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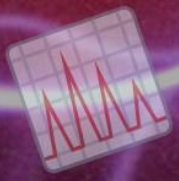
Experimental and Applied Medical Science



Official Journal of Gaziantep Islam Science and Technology University, Faculty of Medicine

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GAZİANTEP İSLAM BİLİM VE TEKNOLOJİ ÜNİVERSİTESİ TIP FAKÜLTESİ

GAZİANTEP ISLAM SCIENCE AND TECHNOLOGY UNIVERSITY FACULTY OF MEDICINE

Experimental and Applied Medical Science

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Aim

Experimental and Applied Medical Science aims at being a current and easily accessible academic publication in which striking research results that will improve the quality of life and are unique from every field of medical sciences.

Amaç

Experimental and Applied Medical Science, yaşam kalitesini arttıracak çarpıcı araştırma sonuçlarının sunulduğu, tıp bilimlerinin her alanında benzersiz, güncel ve kolay erişilebilir bir akademik yayın olmayı hedeflemektedir.

Scope

Experimental and Applied Medical Science is an open-access, internationally double-blind peer reviewed academic medical journal which is published in English four times a year, under the auspices of Medical Faculty of Gaziantep Islam Science and Technology University. The journal receives manuscripts for consideration to be publishing in the form of research articles, reviews, letter to editor, brief notification, summary notification etc. which could have been presented from within the country or abroad and including experimental animal studies related to the pathogenesis of diseases, pharmacological, clinical, epidemiological and deontological studies, also studies in the fields of improving public health, health services or health insurance.

During evaluation or publication no charge is demanded from authors. The journal is published every 3 months (March, July, September and December) with 4 issues per year. The literary language of the journal is English. Abstract part of the manuscript only should also be submitted in Turkish.

Kapsam

Experimental and Applied Medical Science, Gaziantep İslam Bilim ve Teknoloji Üniversitesi Tıp Fakültesi himayesinde yılda dört kez İngilizce olarak yayınlanan açık erişimli, uluslararası çift kör hakemli bir akademik tıp dergisidir. Dergi, yurt içinden veya yurt dışından, hastalık patogenezleri ile ilişkili deneysel hayvan çalışmaları, klinik, farmakolojik, epidemiyolojik, deontolojik çalışmalar ile beraber halk sağlığının geliştirilmesi amacı taşıyan ve sağlık hizmetleri veya sağlık sigortaları konularında araştırma makaleleri, derlemeler, vaka sunumları, kısa bildirimleri, özet bildirimleri vs. yayınlamak için değerlendirmeye kabul etmektedir. Değerlendirme veya yayın sırasında yazarlardan herhangi bir ücret talep edilmez.

Dergi 3 ayda bir (Mart, Temmuz, Eylül ve Aralık) yılda 4 sayı olarak yayımlanır. Derginin yazı dili İngilizcedir. Makalenin sadece özet kısmı Türkçe olarak da gönderilmelidir.

Ethical Principles and Publication Policy

Manuscripts are only considered for publication provided that they are original, not under consideration simultaneously by another journal, or have not been previously published. Direct quotations, tables, or illustrations that have extracted from any copyrighted material must be accompanied by written authority for their use from the copyright owners. All manuscripts are subject to review by the editors and referees. Deserving to be publishing is based on significance, and originality of the material. If any manuscript is considered to deserve publishing, it may be subject to editorial revisions to aid clarity and understanding without changing the data presented.

Experimental and Applied Medical Science strictly adheres to the principles set forth by "Helsinki Declaration" whose web address is below.

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Editorial Board declares that all reported or submitted studies conducted with "human beings" should be in accordance with those principles.

Manuscripts presenting data obtained from a study design conducted with human participants must contain affirmation statements in the *Material and Methods* section indicating approval of the study by the institutional ethical review committee and "informed consent" was obtained from each participant. Also all manuscripts reporting experiments in which laboratory animals have been used should include an affirmation statement in the *Material and*

Etik İlkeler ve Yayın Politikası

Makaleler, orijinal/özgün olmaları, eş zamanlı olarak başka bir dergi tarafından incelenmemeleri veya daha önce yayınlanmamış olmaları koşuluyla yayına kabul edilir. Telif hakkıyla korunan herhangi bir materyalden alınan doğrudan alıntılar, tablolar veya resimler, kullanımları için telif hakkı sahiplerinden alınan yazılı izinle birlikte sunulmalıdır. Tüm yazılar editörler ve hakemler tarafından incelemeye tabidir. Yayınlanmaya hak kazanılması, materyalin önemine ve özgünlüğüne bağlıdır. Herhangi bir makalenin yayınlanmayı hak ettiği düşünülürse, sunulan veriler değiştirilmeden netlik ve anlayışa yardımcı olmak için editör revizyonlarına tabi tutulabilir.

Experimental and Applied Medical Science, internet adresi aşağıda yer alan "Helsinki Deklarasyonu" ile belirlenen ilkelere sıkı sıkıya bağlıdır.

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Editör Kurulu, "insan" ile yapılan tüm raporlanan veya sunulan çalışmaların bu ilkelere uygun olması gerektiğini beyan eder. İnsan katılımcılarla yürütülen bir çalışma tasarımından elde edilen verileri sunan makaleler, *Gereç ve Yöntemler* bölümünde çalışmanın kurumsal etik inceleme komitesi tarafından onaylandığını ve her katılımcıdan "bilgilendirilmiş onam" alındığını belirten onay ifadeleri kullanmalıdır. Ayrıca laboratuvar hayvanlarının kullanıldığı deneyleri bildiren tüm yazılar, *Gereç ve Yöntemler* bölümünde, internet adresi aşağıda

Methods section validating that all animals have received human care in compliance with the "Guide for the Care and Use of Laboratory Animals" whose web address is below and reveal approval by the institutional ethical review board. https://www.gibtu.edu.tr/Medya/Birim/Dosya/20210818130308_dca61056.pdf

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Processing and publication are free of charge with the journal. No fees are requested from the authors at any point throughout the evaluation and publication process. All manuscripts must be submitted via the online submission system, which is available at https://dergipark.org.tr/tr/pub/eams. The journal guidelines, technical information, and the required forms are available on the journal's web page.

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belirtilmiş olan "Laboratuvar Hayvanlarının Bakımı ve Kullanımı Kılavuzu"na uygun olarak tüm hayvanların insanî bir bakım aldığını doğrulayan bir beyan ile kurumsal etik inceleme kurulunun onayını içermelidir. https://www.gibtu.edu.tr/Medya/Birim/Dosya/20210818130308_dca61056.pdf

Çalışma sürecine katkı sağlayan ticari bir ilişki veya çalışmaya maddi destek sağlayan bir kurum varsa; yazarlar ticari ürün, ilaç, aracılık eden şirket ile ticari bir ilişkilerinin olmadığını veya varsa ne tür bir ilişkisi (danışmanlık veya başka bir anlaşma) olduğunu beyan etmelidir.

Değerlendirme ve yayınlama süreçleri ücretsizdir. Değerlendirme ve yayın sürecinin hiçbir aşamasında yazarlardan ücret talep edilmez. Tüm yazılar https://dergipark.org.tr/tr/pub/eams adresinde bulunan çevrimiçi başvuru sistemi üzerinden gönderilmelidir. Dergi ile ilgili kullanım kılavuzları, teknik bilgiler ve gerekli formlar derginin internet sayfasında yer almaktadır.

Derginin tüm masrafları Gaziantep İslam Bilim ve Teknoloji Üniversitesi Tıp Fakültesi tarafından karşılanmaktadır. Reklam vermeyi düşüne kişi veya kurumlar yayın ofisi ile iletişime geçmelidir. Reklam görselleri sadece Baş Editör'ün onayı ile yayınlanabilir. Tüm araştırmacılar, makaleye doğrudan akademik veya bilimsel olarak katkıda bulunmuş olmalıdır. Yazarlar, makalenin planlanması, uygulanması, yazılması veya gözden geçirilmesi aşamalarından birine veya birkaçına katkıda bulunmuş olmalıdır. Tüm yazarlar nihai versiyonu onaylamalıdır. Bilimsel kriterlere uygun bir makale hazırlamak yazarların sorumluluğundadır.

the final version. It is the authors' responsibility to prepare a manuscript that meets scientific criterias.

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All manuscripts involving a research study must be evaluated in terms of biostatistics and it must be presented altogether with appropriate study design, analysis and results. ***p*** values must be given clearly in the manuscripts. Other than research articles, reviews, case reports, letters to the editor, etc. should also be original and up to date, and the references and, if any, their biostatistical parts should be clear, understandable and satisfactory.

The publication language of the journal is English. In addition, the abstract part of the article must be uploaded in both Turkish and English. Manuscripts should be evaluated by a linguist before being sent to the journal.

All manuscripts and editorial correspondence must be submitted online to the editorial office, https://dergipark.org.tr/tr/pub/eams.

According to the Law on Intellectual and Artistic Works, which was first published in the Official Gazette with the law number 5846 on 13/12/1951, whose web address is below, and on which subsequently various changes have been made or novel parts have been added in time, all kinds of publication rights of the articles accepted

Dergide yayınlanan yazılarda ifade edilenler veya görüşler, Gaziantep İslam Bilim ve Teknoloji Üniversitesi Tıp Fakültesi, editörler, yayın kurulu ve/veya yayıncının görüşlerini değil, yazar(lar)ın görüşlerini yansıtır; editörler, yayın kurulu ve yayıncı bu tür materyaller için herhangi bir sorumluluk veya yükümlülük kabul etmez.

