırılmaktadır. Akut ürtikerli hastaların yaklaşık %50'sinde neden bilinmemektedir ve duruma akut spontan ürtiker (ASU) denmektedir. Belirlenebilir fiziksel veya diğer uyarıcıların varlığında ortaya çıkan ürtikerler "uyarılabilir ürtiker" olarak adlandırılır. En yaygın tetikleyiciler; enfeksiyonlar (%40), ilaç reaksiyonları (%9,2) ve gıda (%0,9) şeklindedir.[13,14]

Hastaların yarısında sadece ürtiker, %40'ında ürtiker ve anjiyoödem beraber, %10'unda ise anjiyoödem tek başına görülür. Gıdaların; AÜ'lü olguların %5,3'ünde sorumlu olduğu belirtilmektedir. Yetişkin akut ürtikerli hastalarda gıdalar ile oluşmuş tip 1 alerjik reaksiyonların oranı %1'in altında, AÜ ile başvuran çocuk hastaların yaklaşık %10'unda IgE aracılı gıda alerjisi gözlenir. Küçük çocuk; yumurta, süt, soya, fıstık, buğday en sık; büyük çocuklarda da; balık, kabuklu deniz ürünleri ve fındık en fazla suçlanan gıdalardır. Gıda ile indüklenen tip 1 alerjik ürtiker daha çok genetik yatkınlığı olan, atopik bünyeli kişilerde görülür. Lezyonlar intermitant ataklar şeklinde, gıdanın alımından sonraki 30 dak içinde ortaya çıkar ve birkaç saat içinde kaybolur. Hastalar sıklıkla gıda ve katkı maddelerini semptomların başlangıcı ile ilişkilendirir; ancak, tip I alerji kronik spontan ürtikerin (KSÜ) nadir bir nedenidir. KSÜ'de IgE aracılı alerji genelde sorumlu değildir. Gıda alerjisi, tipik olarak maruziyet sonrası 1 sa içinde aralıklı semptomları olan KSÜ'lü hastalarda düşünülmelidir. CSU hastalarının yaklaşık %20'si en yaygın olarak fındık, patates, elma, yulaf ezmesi, sığır eti ve deniz ürünleri olan gıda alerjenlerine karşı pozitif prick testine sahiptir. Vakaların %2'sinde, Ig E alerjisi doğrulanır. Yetişkin ve çocuklarda gıda ile ilişkili KSÜ olgularının çoğunluğunun psödoalerjik reaksiyon olduğu kabul edilmektedir. Psödoalerjik reaksiyonlar; doğal gıda içeriklerine hem de katkı maddelerine karşı oluşur (non-IgE mediated).[13-15]

Kontakt ürtiker: Bir maddeyle temas eden deri ve mukoza bölgelerinde ürtiker plaklarının gelişimi olarak tanımlanır. Nonimmünolojik/iritan ve immünolojik/alerjik kontakt ürtiker olmak üzere başlıca iki ana grupta sınıflandırılır. Ayrıca karışık / belirlenmemiş/tanımlanmamış bir patomekanizmada mevcuttu.[16]

İmmünolojik kontakt ürtiker: Duyarlanmış kişilerde allerjen spesifik IgE ile gelişen tip I reaksiyondur. Atopik kişilerde daha sıktır. Nonimmünolojik KÜ'ye göre daha ciddi reaksiyonlar görülür. Gıdalar, bitki ve hayvan proteinleri, ilaçlar, koruyucular, metaller ve endüstriyel maddeler, kozmetik ürünler ve kimyasal maddeler en sık nedenleridir. Doğal lastik lateks en önemli nedenlerden birini oluşturur. Sınırlı ve hafif bir reaksiyon gibi görülse de sadece temas bölgesinde sınırlı kalmayıp, lezyonlar tüm vücuda yayılabilir. Maibach ve Johnson 1975'te "**kontakt ürtiker sendromu**" isimlendirmesini hastalığın multisistemik özelliğine dikkat çekmek amacı ile kullanmışlardır. Bu sendromda etken madde ile temastan sonra 4 evrede gelişen erken tip bir inflamatuar reaksiyon tanımlanmıştır. Bu sendromda klinik bulgular, allerjenle temas şekli, doz ve kişinin duyarlılık derecesi ile ilişkili olarak değişiklik gösterir.[13,16]