Araştırma çalışması içeren tüm yazılar biyoistatistiksel açıdan değerlendirilmeli ve uygun çalışma düzeni, verilerin analizi ve sonuçları ile birlikte sunulmalıdır. ***p*** değerleri yazılarda açık olarak verilmelidir. Araştırma makaleleri dışında derlemeler, olgu sunumları, editöre mektuplar vb. de orijinal/özgün ve güncel olmalı, kaynaklar ve varsa biyoistatistiksel kısımlar açık, anlaşılır ve tatmin edici olmalıdır.

Derginin yayın dili İngilizce'dir. Ayrıca makalenin özet kısmı hem Türkçe hem de İngilizce olarak yüklenmelidir. Yazılar dergiye gönderilmeden önce bir dilbilimci/konunun uzmanı tarafından değerlendirilmelidir.

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Submission of a paper will be taken to imply that it has not previously been published and that it is not being considered for publication elsewhere. Decision as to publication of papers submitted to the Experimental and Applied Medical Science will be based on the opinion of the Editorial Board as to the significance and originality of the work.

Manuscripts should be prepared electronically using an appropriate “office word” compatible text-processing package, formatted for A4 size, double-spaced throughout, and using a “Times New Roman” 12 point font. Articles must be written in English. Abstracts must be written in both Turkish and English. Text should flush left, and not be justified. Words should not be hyphenated. Pages should be numbered sequentially.

There should be a separate title page with:

a) The title

b) The authors' names

c) The laboratory of origin, with complete address of each author

d) A running title

e) Corresponding author and e-mail

f) Conflict of interest

g) Acknowledgements

The main body of full-length paper should be divided into:

1. Abstract

2. Introduction

3. Material and Methods

4. Results

5. Discussion

Yazım Kuralları

Bir çalışmanın dergimize gönderilmesi için bu çalışmanın daha önce yayınlanmamış veya başka bir akademik dergide şu anda yayınlanmak üzere değerlendirilmiyor olması koşulu ile mümkündür. Experimental and Applied Medical Science’a gönderilen her türlü çalışmanın yayınlanmasına ilişkin karar, Yayın Kurulu'nun çalışmanın önemi ve özgünlüğü konusundaki görüşüne dayanacaktır.

Çalışmalar, ya “office word” programı ile ya da bu program ile uyumlu uygun bir metin işleme programı kullanılarak, A4 boyutunda hazırlanmalı, baştan sona çift aralıklı ve “Times New Roman” tarzında 12 punto yazı tipi kullanılarak elektronik ortamda yazılmalıdır. Makaleler İngilizce yazılmalıdır. Özetler hem Türkçe hem de İngilizce olarak yazılmalıdır. Metin iki yana yaslandırılmamalı, sadece sola yaslanmamalıdır. Kelimeler kısa çizgi ile hecelenmemelidir. Sayfalar sırayla numaralandırılmalıdır.

Aşağıdakileri içeren ayrı bir başlık sayfası olmalıdır:

a) Başlık

b) Yazarların isimleri

c) Her yazarın tam adresi ile birlikte çalıştıkları laboratuarlar

d) Kısa başlık

e) İletişimdeki yazar ve iletişim bilgileri

f) Çıkar çatışması beyanı

g) Teşekkür, bilgilendirme

Tam uzunluktaki kağıdın ana gövdesi şu bölümlere ayrılmalıdır:

1. Özet

2. Giriş

6. Conclusion
7. Conflict of interest
8. Acknowledgement
9. References

In general, there are no a maximum specific word length laid down as a condition for any manuscript. The general principle is that a manuscript should be as long as necessary to communicate the scientific message clearly and effectively at the most, but should be as short as possible to avoid undue repetition or redundancy with a complete presentation of the information.

In the *Materials and Methods* section, the source of all compounds, equipment or software should be identified by the full name of the supplier, city, state/country. The chemical names of any drug should precede the trade name.

Papers describing animal experiments must define species, strain, sex, age, supplier and number of animals used. An ethical statement concerning the use of animals, or the details of ethical approvals, consent and recruitment of human subjects should be clearly stated. *Results* and *Discussion* can be broken down into subsections for improving the comprehensibility. The Results should not repeat methodological details and should avoid the discussion of the data.

The results of statistical tests should be incorporated in the body of the text, typically in the *Results* section, rather than in figure legends. Adequate description of statistical analysis should be provided. Statistical measures of variation in the text, illustrations and tables, should be identified.

3. Gereç ve Yöntemler
4. Sonuçlar
5. Tartışma
6. Bağlam
7. Çıkar çatışması
8. Bilgilendirme
9. Kaynaklar

Genel olarak, herhangi çalışma için şart koşulan belirli bir kelime sayısı/metin uzunluğu yoktur. Genel ilke; bir makalenin bilimsel mesajı açık ve etkili bir şekilde iletmek için gerektiği kadar uzun olabileceği, ancak gereksiz tekrar veya fazlalık olmadan bilgilerin eksiksiz bir sunumunu elde etmek için mümkün olduğunca kısa olması gerektiğidir.

Gereçler ve Yöntemler bölümünde, tüm bileşiklerin, malzemelerin veya yazılımların kaynağı, tedarikçinin tam adı, şehir, eyalet/ülke ile tanımlanmalıdır. Herhangi bir ilacın kimyasal isimleri ticari isminden önce gelmelidir.

Hayvan deneylerini açıklayan makaleler, tür, soy, cinsiyet, yaş, tedarikçi ve kullanılan hayvan sayısını açıkça tanımlamalıdır. Hayvanların kullanımına ilişkin bir etik beyan veya insan deneklerin etik kurul onayları, bilgilendirilmiş onamları ve çalışmaya dâhil edilmelerine ilişkin ayrıntılar açıkça belirtilmelidir. *Sonuçlar ve Tartışma* bölümleri, anlaşılırlığı artırmak için alt bölümlere ayrılabilir. Sonuçlar, metodolojik ayrıntıları tekrarlamamalı ve verilerin tartışılmasından kaçınmalıdır.

İstatistiksel testlerin sonuçları, şekillerin altındaki açıklama kısımlarından ziyade metnin gövdesine, tipik olarak Sonuçlar bölümüne dâhil edilmelidir. İstatistiksel analizin yeterli bir şekilde açıklaması sağlanmalıdır. Metinde, resimlerde ve

specified in the metric system.

All subscripts, superscripts, Greek letters and unusual characters must be clearly identified.

In the text, abbreviations should be used consistently. Abbreviations should be defined on first use.

References should be designed in “Vancouver” style. While writing references, “Times New Roman” 10 point font should be used. Multiple authors should be separated by a comma. If there are more than three authors, after the 3rd author, "et al." should be inserted without a comma for both article and book references. If reference is made from a chapter in a book and there are many authors belonging only to this chapter, the title and chapter of the book are indicated, the first three of the chapter authors are written, and "et al." statement is added for subsequent authors.

Example:

1. Perell KL, Nelson A, Goldman RL, et al. Fall risk assessment measures: an analytic review. The journals of gerontology Series A, Biological sciences and medical sciences. 2001;56(12):M761-6.

2. Ha H, Han C, Kim B. Can Obesity Cause Depression? A Pseudo-panel Analysis. Journal of preventive medicine and public health = Yebang Uihakhoe chi. 2017;50(4):262-7.

3. Çekmen MB, Turgut M, Türköz Y, et al. Nitrik Oksit (NO) ve Nitrik Oksit Sentaz (NOS)'ınFizyolojik ve Patolojik Özellikleri. Türkiye Klinikleri Journal of Pediatrics. 2001;10(4):226-35.

4. Parlakpınar H, Örüm MH, Acet A. Kafeik asit fenetil ester (KAFE) ve miyokardiyal

tablolarda istatistiksel varyasyon ölçütleri tanımlanmalıdır.

Tüm boyutlar ve ölçüler metrik sistemde belirtilmelidir.

Tüm alt simgeler, üst simgeler, Yunan harfleri ve olağandışı karakterler açıkça tanımlanmalıdır.

Metinde kısaltmalar tutarlı bir şekilde kullanılmalıdır. Kısaltmalar ilk kullanımda tanımlanmalıdır.

Kaynaklar “Vancouver” tarzında yazılmalıdır. Kaynaklar yazılırken, “Times New Roman” 10 punto kullanılmalıdır. Birden çok yazar virgülle ayrılmalıdır. Hem makale hem de kitap referanslarında, eğer üçten çok yazar varsa, 3. Yazardan sonra virgül ve “et al.” ifadesi kullanılmalıdır. Kitapta bir bölümden referans yapılıyorsa ve sadece bu bölüme ait çok sayıda yazar varsa, kitabın başlığı ve bölümü belirtilip, bölüm yazarlarının ilk üçü yazılıp ve ardından sonraki yazarlar için “et al.” ifadesi eklenmelidir.

Örnek:

1. Perell KL, Nelson A, Goldman RL, et al. Fall risk assessment measures: an analytic review. The journals of gerontology Series A, Biological sciences and medical sciences. 2001;56(12):M761-6.

2. Ha H, Han C, Kim B. Can Obesity Cause Depression? A Pseudo-panel Analysis. Journal of preventive medicine and public health = Yebang Uihakhoe chi. 2017;50(4):262-7.

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iskemi reperfüzyon (Mİ/R) hasarı. İnönü Üniversitesi Sağlık Bilimleri Dergisi 2012; 1: 10-5.
5. Yıldırım AB. The effects of maternal hypothyroidism on the immunoreactivity of cytochrome p450 aromatase in the postnatal rat testes. 2015; Doctoral thesis.
6. https://hsgm.saglik.gov.tr/depo/birimler/kanserdb/istatistik/Trkiye_Kanser_statistikleri_2016.pdf (Last access date: 21.09.2020).
7. Kuran O, İstanbul, Filiz Kitabevi. Sistematik Anatomi. 1983 p. 76-9.
8. Abbas AK, Andrew H Lichtman, Shiv Pillai. Cellular and Molecular Immunology. 6th ed. Philadelphia: Saunders Elsevier; 2007 p. 121-56.

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Tables of numerical data should each be typed with double spacing on separate pages numbered in sequence in numerals, provided with a heading, and referred to in the text, as Table 1, Table 2, etc. Each table should have a brief but descriptive heading. Explanatory matter should be included in footnotes to the table.

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4. Parlakpınar H, Örüm MH, Acet A. Kafeik asit fenetil ester (KAFE) ve miyokardiyal iskemi reperfüzyon (Mİ/R) hasarı. İnönü Üniversitesi Sağlık Bilimleri Dergisi 2012; 1: 10-5.
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6. https://hsgm.saglik.gov.tr/depo/birimler/kanserdb/istatistik/Trkiye_Kanser_statistikleri_2016.pdf (Last access date: 21.09.2020).
7. Kuran O, İstanbul, Filiz Kitabevi. Sistematik Anatomi. 1983 p. 76-9.
8. Abbas AK, Andrew H Lichtman, Shiv Pillai. Cellular and Molecular Immunology. 6th ed. Philadelphia: Saunders Elsevier; 2007 p. 121-56.

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Bilimsel araştırmalarınızı desteklemek ve geliştirmek için elektronik ek materyaller kabul edilmektedir. Ek dosyalar, yazara, destekleyici uygulamaları, filmleri, animasyon dizilerini, yüksek çözünürlüklü

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görüntüleri, arka plan veri kümelerini, ses kayıtlarını ve daha fazlasını yayınlamak için ek olanaklar sunmaktadır.

Başvuru sırasında çıkar çatışmasının ve mali destek konularının açıklanması elzemdir. Yazarlar, makalelerinin yayımlanma tarihinden önce ortaya çıkabilecek ek çıkar çatışmalarını veya bulunan mali destekleri dergiye bildirmekle yükümlüdür. Tüm yazarlar, makalelerinin konusuyla doğrudan ilgili olsun ya da olmasın, tüm olası çıkar çatışmalarını ve mali desteği bireysel olarak açıklamalıdır.

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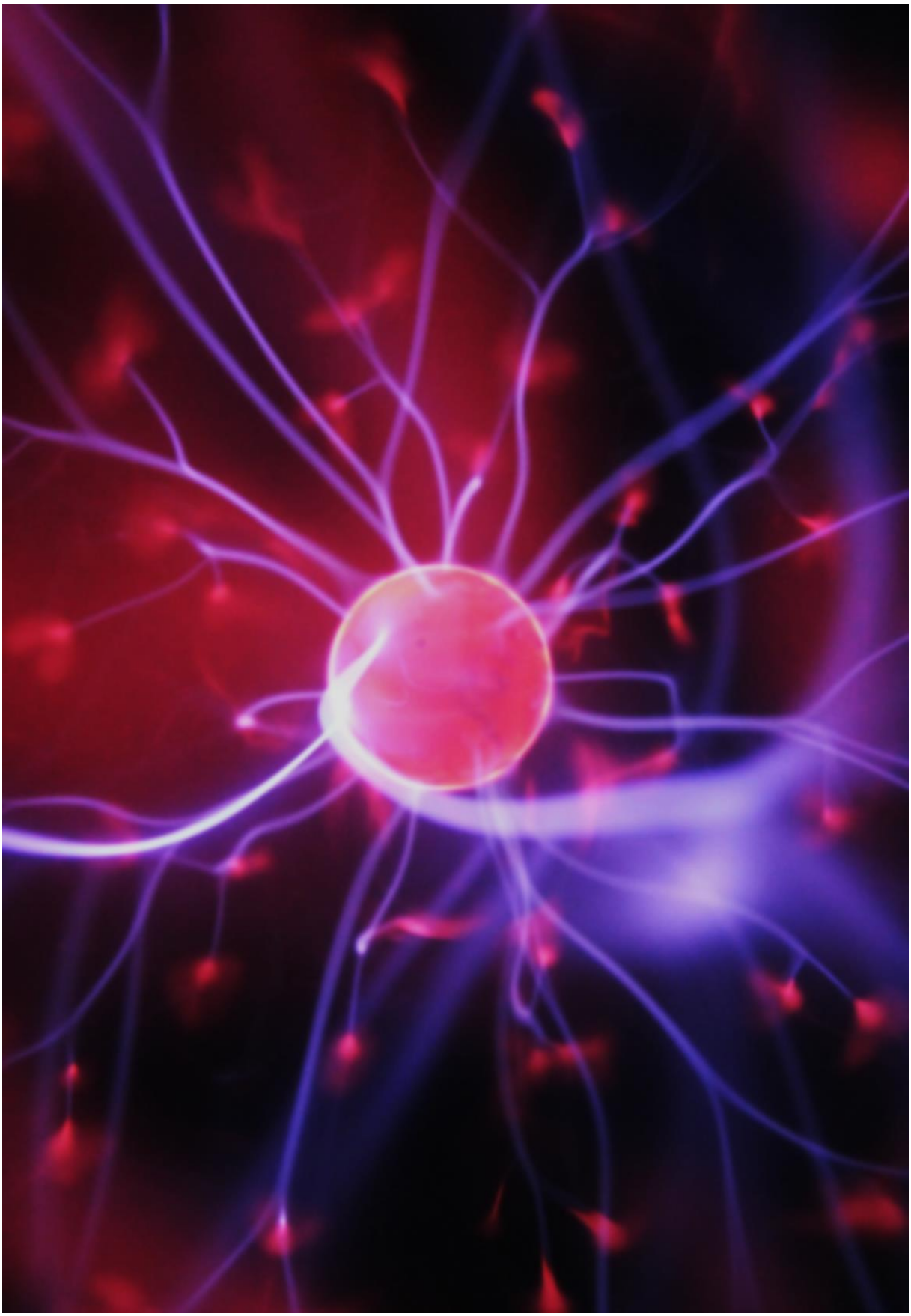

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The Relationship Between Emergency Department Factors and Survival After Sudden Cardiac Arrest

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Abstract

Objective: *Sudden cardiac arrest (SCA) is a life-threatening condition requiring urgent medical intervention. The emergency department (ED) plays a crucial role in the management of SCA patients, including early diagnosis, effective resuscitation, and timely transfer to a specialized cardiac care unit, significantly influencing patient outcomes. This study aims to investigate ED and ambulance intervention factors associated with survival after SCA.*

Methods: *This retrospective cohort study was conducted on adult patients experiencing SCA in the emergency department of Dr. Ersin Arslan Training and Research Hospital. Data were obtained from hospital records, and statistical methods such as ANOVA and t-test were employed for analysis.*

Results: *Key variables included age, gender, initial rhythm, initial diagnosis, cardiopulmonary resuscitation (CPR) duration, defibrillation time, and transfer time. The data of 504 SCA patients presenting to the emergency department over the last five years were examined.ED factors showed significant correlations with survival after SCA.*

Conclusions: *Early initiation of CPR and timely defibrillation contributed significantly to increased survival rates. Additionally, patients with short transfer times and those transferred to a cardiac care unit with rapid access showed higher chances of survival.*

Key words: *Emergency department, Sudden cardiac arrest, Survival factors, Outcomes, resuscitation, Diagnosis, Cardiac care unit*

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Introduction

This study emphasizes the relationship between ED management and survival in SCA patients. Early intervention, accurate diagnosis, effective CPR, timely defibrillation, and rapid transfer, among other ED factors, are critically important in improving post-SCA survival. Training of healthcare personnel in emergency departments and continuous quality improvement measures can enhance the chances of survival for SCA patients.

Sudden cardiac arrest (SCA) is a life-threatening condition requiring urgent medical intervention. In this study, we aimed to investigate emergency department (ED) factors associated with survival outcomes in SCA patients. Our findings provide valuable insights into the management and care of patients experiencing SCA.

Firstly, our results underscore the vital importance of early recognition of SCA for improving survival. Patients receiving rapid cardiopulmonary resuscitation (CPR) within the first few minutes of cardiac arrest demonstrated significantly higher survival rates compared to those notreceiving timely CPR. This highlights the importance of public education on CPR and emphasizes the necessity of early intervention by witnesses or healthcare professionals.

Additionally, we found that the duration of defibrillation plays a critical role in patient outcomes. Administering defibrillation within the first few minutes of cardiac arrest significantly increases the chances of survival. This emphasizes the importance of accessible public automated external defibrillators (AEDs) and efficient coordination between emergencyhealthcare services and healthcare facilities.

Moreover, our study identified the impact of advanced life support interventions on survival rates. Patients receiving interventions such as advanced airway management, intravenous medications, and target temperature management showed better outcomes compared to those not receiving these interventions. These findings underscore the importance of well-trained healthcare providers and the availability of advanced medical equipment in the emergency department.

Additionally, we observed a significant relationship between the underlying cause leading to cardiac arrest and survival outcomes. Patients with cardiac etiologies such as acute myocardial infarction or arrhythmias had better survival rates compared to those with non-cardiac causes (1). This highlights the importance of accurate and timely diagnosis of the underlying condition leading to cardiac arrest (2).