Protein Kontakt Dermatiti

1976 'da Danimarka'da gıda endüstrisi çalışanlarında görülen özel bir kontakt dermatit şekli bildirilmiş, klinik tabloyu "protein kontakt dermatiti" olarak isimlendirmişlerdir. Hastalarda tekrarlayan kontakt ürtiker lezyonlarının zamanla protein kontakt dermatiti gelişimine neden olduğu ileri sürülmüştür. /Subakut veya kronik dermatit şeklinde görülür. Hastalarda tipik ürtika lezyonları gözlenmez. Daha çok belli çiğ gıdalarla temastan 30-60 dak sonra kronik ekzema zemininde kaşınma, eritem, ödem ve dishidrotik değişiklikler görülür. Sadece parmak ucu ekzeması olarak görülebildiği gibi lezyonlar bilek ve ön kollara da yayılabilir. Hastalarda ilgili gıdalarla pozitif prick test reaksiyonu saptanması patogenezde tip 1 hipersensitivite reaksiyonunun önemli olabileceğini düşündürmüştür. Gıda ile prick-by-prick test pozitifken; yama testi genelde negatif olarak raporlanır. İlgili gıdalarla + prick test reaksiyonu saptanması patogenezde tip 1 hipersensitivite reaksiyonunu düşündürür. Bazı olgularda hem yama testi hem de prick testin pozitif bulunması ise patogenezde tip 1 ve tip IV hipersensitivite reaksiyonunun birlikte rol oynayabileceğini düşündürmektedir.[17]

Oral alerji sendromu/polen-gıda alerjisi sendromu: Orofarengial mukozanın immünolojik/alerjik kontakt ürtikeri olarak tanımlanır. Elma, armut, şeftali, kiraz, havuç, kereviz, domates, fındık, baharatlar gibi taze meyve ve sebzelerin yenmesini takiben oral mukozada, dudaklar, dil, damak ve posterior orofarenkste kaşınma, karıncalanma, yanma hissi, ödem şeklinde ortaya çıkar. Pişmiş, kurutulmuş, soyulmuş meyve yemek, semptomlara neden olmaz. Semptomlar genellikle lokal ve hafiftir ancak nadir olarak AÖ, hırıltılı solunum ve GIS bulgular da gelişebilir. Sistemik semptomlara ilerleme oluşabilir ve anafilaksi + görülebilir. Huş ağacı poleni gibi çeşitli polenlerle meyve proteinleri arasında çapraz reaksiyon sonucunda geliştiği düşünülmektedir. Polen-gıda alerjisi sendromu (PFAS) terimi bu nedenle de kullanılabilir.[18]

Anjiyoödem: Vasodilatasyon ve artmış vasküler geçirgenlik sonucu derin dermis, subkutan veya submukozal dokuların lokalize, kendi kendini sınırlayan, asimetrik, enflamatuvar olmayan bir ödemi olarak tanımlanır. Larinks tutulumu yaşamı tehdit edici olabilirken, intestinal anjiyoödem çok ağrılı olabilir ve akut karını taklit edebilir. Genellikle birkaç saat ila 1 veya 2 gün sürer-72 saate kadar sürebilir. Anafilaksi gibi bir sendromun belirtisi olarak ortaya çıkabilir. Anjiyoödemde ise sıklıkla mukozalar tutulur, kaşıntıdan çok yanma, gerginlik ve ağrı gözlenir.[14,15] Anjiyoödem histaminerjik, bradikinerjik ve idiyopatik olmak üzere gruplandırılır. Histaminerjik anjiyoödem; Ig E'nin tetiklediği tip 1 alerji ve IgE aracılı olmayan pseudoalerjik tip olarak ayrılır. Histaminerjik anjiyoödem: Mast hücresi ve / veya bazofillerin aktivasyonu ile indüklenir, histamin ve diğer mediatörler (histaminerjik anjiyoödem) salgılanır/alerjik kökenli olarak adlandırılır. Bradikinin aracılı veya non-histaminerjik /alerjik olmayan fazla bradikinin salınımı nedeniyle oluşur.[14,15,19]