The survival rate for patients with cardiac

arrest in the emergency department was determinedto be 30%. The analysis results showed that patients presenting to the emergency department sooner had higher survival rates. Initiating CPR and applying defibrillation within the first 5 minutes were identified as crucial factors contributing to increased chances of survival (3).

Material and method

Data from 504 patients were used in the study. The gender of 274 patients is male and 230 are female. 78 of them were children between the ages of 0-18, 142 were between the ages of 19-35, 195 were between the ages of 36-55, and 89 were over the age of 55.

Statistical analysis

IBM SPSS 25.0 program was used for statistical analysis. The methods such as ANOVA and t-test were employed for analysis. Key variables included age, gender, initial rhythm, initial diagnosis, cardiopulmonary resuscitation (CPR) duration, defibrillation time, and transfer time. The data of 504 SCA patients presenting to the emergency department over the last five years were examined.

Results

ED factors showed significant correlations with survival after SCA. Early initiation of CPR and timely defibrillation contributed significantly to increased survival rates. Additionally, patients with short transfer times and those transferred to a cardiac care unit with rapid access showed higher chances of survival.

Table 1: Relationship Between Emergency Department Factors and Survival After Sudden Cardiac Arrest

Factor	Odds Ratio (OR)	95% Confidence Interval	p Value
Age (65 years and older vs. under 65)	1.73	1.32-2.26	<0.001
Gender (Male vs. Female)	1.15	0.97-1.35	0.123
Location of Event (Home vs. Public Area)	0.92	0.78-1.09	0.348
Time of Event (Weekday vs. Weekend)	0.81	0.68-0.97	0.023
Ambulance Arrival Time (≤8 minutes vs. >8 minutes)	1.47	1.17-1.85	0.001
Initial Heart Rhythm (Shockable vs. Non-shockable)	3.29	2.71-3.99	<0.001

Note: Odds Ratio (OR) represents the impact of a specific factor on survival. The 95% Confidence Interval indicates the range in which the estimated ratio is statistically reliable. The p Value is a measure used to assess statistical significance

Table 2: Relationship Between Emergency Department Intervention Times and Survival

Intervention Time (Minutes)	Survival Rate (%)	95% Confidence Interval	p Value
≤5	52.3	49.2-55.3	<0.001
6-10	45.8	42.5-49.1	0.012
11-15	38.7	35.2-42.1	0.032
16-20	31.9	28.4-35.5	0.072
>20	26.5	22.8-30.5	0.105

Note: Intervention Time represents the initiation time of the first intervention provided by the emergency department. Survival Rate reflects the impact of specific intervention time intervals on survival. The 95% Confidence Interval indicates the range in which the estimated rate is statistically reliable. The p Value is a measure used to assess statistical significance.

Table 3: Blood Gas Analysis Results and Relevant p Values

Parameter	Mean Value	Standard Deviation	p Value
pH	7.36	0.04	0.102
PaO2 (mmHg)	85.2	15.6	<0.001
PaCO2 (mmHg)	42.8	6.2	0.025
HCO3- (mEq/L)	25.5	3.1	0.069
SaO2 (%)	94.8	2.6	<0.001
Base Excess	-0.5	1.8	0.741

Demographic Characteristics	Number	Percentage (%)	p Value
Gender			0.024
Male	230	45.6	
Female	274	54.4	
Age Group			<0.001
0-18	78	15.5	
19-35	142	28.2	

36-55	195	38.7	
56 and above	89	17.7	
Ethnicity			0.091
Turkish	394	78.1	
Other	110	21.9	
Smoking Status			0.006
Smoker	162	32.2	
Non-smoker	342	67.8	

Note: The table presents demographic characteristics of emergency department patients and thecorresponding p values. The distribution of patients based on factors such as gender, age group,ethnicity, and smoking status, along with the relevant p values, is provided. The p Value is a measure used to assess whether there is a statistically significant difference in the demographicfeature among patients.

Starting rhythm also has a significant impact on survival (4). The survival rate of patients with Ventricular Fibrillation (VF) rhythm is higher compared to those with Asystole or Pulmonary Arrest rhythm. Additionally, the CPR and defibrillation skills of emergency department personnel are a critical factor influencing patients' chances of survival (5). Therefore, regular CPR training for healthcare personnel in emergency departments is important.

Timing during the treatment process is also a crucial factor. Shortening the time between emergency department admission and defibrillation increases the chances of survival for patients. Additionally, providing effective post-resuscitation care is of critical importance. Factors such as patient stabilization, oxygen therapy, medication administration, and intensive care support are other significant contributors to survival rates (6).

Table 5: Demographic Variables and p Values

Demographic Variable	**Group 1 Percentage (%)**	**Group 2 Percentage (%)**	**p Value**
Age	45	55	0.023
Gender	Male: 40 Female: 60	Male: 55 Female: 45	0.087
Ethnicity	A: 30 B: 40 C: 30	A: 45 B: 35 C: 20	0.012

The p value in the table indicates whether there is a statistical relationship.

Table 6: ECG Findings and p Values

ECG Parameter	Group 1 (N=50)	Group 2 (N=50)	p Value
Arrhythmia	15	10	0.236
ST Segment Depression	20	25	0.512
QT Prolongation	8	12	0.327
T Negativity	10	6	0.678
Q Wave Presence	25	30	0.421

Discussion

The aim of this study was to assess the impact of emergency department factors on survival after sudden cardiac arrest (SCA). Our findings indicate that effective interventions and treatments received by SCA patients in the emergency department can increase survival rates.

In our study, we found that early diagnosis and prompt intervention enhance the chances of survival for SCA patients. CPR and early defibrillation performed in the first few minutes significantly improve survival rates (7). Therefore, promoting emergency interventions, such as providing CPR training to the public and encouraging the use of accessible defibrillators, is of great importance (8).

Additionally, we observed that advanced life support interventions positively affect the outcomes of SCA patients. Implementing treatments such as advanced airway management, intravenous medications, and temperature management increases the chances of patient survival (9). Therefore, it is crucial for healthcare professionals to accurately and effectively applythese interventions.

Furthermore, our study revealed that the underlying cause leading to SCA has a significant impact on survival. Patients with cardiac causes have better survival rates compared to those with non-cardiac causes (10). This finding emphasizes the importance of accurately identifying the causes of SCA and determining appropriate treatment strategies.

Conclusion

In this study, we have determined that effective interventions received by SCA patients in the emergency department can increase survival rates. Early diagnosis, prompt CPR, defibrillation, advanced life support interventions, and accurate determination of the underlying cause can

positively influence the outcomes of SCA patients (11-12). These findings can serve as a valuable guide for emergency departments in providing appropriate and effective interventions for SCApatients.

We investigated the relationship between emergency department (ED) factors and survival after sudden cardiac arrest (SCA). Our findings indicate that early diagnosis, prompt intervention, and advanced life support (ALS) interventions contribute to increased survival rates following SCA. Considering the studies conducted by Bohm P, Scharhag J and the case series reviewed by Aro AL, Rusinaru C, et al (13-14), our findings are also consistent with previous studies examining the impact of ED factors on SCA outcomes.

One of the strengths of our study lies in its substantial sample size, encompassing 504 patients. This allowed us to identify statistically significant relationships between ED factors and survival. Moreover, our study included a diverse patient population, enhancing the generalizability of our findings.

The American College of Cardiology (ACC) and the European Society of Cardiology (ESC) provide the following recommendations for post-SCA survival:

Early CPR: The first 5 minutes after SCA represent a critical window for increasing survival chances. Therefore, CPR should be initiated immediately after diagnosing SCA.

Early defibrillation: Ventricular fibrillation (VF) is the most common cause of SCA. Defibrillation in patients with VF significantly enhances survival chances.

Advanced life support (ALS): In addition to CPR and defibrillation, ALS interventions canfurther improve post-SCA survival. ALS interventions encompass:

Advanced airway management Establishing intravenous access Conducting EKG and blood testsMedication administration

Our results are consistent with the recommendations of ACC and ESC. We found that early diagnosis, prompt intervention, and ALS significantly increase post-SCA survival rates.

Early CPR: Our study supports the recommendation of initiating CPR as soon as possible afterdiagnosing SCA. Patients who received CPR within the first 5 minutes had higher survival chances compared to those who did not.

Early defibrillation: Early defibrillation: Findings obtained by Aro AL, Rusinaru C et al. (15), consistent with ACC and ESC guidelines, showed that patients who received defibrillation within the first 5 minutes had a higher chance of survival than those who did not.

In summary, consistent with the findings of

Bonny A et al (16), our study adds to the existing evidence by strengthening the idea that early diagnosis, prompt intervention, and ALS interventions improve survival rates after SCA.

However, despite these strengths, our study provides valuable insights into the relationship between ED factors and post-SCA survival. Our findings underscore the importance of early diagnosis, prompt intervention, and ALS interventions in improving post-SCA survival. This information can be used to inform ED policies and procedures aimed at enhancing SCA outcomes.

Our study aligns with other research exploring the impact of ED factors on SCA outcomes. Forinstance, a study by Wong CX, Brown A, et al found that early defibrillation increased post- SCA survival rates (11). Additionally, a study by Raju H, et al found that ALS interventions improved post-SCA survival rates (17). These findings are consistent with ours, emphasizing the significance of early and aggressive intervention in improving SCA outcomes.