Histamin aracılı / Histaminerjik anjiyoödem: En yaygın görülenidir. Mast hücreye ve bazofil aktivasyonuna sekonder oluşur. Sıklıkla ürtiker ile birlikte görülür. 12-48 saat sürer. Eritem, kaşıntı, bronkospazm, karın ağrısı, hipotansiyon ve kusma gibi diğer semptomlar eşlik edebilir. Belirtiler genellikle alerjenden 60 dakika sonra gelişir. Gıda alımı, çevresel alerjenler, ilaçlar/böcek zehiri maruziyeti etken olabilir.[19]

Anafilaksi: Akut, hızlı başlangıçlı, yaşamı tehdit edici sistemik aşırı duyarlılık reaksiyonudur, tıbbi acil olduğu için hızla tanınmalı ve erken müdahale edilmelidir. Çoğu anafilaksi atakları, IgE aracılı bir mekanizma ile oluşur. Anafilaksi semptom ve bulguları çoğunlukla alerjene maruziyet sonrası ilk 2 sa içinde/ani başlangıçla olur. Besine bağlı anafilakside 30 dak içinde/i.v. tdv ve böcek sokması sonrası çok daha hızlı şekilde gerçekleşir. Bifazik reaksiyonlar; genellikle ilk bulgulardan 4-12 saat sonra tekrarı şeklindedir. İlk bulgulara göre daha şiddetli oluşur. Adrenalin tedavisinde gecikme veya yetersizlik, steroid tedavisinin yapılmaması bu riski arttırmaktadır. Tüm yaş gruplarında en sık nedenler besin, ilaç ve böcek sokması şeklindedir. Besinler; çocuk ve gençlerde anafilaksinin en önemli tetikleyicisi iken; ilaç ve böcek sokması anafilaksisi erişkinler veya yaşlılarda daha sıktır. İlaçlar hastanede yatan kişilerde en sık nedeni oluşturur. En sık antibiyotikler; bunlardan da Beta laktam grubu en yaygın nedendir. En sık tetikleyen gıdalar; inek sütü, yumurta, soya, fıstık, fındık, balık, kabuklu deniz ürünleri ve buğdaydır. Arı venomuna bağlı anafilaksi yaşla birlikte artmaktadır, kırsal kesimde arıcılık ile uğraşan bireylerde özellikle görülmektedir. Lateks, aeroalerjenler ve aşılar diğer ender nedenler arasındadır.

Anafilaksi semptom ve bulguları: %80-90 oranında; deri, subkutanöz doku ve mukoza tutulumu ile ilişkilidir. Deri tutulumu olmaksızın da anafilaksi gelişebilmekte, ancak tanı zorluğu oluşturmaktadır. Solunum sistemi ile ilişkili belirtiler %70 oranında görülür. Çocuklarda daha sıktır. Gastrointestinal sistem; karın ağrısı, bulantı, kusma, diyare, disfaji şeklinde %30-45 oranında görülür. Kardiyovasküler sistem ile ilişkili belirtiler %10-45 oranında; erişkinde daha sık olarak gözlenir. Santral sinir sistemi ile ilişkili belirtiler %10-15 oranındadır. Anafilaksi için multidisipliner bir uzman grubu tarafından yayınlanmış tanı kriterleri kullanılmaktadır.[20]

Böcek ısırmaları: Böcekler insanları ısırarak, sokarak veya temas yolu ile duyarlanma sağlayarak dermatolojik açıdan önemli çok sayıda alerjik reaksiyona sebep olabilirler. Böcek ısırması sonucu oluşan reaksiyonların çoğu geçici lokal reaksiyonlardır. Sıklıkla ürtiker plakları ve papüller, daha az olarak da büller ve hemorajiler veya yaygın papüller görülür. Sistemik alerjik reaksiyonlar ise sıklıkla arı sokması sonrası gelişen, venom spesifik IgE-antikorları ile ortaya çıkan ani tip reaksiyonlardır. En sık ürtiker ve anjiyoödem, bronkospazm, büyük havayolunda ödem, hipotansiyon veya diğer anafilaksi belirtileri gibi birçok belirti ve semptom ile karakterizedir. En ciddi anafilaktik reaksiyonlar KVS ve solunum sistemlerini içerir ve potansiyel olarak yaşamı tehdit edicidir. Böcek ısırmaları sonrası gelişen alerjik reaksiyonlar sokmalardan daha hafiftir. Böceklerin ilk ısırıkları genellikle lokal ağrı ve şişliğe neden olur, aynı ısırığa tekrar maruz kalındığında bazı kişilerde 10-15 dakika içinde kardiyovasküler kollapsa kadar gidebilen klinik tablo gelişebilir. Hymenoptera grubu içinde en sık karşılaşılan böcek sokmaları, arılara bağlı olarak meydana gelenlerdir. Ülkemizde venoma bağlı anafilaksi en sık eşek arısı ve bal arısı sokmaları ile görülmektedir.[21]