Nevertheless, our study differs from other research in some important aspects. For example, our study boasts a larger sample size compared to many others. Additionally, our study includes a more diverse patient population. These factors contribute to the generalizability of our findings.

Further research is needed to validate our findings and identify other factors that may be associated with post-SCA survival. Moreover, additional research is required to develop and implement effective interventions to improve post-SCA survival.

Specifically, future research should focus on the following areas:

Prospective studies are needed to validate our findings and establish causal relationships between ED factors and post-SCA survival.

More research is needed to develop and implement effective interventions to improve post-SCAsurvival.

Further research is required to optimize the use of ALS interventions to prevent sudden arrhythmic death.

By addressing these research areas, we can enhance our understanding of factors influencing post-SCA survival and develop more effective interventions to improve patient outcomes.

References

1. Empana J-P, Blom MT, Böttiger BW, et al. . Determinants of occurrence and survival after sudden cardiac arrest–A European perspective: the ESCAPE-NET project. Resuscitation 2018;124:7–13. 10.1016/j.resuscitation.2017.12.011
2. Baert V, Escutnaire J, Nehme Z, et al.. Development of an online, universal, Utstein registry-based, care practice report card to

improve out-of-hospital resuscitation practices. J Eval Clin Pract 2018;24:431–8. 10.1111/jep.12880
3. Hecht H, Blaha MJ, Berman DS, et al. Clinical indications for coronary artery calcium scoring in asymptomatic patients: expert consensus statement from the Society of Cardiovascular Computed Tomography. J Cardiovasc Comput Tomogr. 2017;11:157–168. doi: 10.1016/j.jcct.2017.02.010.
4. Semsarian C, Ingles J, Wilde AAM. Sudden cardiac death in the young: the molecular autopsy and a practical approach to surviving relatives. Eur Heart J 2015;36:1290–6. 10.1093/eurheartj/ehv063
5. Nanavati PP, Mounsey JP, Pursell IW, et al.. Sudden unexpected death in North Carolina (sudden): methodology review and screening results. Open Heart 2014;1:e000150 10.1136/openhrt-2014-000150
6. Gliklich RDN, Center OD. Registries for Evaluating Patient Outcomes: A User's Guide. Rockville, Maryland, 2010.
7. Bohm P, Scharhag J, Meyer T. Data from a nationwide registry on sports-related sudden cardiac deaths in Germany. Eur J Prev Cardiol 2016;23:649–56. 10.1177/2047487315594087
8. Aro AL, Rusinaru C, Uy-Evanado A, et al.. Syncope and risk of sudden cardiac arrest in coronary artery disease. Int J Cardiol 2017;231:26–30. 10.1016/j.ijcard.2016.12.021
9. Bonny A, Ngantcha M, Amougou SN, et al.. Rationale and design of the Pan-African Sudden Cardiac Death survey: the Pan-African SCD study : cardiovascular topic. Cardiovasc J Afr 2014;25:176–84. 10.5830/CVJA-2014-035
10. Bonny A, Noah DN, Ngantcha M, et al.. Epidemiology of sudden cardiac death in Cameroon: rationale and design of the Douala-SUD survey. Arch Cardiovasc Dis 2014;107:433–42. 10.1016/j.acvd.2014.05.005
11. Wong CX, Brown A, Lau DH, et al.. Epidemiology of sudden cardiac death: global and regional perspectives. Heart Lung Circ 2019;28:6–14. 10.1016/j.hlc.2018.08.026
12. Raju H, Behr ER. Unexplained sudden death, focussing on genetics and family phenotyping. Curr Opin Cardiol 2013;28:19–25. 10.1097/HCO.0b013e32835b0a9e
13. Goldberger ZD, Nichol G. Registries to measure and improve outcomes after cardiac arrest. Curr Opin Crit Care 2013;19:208–13. 10.1097/MCC.0b013e328360ad06
14. Herman ARM, Cheung C, Gerull B, et al.. Outcome of apparently unexplained cardiac arrest: results from investigation and follow-up of the prospective cardiac arrest survivors with preserved ejection fraction registry. Circ Arrhythm Electrophysiol 2016;9:e003619 10.1161/CIRCEP.115.003619
15. Peberdy M.A, Callaway C.W, Neumar R.W. et al. Part 9: post-cardiac arrest care: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2010; 122: S768-S786
16. Nichol G, Aufderheide T.P, Eigel B, et al. Regional systems of care for out-of- hospital cardiac arrest: a policy statement from the American Heart Association. Circulation. 2010; 121: 709-729
17. Panchal A.R, Vadeboncoeur T.F, Stolz U, et al. Impact of an AHA guideline-based. Statewide postarrest system of care on survival from out-of-hospital cardiac arrest. Circulation. 2010; 124

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Does Adenoid Hypertrophy Affect Hemoglobin and Erythropoietin Levels in Children?

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Abstract

Objective: *Adenoid hypertrophy restricts the nasal airflow by obstructing the choanae posteriorly and may lead to chronic hypoxia. The present study mainly aims to compare pre- and postoperative erythropoietin (EPO) and hemoglobin (Hgb) levels in children undergoing adenoidectomy.*

Methods: *Between 2021 September and 2022 August, 61 children who performed adenoidectomy in the ENT clinic included in this prospective clinical trial. The pre- and postoperative third months EPO and Hgb values of children were compared.*

Results: *The mean age of the children undergoing adenoidectomy was 5.7±3.4 (range, 3-9 years). Twenty-seven of the subjects were men and 34 were women. The mean EPO values of the adenoid hypertrophy patients preoperatively and at postoperative third months were 13.7±2.4 Mu/mL and 10.8±1.6 Mu/mL, respectively. The decrease in mean EPO value was significant (p = 0.031). The mean Hgb levels of the subjects preoperatively and at postoperative 3rd months were 12.1±2.4 g/dL and 11.9±1.6 g/dL, respectively. When pre- and postoperative 3rd month mean Hgb values compared, the difference was not significant (p = 0.721).*

Conclusions: *According to these outcomes, grade 4 adenoid hypertrophy is associated with significantly increased EPO values compared to post-operative values in children. To validate these results further prospective studies with larger sample sizes are required.*

Key words: *Adenoid hypertrophy; Adenoidectomy; Erythropoietin; Hemoglobin; Hypoxia.*

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Introduction

The most important outcome of adenoid hypertrophy (AH) is Obstructive Sleep Apnea syndrome (OSAS), which is among the most common reason for nocturnal hypoxia in children. Erythropoietin (EPO), a hormone in the glycoprotein structure, the physiological regulator of erythrocyte production, is synthesized mainly in the kidney in response to hypoxia (1). In circulation, EPO has a half-life of 6-9 hours and EPO shows activity by binding to specific receptors at the level of marrow erythroid precursors. The EPO directly stimulates the bone marrow precursors to increase red blood cells (RBC) and its components, including hemoglobin (Hgb) (2). Hgb is a protein comprising iron found in red blood cells (RBC) that transfers oxygen (O2) from the alveoli to the tissues and the carbon dioxide (CO2) from the tissues back to the alveoli where the O2 and CO2 exchange occurs. Therefore, the chronic hypoxic condition leads to reduced arterial O2 saturation that results in decreased O2 transport to the peripheral tissues. As a physiological response, under the chronic hypoxemic condition, first EPO levels increases then there will be an increase in both the Hbg level and hematocrit value (3). If not cured, in the long term, severe AH -the most common reason for snoring, open-mouth breathing, and OSAS in children- may result in chronic nocturnal hypoxia (4). Neutrophil/lymphocyte ratio (NLR) and Mean platelet volume (MPV) are inflammatory markers linked to increased inflammatory conditions in the pediatric population. An increase in MPV level may cause growth retardation or an increase in the rate of upper respiratory tract infection (5). Plateletcrit (PCT), on the other hand, is a marker that has been used recently and is calculated using hemogram parameters (6). According to our knowledge, in the current literature, no study was conducted regarding EPO level and PCT changes after adenoidectomy. Thus, in the current study, the authors intended to enquire whether adenoid hypertrophy has any relation with EPO, Hgb, NLR, MPV and PCT levels or not.

Material-Methods

Study setting

This prospective clinical trial was carried out on 61 patients between September 2021 and August 2022 at a tertiary referral centre. The ethical committee approval of the study protocol was obtained. Informed consent was acquired from the parents of children included in this clinical trial.

Patient selection

Between September 2021 and August 2022, 61 children in the ENT clinic were enrolled in the study. All subjects included in this

clinical trial had paradoxical or obstructed breathing during sleep/ sleepiness, snoring/labored and/or chronic postnasal discharge. AH was diagnosed by endoscopic examination and/or X-ray imaging, and was classified with respect to the scale suggested by Clements et al (7). In grade I AH; AH fills up to 1/3 of the choana, in grade II; AH occupies 2/3 of the choana, in grade III; AH obstructs the choana almost near-total, and grade IV represents total obstruction of the choana. The Sleep Disturbance Scale for Children (SDSC) scale was utilized to survey sleep disorder. This scale was developed by Bruni et al. and validity and reliability of this scale were conducted in many studies in different languages (8). SDSC contains 26 symptom items asking about characteristics of snoring, difficulty breathing during sleep, daytime sleepiness, and other pediatric sleep disorders. The questions are answered from 'never' (1 point) to 'always' (5 points). The scores can be obtained from this scale varying between the minimum (26 points) and the maximum (130 points). High scores obtained from the scale are interpreted in favor of sleep disorder. In addition, there is a T-score table in the original scale to guide clinicians. According to this table, it is accepted that those with T-score >70 show symptoms of sleep disturbance (8,9).

Pediatric subjects who performed adenoidectomy were included in this prospective clinical study. Enrollment criterions of the study were as follows: grade 3-4 adenoid hypertrophy with T-score >70 who underwent adenoidectomy. Patients with hematologic disease, iron deficiency anemia and with grade 1-2 adenoid hypertrophy were not enrolled in this study. Furthermore, patients with any malignancy, chronic inflammatory disease, thyroid dysfunction, chronic liver disease, kidney failure or any acute-subacute infectious disease in the last 3 months were not enrolled in this study. All children participating in the study underwent adenoidectomy by the same surgical team using the same surgical technique.

Parameters

Blood samples were taken preoperatively and at the 3rd month postoperatively and compared. Mainly EPO, Hgb, NLR and MPV and PCT levels are investigated. Since EPO release has a diurnal rhythm, blood samples were taken from the antecubital vein between 08:30 and 09:00 in the morning to ensure consistency. Blood samples were gathered in tubes comprising ethylene diamine tetra acetic acid and laboratory analysis was performed within two hours on the same day. All blood samples were studied on the same device to ensure standardization.

Statistical analysis

SPSS (Statistical Package for Social Sciences, Chicago, Illinois, USA) software was utilized to analyse of the data of the current study. Descriptive analysis, Wilcoxon and Paired-Sample t tests were used to investigate the data. A p-value <0.05 was considered statistically significant.

Results

Between September 2021 and August 2022, 61 children were enrolled in this clinical trial. Of these patients, 27 (44.3%) were men and 34 (55.7%) were women. The average age of the subjects participating in the study was 5.7±3.4 (range 3-9). 24 of these patients (39.3%) had grade 3 and 37 (60.7%) had grade 4 adenoid hypertrophy (Table 1).

Table 1. Demographics of patients

		n	%
Gender			
	Male	27	44.3
	Female	34	55.7
Adenoid hypertrophy			
	Grade 3	24	39.3
	Grade 4	37	60.7

While the mean preoperative EPO values were 13.7±2.4 Mu/mL, it was 10.8±1.6 Mu/mL at the postoperative 3rd month. When the pre- and postoperative 3rd month EPO values were investigated, statistically significant difference was observed in EPO values (p=0.031). When the hemoglobin values of the patients were examined, the preoperative mean was 12.1±2.4 g/dL, while the mean at the postoperative 3rd month was 11.9±1.6 gr/dL. When the pre- and postoperative 3rd month hemoglobin levels of the subjects were investigated, changes in Hgb levels was not statistically significant (p=0.721). While the preoperative NLR of the patients was 3.12±0.4, the NLR postoperative 3rd month was 2.07±0.7. Significant difference were observed in the NLR of the patients at the pre- and postoperative 3rd month (p<0.001). While the preoperative PCT mean of the patients was 0.56±0.02, the

mean at the 3rd month postoperatively was 0.39±0.01. There was a statistically significant difference (p<0.001) when the mean PCT (%) of the subjects at the preoperative and postoperative 3rd month was considered. While the mean preoperative MPV value of the patients was 7.1±3.2 fL, the mean MPV at the postoperative 3rd month was 6.4±1.9 fL. The MPV values of the patients at the pre- and postoperative 3rd month were significantly different (p<0.001). The preoperative and postoperative 3rd month blood parameters of the subjects presented in Table 2.

Table 2. Comparision of preoperative and postoperative 3rd month blood parameters of patients underwent adenoidectomy

Parameters	Preoperative	Postoperative 3rd month	P-value
EPO (Mu/mL)	13.7 ± 2.4	10.8 ± 1.6	0.031*
Hgb (gr/dL)	12.1 ± 2.4	11.9 ± 1.6	0.721
NLR	3.12 ± 0.4	2.07 ± 0.7	<0.001*
PCT (%)	0.56 ± 0.02	0.39 ± 0.01	<0.001*
MPV (fL)	7.1 ± 3.2	6.4 ± 1.9	<0.001*

EPO: Erythopoietin, Hgb: Heamoglobin, NLR: Neutrophil lymphosite ratio, PCT: Platelecrit, MPV: Mean platelet volume, * p value <0.05 is statisticaly significant

When the subjects were compared with respect to the size of the adenoid vegetation, the EPO values were divided into 2 groups. In the group with grade 3 adenoid hypertrophy, the difference in EPO between preoperative and postoperative 3rd month was 2.6±1.7, and in the group with grade 4 adenoid hypertrophy, the difference in EPO between preoperative and postoperative 3rd month was 3.1±1.9. There was a significant difference when the change in EPO value in preoperative and postoperative 3 months in grade 3 and grade 4 adenoid hypertrophy patients was compared (p=0.042 and p= 0.012, respectively) (Table 3).

When the subjects were classified with respect to the size of the adenoid vegetation, the mean preoperative Hgb value in the group with grade 3 adenoid hypertrophy was 12.4±1.9 g/dL, while the mean in the postoperative 3rd month was 12.1±1.3 g/dL: in the group with grade 4 adenoid hypertrophy, the mean preoperative Hgb value was 11.3±1.6 g/dL. It was detected as

11.9±2.1gr/dL at the postoperative 3rd month. When the change in Hgb values in preoperative and postoperative 3 months in grade 3 and grade 4 adenoid hypertrophy patients was analyzed, no significant difference was observed (p=0.843 and p=0.753, respectively) (Table 3).

Table 3. Comparision of EPO level and Hbg value changes of patients with grade 3 and 4 adenoid hypertrophy

Adenoid hypertrophy	**Preoperative EPO values**	**Postopertaive EPO values**	**P value**
Grade 3	13.1 ± 1.1	11.2 ± 1.9	0.042*
Grade 4	14.3 ± 2.4	10.5 ± 3.2	0.012*
	Preoperative Hgb values	**Postoperative Hgb values**	**P value**
Grade 3	12.4 ± 1.9	12.1 ± 1.3	0.843
Grade 4	11.3 ± 1.6	11.9 ± 2.1	0.753

EPO: Erythopoietin, Hgb: Heamoglobin, * p value <0.05 is statisticaly significant

Discussion

Adenoidectomy alone or combined with tonsillectomy is one of the most frequent surgical procedures performed by otorhinolaryngologists across the globe. Adenoid hypertrophy causes upper airway obstruction in children. This may result in chronic hypoxia and hypercarbia by causing alveolar hypoventilation (10). If adenoidectomy is performed in appropriate indications, it noticeably improves the patient's quality of life.

Recurrent hypoxia and chronic airway collapse also cause metabolic alterations, immune system malfunction, and inflammatory reactions. In current literature, studies advocate that OSAS may lead to systemic inflammatory response and increased oxidative stress (11). One of the most important causes of diseases such as cor pulmonale, pulmonary arterial hypertension, and decompensated heart failure is chronic nocturnal hypoxia (10). Identification of varying inflammatory mediators in OSAS patients may anticipate the nocturnal sleep disturbance degree and associated systemic inflammation and the existence of comorbid conditions including cardiovascular diseases and hypertension. Low-level chronic systemic inflammatory response and coexisting vascular detriment have been proposed as the responsible mechanism for the development of these comorbid conditions. Evaluation of systemic inflammatory mediators in OSAS

subjects may be useful in predicting future risk of comorbidity. In addition, the reversibility of these devastating results with adenoidectomy has increased the importance of treatment (10,12–15).

With adenoidectomy, the enlarged adenoid is controlled. Thus, the secondary inflammatory response will be minimized and inflammatory mediators will be reduced. In long term, this may lead to a significant diminish in the risk of diseases such as coronary artery disease and chronic nocturnal ischemia (16).

In the case of chronic and/or recurrent hypoxia, the erythrocyte level increases as a physiological response. Hypoxia-inducible factors (HIFs) induce increased production of the EPO, increased iron absorption, increased iron usage, and adjustment of the bone marrow functions that facilitates erythroid cells. Particularly, HIFs-2 is a transcription factor regulating the EPO productions in the liver and kidney and acts a crucial role in the regulation of iron absorption through the gut (17). The current study is the first to ascertain the correlation between chronic hypoxia and EPO level in children with grade 3 and 4 adenoid hypertrophy. In our study, the pre- and postoperative EPO levels of subjects with AH were compared and it was concluded that the EPO level decreased significantly (Table-1). In addition, although there was a slight decrease in the hemoglobin level in the measurements taken at the 3rd month postoperatively, no statistically significant difference was found.

NLR is a defined marker for systemic inflammation and a measurable marker with ease that is influenced by both the innate (mediated by neutrophils) and adaptive (mediated by lymphocytes) immune response. There is very little research in the current literature inquiring into the correlation between NLR and OSAS (12,18). In a study by Korkmaz et al. in the adult age group, there is no significant difference was found in the diagnosis and severity of NLR in OSA (12). Yenigün's study concluded that no significant difference was found to be between pre- and postoperative NLR between adenoid hypertrophy and adenotonsillar hypertrophy (19). Derin et al. analyzed the relationship between adenoid hypertrophy and NLR in the pediatric age group. In this study, it was concluded that NLR values were not associated with upper airway obstruction and NLR was not a statistically significant inflammatory factor (16). Contrary to these publications, there is a significant difference in our study.