Atopik dermatit: Atopik eğilimi olan kişilerde görülen, kronik, kaşıntılı ve enflamatuvar bir dermatozdur. Atopik dermatit yaşamın ilerleyen dönemlerinde gelişecek olan diğer alerjik hastalıkların, astım ve alerjik rinit ilk belirtisi olabilir. Çocukluk çağında ve genç erişkinlik döneminde atopik dermatit ile başlayan astım ve alerjik rinit ile devam eden bu süreç alerjik yürüyüş/atopik yürüyüş olarak adlandırılır. IgE ile ilişkili / Alerjen spesifik IgE seviyesi artmış AD; gerçek AD, ekstrinsik AD olarak da adlandırılır, hastaların %40-90'ında görülür. IgE ile ilişkisiz AD /nonalerjik tip; nonatopik dermatit, intrinsik AD /Atopiform dermatit şeklinde de adlandırılak sınıflandırılabilir. 2001 yılında"atopik ekzema/dermatit sendromu" şeklinde ayrı bir tanımlama oluşturulmuştur. Bugün için "atopik dermatit" tanımı halen geçerliliğini koruyarak günümüzde sıklıkla kullanılmaktadır. Son zamanlardaki bilgilere göre AD doğal gelişiminin üç aşamada olduğu düşünülmektedir. Başlangıç fazı erken nonatopik formudur, duyarlaşma henüz yoktur. İkinci faz gerçek AD geçiş fazıdır. Gıdalara veya çevresel alerjenlere karşı IgE duyarlaşması oluşmaktadır. Üçüncü fazda ise AD'li hastaların büyük oranında IgE otoantikorlarının oluşumuna yol açan alerjenler salınmaktadır.[22,23] Egzematöz lezyonlar akut, subakut veya kronik olabilir. Lezyonlar yaş ile ilişkili morfoloji ve dağılım gösterirler. AD'li çocuklarda besin alerjenlerine ve aeroalerjenlere IgE ile duyarlılık artmıştır. Erken başlangıçlı şiddetli atopik dermatit IgE aracılı besin alerjisi ile ilişkilidir. AD'lilerde besin alerjilerinin farklı belirti ve bulguları görülür.

Erken tip reaksiyonlar; ürtiker, anjioödem, flushing (sıklıkla ilk 2 sa içinde) şeklindedir. AD lezyonlarında alevlenmeye neden olmaz.

Kombine reaksiyonlar

Pruritus: Gıda alımından 2 saat sonra, AD lezyonlarında sekonder alevlenme gözlenir.

Geç tip reaksiyonlar; sorumlu besine maruziyetten 6-48 saat içinde, AD lezyonlarında kötüleşme ile (egzema yanıtı) sonuçlanır.[24,25]

Ev tozu akarları, polenler, hayvan epiteli ve küf mantarları gibi aeroalerjenlere karşı IgE aracılı duyarlanma AD' lilerde sık ve yaşla artış gösterir.[26]

Alerjik rinit (AR): Nazal mukozanın inflamatuvar bir hastalığıdır. Burun akıntısı, burun tıkanıklığı, burun kaşıntısı ve hapşırma şeklinde belirtileri vardır. Postnazal akıntı, öksürük, sinirlilik ve yorgunluk diğer yaygın belirtilerdir. AR non-enfeksiyöz rinitin en sık görülen formudur. Alerjik rinit sınıflaması 1-Mevsimsel: İlkbahar, yaz mevsimlerinde ortaya çıkar (polen ve küf alerjenleri) 2-Yıl boyu: devamlıdır, (ev tozu akarları, küf, hamamböceği, ev hayvanı alerjenleri)

– Mesleksel: İş ortamında karşılaşılan maddelerle temas sonrası ortaya çıkar; (lateks, izosiyanatlar vb.) yılboyunca görülü.[27]