Mean platelet volume (MPV) is a cost-effective test used to measure platelet size and is a platelet activity indicator (5). The relationship among MPV and severity of disease in adult subjects with OSAS was investigated. According to this study, it was

concluded that MPV is correlated with both disease severity and severity of inflammatory response (20,21). Varol et al., reported that MPV values increased significantly in adult patients with OSAS relative to the control group (22). In another study conducted in the same cohort, they reported that MPV values decreased after 6 months of CPAP treatment (23). In a study investigating whether MPV could be utilized as an indicator of AH severity in children, it was concluded that there was no relationship between the degree of adenoid vegetation and MPV (24). Kucur et al. concluded that MPV is increased in subjects with AH and that adenoidectomy is an efficient surgical procedure in these subjects (25).

In a study investigating the relationship between chronic tonsillitis-adenoid hypertrophy (CT-AH) and MPV in children, it was concluded that OSAS caused by CT-AH is related with low MPV values in childhood (26). Similarly, in our study, as compared to preoperative MPV levels there was a significant decrease in MPV levels at the postoperative 3rd month. Erdim et al. investigated whether MPV, NLR and platelet-lymphocyte ratio (PLR) are factors contributing to the diagnosis and severity of OSAS in obese children and concluded that there is no relationship between levels of MPV and OSAS (27).

PCT is a recently used marker that uses hemogram parameters to calculate. The formula for PCT is platelet count*MPV/10000. Looking at this formula, it is directly related to the MPV value (6,28). Current study is the first to analyze the correlation between PCT value and adenoid hypertrophy. According to our study, there was a significant decrease observed in PCT values calculated in the preoperative period compared to the PCT values calculated in the 3rd month postoperatively.

Conclusion

This study is the first in the current literature to evaluate the relationship between adenoid vegetation and EPO levels. As a result, with this study, the effect of adenoid vegetation on EPO level was revealed, avoiding high EPO levels and possible comorbidities that may occur as a result, and evaluating inflammatory mediators in subjects with OSAS may be useful in predicting the risk of future comorbidity.

The limitations of our study may be the relatively small number of patients, the inability to objectively evaluate adenoid vegetation, and the inability to objectively evaluate obstructive sleep apnea.

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REFERENCES

1. Türkoğlu Babakurban S, Aydın E. Adenoidectomy: current approaches and review of the literature. Kulak Burun Bogaz Ihtis Derg 2016;26:181–90.

2. Thornval A. Wilhelm Meyer and the adenoids. Arch Otolaryngol 1969;90:383–6.

3. Atilla MH, Kaytez SK, Kesici GG, et al. Comparison between curettage adenoidectomy and endoscopic-assisted microdebrider adenoidectomy in terms of Eustachian tube dysfunction. Braz J Otorhinolaryngol 2020;86:38–43.

4. Kozcu SH, Demirhan E, Çukurova I. Curettage adenoidectomy versus endoscopic microdebrider adenoidectomy in children: A randomized controlled trial. Int J of Pediatr Otorhinolaryngol 2019;119:63–9.

5. Chang WD, Tseng CH, Tsou YA. Mean platelet volume levels in children with sleep-disordered breathing: A meta-analysis. BMC Pediatr 2020;20:1–9.

6. Akpinar I, Sayin MR, Gursoy YC, et al. Plateletcrit. A platelet marker associated with saphenous vein graft disease. Herz 2014;39:142–8.

7. Clemens J, McMurray JS, Willging JP. Electrocautery versus curette adenoidectomy: comparison of postoperative results. Int J Pediatr Otorhinolaryngol1998;43:115–22.

8. Bruni O, Ottaviano S, Guidetti V, et al. The Sleep Disturbance Scale for Children (SDSC). Construction and validation of an instrument to evaluate sleep disturbances in childhood and adolescence. J Sleep Res 1996;5:251-61.

9. Ağadayı E, Çelik N, Başer DA. Turkish Validity and Reliability of the Sleep Disturbance Scale for Children. Journal of Turkish Sleep Medicine 2020;2:65-72.

10. Abdel-Aziz M. Asymptomatic cardiopulmonary changes caused by adenoid hypertrophy. J Craniofac Surg 2011;22:1401–3.

11. Faraut B, Boudjeltia KZ, Vanhamme L, et al. Immune, inflammatory and cardiovascular consequences of sleep restriction and recovery. Sleep Med Rev 2012;16:137–9.

12. Korkmaz M, Korkmaz H, Küçüker F, et al. Evaluation of the Association of Sleep Apnea-Related Systemic Inflammation with CRP, ESR, and Neutrophil-to-Lymphocyte Ratio. Med Sci Monit 2015; 21:477-81.

13. Panoutsopoulos A, Kallianos A, Kostopoulos K, et al. Effect of CPAP treatment on endothelial function and plasma CRP levels in patients with sleep apnea. Med Sci Monit 2012;18:747-51.

14. Mehra R, Redline S. Sleep apnea: a proinflammatory disorder that coaggregates with obesity. J Allergy Clin Immunol 2008;121:1096–102.

15. Chami HA, Fontes JD, Vasan RS, et al. Vascular Inflammation and Sleep Disordered Breathing in a Community-Based Cohort Sleep 2013;36:763-8.

16. Derin S, Erdogan S, Sahan M, et al. Neutrophil-Lymphocyte Ratio in Patients with Adenoidectomy. J Clin Diagn Res 2016;10:3–5.

17. Haase VH. Regulation of erythropoiesis by hypoxia-inducible factors. Blood Rev 2013;27:41-53.

18. Sawant AC, Adhikari P, Narra SR, et al. Neutrophil to lymphocyte ratio predicts short- and long-term mortality following revascularization therapy for ST elevation myocardial infarction. Cardiol J 2014;21:500–8.

19. Yenigun A. The efficacy of tonsillectomy in chronic tonsillitis patients as demonstrated by the neutrophil-to-lymphocyte ratio. J Laryngol Otol 2015;129:386–91.

20. Kanbay A, Tutar N, Kaya E, et al. Mean platelet volume in patients with obstructive sleep apnea syndrome and its relationship with cardiovascular diseases. Blood Coagul 2013;24:532–6.

21. Akyol S, Çörtük M, Baykan AO, et al. Mean platelet volume is associated with disease severity in patients with obstructive sleep apnea syndrome. Clinics (Sao Paulo) 2015;70:481–5.

22. Varol E, Ozturk O, Gonca T, et al. Mean platelet volume is increased in patients with severe obstructive sleep apnea. Scand J Clin Lab Invest 2010;70:497–502.

23. Varol E, Ozturk O, Yucel H, et al. The effects of continuous positive airway pressure therapy on mean platelet volume in patients with obstructive sleep apnea. Platelets 2011;22:552–6.

24. Onder S, Caypinar B, Sahin-Yilmaz A, et al. Relation of mean platelet volume with obstructive adenoid hypertrophy in children. Int J Pediatr Otorhinolaryngol 2014;78:1449–51.

25. Kucur C, Kulekci S, Zorlu A, et al. Mean platelet volume levels in children with adenoid hypertrophy. J Craniofac Surg 2014;25:29-31.

26. Cengiz C, Erhan Y, Murat T, et al. Values of mean platelet volume in patients with chronic tonsillitis and adenoid hypertrophy. Pak J Med Sci 2013;29:569-72.

27. Erdim I, Erdur O, Oghan F, et al. Blood count values and ratios for predicting sleep apnea in obese children. Int J Pediatr Otorhinolaryngol 2017;98:85–90.
28. Beyan C, Beyan E. Plateletcrit may not provide a distinction between patients with adult -onset Still's disease and sepsis. Wien Klin Wochenschr. 2021;133:247–8.

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Cornea and Anterior Segment Parameters and Their Importance in the Eye Disease

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Dear Editor,

Corneal and anterior segment parameters (ASP) are valuable in diagnosis and risk assessment of diseases such as glaucoma and keratoconus and it is also an valuable tool in patient selection and surgical planning of excimer laser refractive surgery. Devices where cornea and anterior segment parameters are measured include Sirius System, Pentacam, Orbscan, Galilei, Anterior Segment Optical Coherence Tomography (ASOCT). Savini et al. found the Sirius System to be reliable in corneal and anterior segment measurements (1). Similarly, a study by Huang et al. found excellent reliability and reproducibility in measuring corneal thickness in healthy eyes using Sirius Topography (2). Studies comparing the Sirius System with Pentacam, Galilei and ASOCT devices in terms of corneal and anterior segment parameters have been carried out. Anayol et al. compared Sirius, Pentacam and Galilei devices in terms of ASP, and reported that devices could not be used interchangeably for these measurements (3). Milia et al. reported that the Sirius device was not equivalent to ASOCT for ASP (4).

Central Corneal Thickness (CCT) is an important clinical parameter for determining the risk of glaucoma as well as in determination of suitable candidates for excimer laser refractive surgery and selection of the surgical procedure to be performed. Many population studies have been performed regarding to CCT. Using Ultrasonic Pachymetry (USP) Nangia et al. found the mean CCT of 514±33 µ in the Indian population above 30 years of age (5). Hwang et al. reported a mean CCT measurement of 530.9±31.5 µ in the Korean population over 40 years of age (6). Using specular pachymetry Tamidokoro et al. found a mean CCT measurement of 521±32 µ in the Japanese population above 40 years of age (7). Using ASOCT Ang et al. found the mean CCT to be 561,4±34.1 in the Indian population over 40 years of age (8). Studies of CCT measurements in the Turkish population are also available. Altınok et al. reported the mean CCT to be 552,2±35,9 µ in males and 552,3±35,4 µ in females between 6 and 88 years of age (9). In a study by Goktas et al. of Turkish patients with cataracts between 44 and 90 years of age using specular microscopy the mean CCT was reported as 500±37 µ (10).