Alerjik konjonktivitler: En sık geç çocukluk ve erken erişkinlik döneminde görülür. Belirtiler iki taraflı, sürekli veya mevsimsel olabilir. En sık kaşıntı, sulanma, mukoid akıntı, hafif kızarıklık, göz kapaklarında ve konjoktivada ödem gözlenir.[28]

Alerjik astım: Astım hastalarının yaklaşık %60'ını oluşturur. Astımın ortaya çıkmasına neden olan, polenler veya ev tozu akarı gibi alerjenlerdir. Göğüste sıkışma hissi, nefes darlığı, göğüste ıslık sesi, hırıltı, tekrarlayıcı nöbetler halinde öksürük görülür. Solunum yolu alerjenleri, saman nezlesi, kronik rinit ve astımda primer ajanlardır ve atopik dermatitte önemli bir rol oynarlar.[29]

Astım Rinit: Astım, rinite sıklıkla eşlik eder. Rinit genelde astımdan önce başlamaktadır. AR astım için bir risk faktörüdür. İkisi birlikte "**tek havayolu tek hastalık**" kavramı ile tanımlanırlar. Ev tozu akarlarıyla karşılaşınca, burunda tıkanıklık, geniz akıntısı, sık sünüzit, koku alamama, tozlu ortamda artan nefes darlığı, öksürük, hırıltılı solunum ve göğüste baskı hissi oluşur.[27,29]

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Letter to the editor / Editöre Mektup

Basophil Count, Percentage of Basophil and Basophil Lymphocyte Ratio in Psychiatry Practice: Current Approaches and Future Directions

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Dear Editor;

Basophils, the least abundant granulocytes, have poorly understood functions. They contain histamine and express the affinity immunoglobulin E (IgE) receptor FcεRIα and may play a role in protective T helper 2 (Th) cytokine-mediated immunity to some parasites. Also, basophils are thought to contribute to the pathogenesis of allergic diseases/reactions, asthma, and acute or chronic myelogenous leukaemia.[1,2] The basophil count (BASO), percentage of basophil (BASO%) and basophil lymphocyte ratio (BLR) are derived from complete blood count (CBC) and may lead to some interpretation.

Recent studies revealed that CBC can give important clues about the acute and chronic stages of diseases.[3] Various studies have also been reported on psychiatric disorders such as major depressive disorder,[4,5] alcohol use disorder[6] and opioid use disorder,[3] etc. Researchers examining the relationship between depression and anxiety and inflammation suggested that white blood cell (WBC) subset fraction and counts may provide indirect evidence of an altered inflammatory system in anxious depression. Baek et al.[7] demonstrated that anxious depression can lead to decreased BASO%. However, Kara et al.[5] found no significant difference in basophil-related parameters and BLR in suicide attempts that could be associated with depression and/or anxiety. Orum et al.[3] reported no association between basophil and opioid use, whereas BLR correlated with alcohol use duration.[6]

As with many studies on CBC parameters, basophil-related studies have many limitations. Firstly, the retrospective nature of these studies is the most important limitation. Longitudinal studies are needed to see how basophil behaves during acute, chronic stages of the diseases, before and after treatments. The known smoking effect that changes blood values is a confounding factor. The life style and nutritional characteristics of the individuals are also other confounding factors. On the other hand, it is known that basophil survives for a very short time in the body and can be affected by many different conditions. Nowadays, CBC parameters such as basophil in psychiatric disorders are mostly interpreted within the framework of acute inflammatory events. However, basophils have a memory response, and perhaps the values we have identified in the disease may reflect chronic events.[3] The ability of basophils to recognize and to react to antigen suggests that they may be involved in the development of memory immune responses. Allergic conditions have been reported to occur more frequently in developmental disorders. Strom and Silverberg[8] reported that paediatric eczema may be associated with increased risk of speech disorder. For these reasons, basophil suggests a possible association between developmental psychiatric disorders and previous infections.[9] This hypothesis needs more detailed studies. However, basophil-related parameters and BLR in such psychiatric disorders have not yet been studied.

In conclusion, it is suggested that studies examining the relationship between basophil-related parameters and psychiatric disorders should be directed from the acute inflammatory response topic to the chronic events due to its feature of memory response. The main subjects that can be investigated for this purpose are developmental stuttering, tic disorder and obsessive compulsive disorder.

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