Cornea and anterior segment parameters measursement may be helpful for ophthalmologists on evaluating glaucoma, candidates for excimer laser refractive surgery.

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References

1. Savini G, Barboni P, Carbonelli M, et al. Repeatability of automatic measurements by a new Scheimpflug camera combined with Placido topography. J Cataract Refract Surg. 2011;37:1809-16.
2. Huang J, Savini G, Hu L, et al. Precision of a new Scheimpflug and Placido-disk analyzer in measuring corneal thickness and agreement with ultrasound pachymetry. J Cataract Refract Surg. 2013;39:219-24.
3. Anayol MA, Güler E, Yağcı R, et al. Comparison of central corneal thickness, thinnest corneal thickness, anterior chamber depth, and simulated keratometry using galilei, Pentacam, and Sirius devices. Cornea. 2014;33:582-86.
4. Milla M, Pinero DP, Amparo F, et al. Pachymetric measurements with a new Scheimpflug photography-based system: intraobserver repeatability and agreement with optical coherence tomography pachymetry. J Cataract Refract Surg. 2011;37:310-16.
5. Nangia V, Jonas JB, Sinha A, et al. Central corneal thickness and its association with ocular and general parameters in Indians: the Central India Eye and Medical Study. Ophthalmology. 2010;117:705-10.
6. Hwang YH1, Kim HK, Sohn YH. Central corneal thickness in a Korean population: the Namil Study. Invest Ophthalmol Vis Sci. 2012;53:6851-5.
7. Tomidokoro A, Araie M, Iwase A. Corneal thickness and relating factors in a population-based study in Japan: the Tajimi study. Am J Ophthalmol. 2007;144:152-4.
8. Ang M, Chong W, Tay WT, et al. Anterior segment optical coherence tomography study of the cornea and anterior segment in adult ethnic South Asian Indian eyes. Invest Ophthalmol Vis Sci. 2012;53:120-5.
9. Altinok A, Sen E, Yazici A, et al. Factors influencing central corneal thickness in a Turkish population. Curr Eye Res. 2007;32:413-9.
10. Goktas A, Gumus K, Mirza GE, et al. Corneal endothelial characteristics and central corneal thickness in a population of Turkish cataract patients. Eye Contact Lens. 2012;38:142-5.

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Approach to A Patient with İatrogenic Coronary Dissection During Percutaneous İntervention: A Case Report

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Abstract

This case report presents a conservative management approach to a potentially hazardous complication, iatrogenic coronary artery dissection (ICAD), occurring during percutaneous coronary intervention (PCI). The patient, a 60-year-old woman with a history of chronic hypertension and type II diabetes mellitus, presented with non-ST-segment elevation myocardial infarction. During the PCI, an antegrade coronary dissection was observed, leading to the termination of the procedure. Post-procedure, the patient was managed conservatively with standard coronary artery disease treatment. Follow-up angiography showed complete healing of the dissection area, and no adverse cardiovascular events occurred during a 3-month follow-up period. This report highlights the importance of early diagnosis and careful management of ICAD. It stresses the need for further research into long-term outcomes and effectiveness of different treatment approaches for patients with ICAD.

Key words: *Iatrogenic coronary artery dissection, Percutaneous coronary intervention, Conservative management, Hydrophilic wire, Complications*

Aim

This case report aims to share the management of a potentially hazardous complication occurring during percutaneous coronary intervention (PCI), emphasizing a conservative approach.

Case

A 60-year-old woman presented to our center with a diagnosis of non-ST-segment elevation myocardial infarction (NSTEMI) due to elevated troponin levels after experiencing 20 minutes of chest pain.

With a history of chronic hypertension and type 2 diabetes mellitus, she had minimal coronary artery disease noted during a 2017 coronary angiography, mainly in the left anterior descending (LAD) artery.

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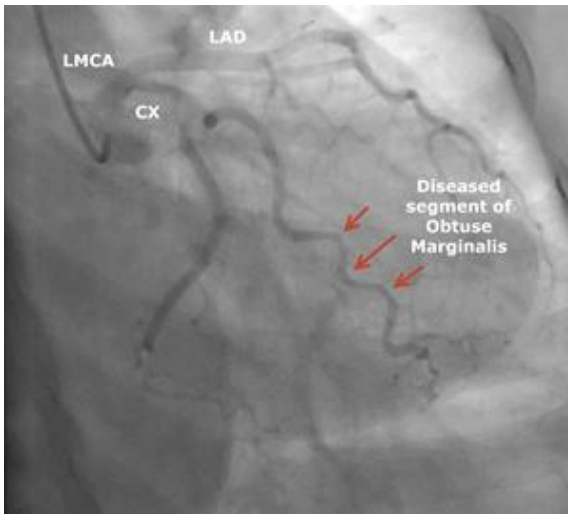
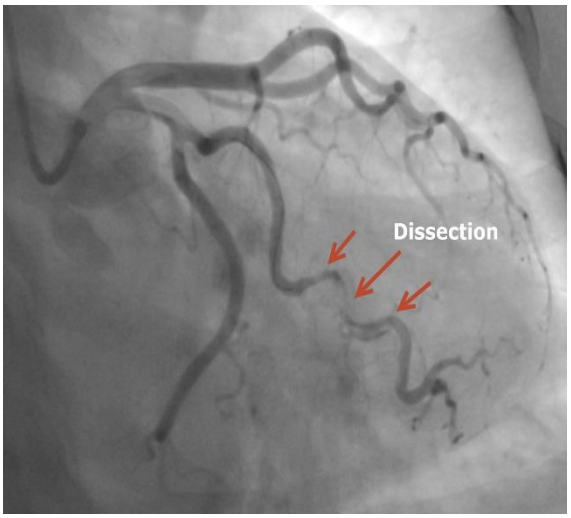
On admission, the chest pain had subsided, and transthoracic echocardiography revealed an ejection fraction of 60% with no significant wall motion abnormalities. Given the elevated cardiovascular risk, coronary angiography was scheduled within 24 hours. After obtaining informed consent, coronary angiography was planned to be performed via the right radial route. After sheat placement in the radial artery, 5000 units of heparin and 200 mcg glyceryl trinitrate mixture was administered through the radial artery. Diagnostic angiography revealed normal left main coronary artery (LMCA). Plaque was detected in the distal LAD vessel and slow flow was detected in the right coronary artery (RCA). In the circumflex artery, 80% stenosis was detected in the obtuse marginalis branch (Figure 1).



Percutaneous coronary intervention was decided because the lesion did not regress with intracoronary glyceryl trinitrate and the patient was followed up with NSTEMI. Before guiding catheter placement 600 mg clopidogrel loaded orally. A 6f 3.5 extra back-up guiding catheter was inserted into the LMCA and an additional 2500 units of heparin was administered intracoronary.

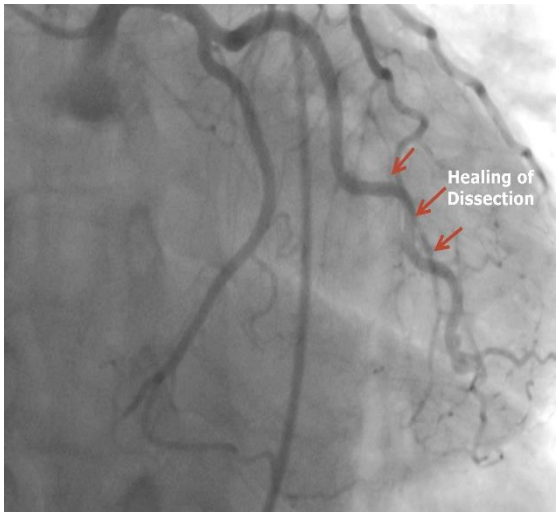
Hydrophilic wire was preferred because of the tortuosity in the obtuse marginalis branch and the soft tip hydrophilic Whisper extra-support (Abbott) wire available at the time was used for lesion crossing. However, the procedure was stopped when antegrade coronary dissection was observed during passage through the tortuous segment (Figure 2).



The procedure was concluded because the patient had no chest pain and ECG changes, distal flow was good and the dissection was considered as Type B.

After the procedure, the patient was followed up in the coronary intensive care unit for 24 hours. The patient received standard coronary artery disease treatment with acetylsalicylic acid 100 mg,

clopidogrel 75 mg, atorvastatin 80 mg, metoprolol 25 mg once a day. The patient was discharged after being followed up in the ward for 2 more days. Control angiography was performed 45 days after the first procedure. Control angiography showed complete healing of the dissection area (Figure 3).



It was decided to continue the standard treatment and the procedure was terminated. No adverse cardiovascular events occurred during the 3-month follow-up period.

Discussion

Iatrogenic coronary artery dissection (ICAD) is a rare but serious complication associated with coronary angiography and PCIs. According to a recent study of 10278 patients who underwent PCI, the incidence of coronary dissection was found to be 1.4% (1). In this study, the most common causes of ICAD were guidewire advancement, stenting, balloon angioplasty and guiding catheter engagement. The use of hydrophilic guidewires, Amplatz-shaped guiding catheters, deep engagement of guiding catheter, calcific and tortuous lesions, female gender, LMCA disease are among the factors that enhance the risk of ICAD (2, 3). Early diagnosis of ICAD is critical for optimal management. Diagnosis is typically made through coronary angiography, which may reveal a radiolucent intimal flap, contrast staining of the vessel wall, or the presence of a false lumen. According to Huber's classification, coronary dissections are classified from A to F, from simple dissection to dissection with total loss of lumen (4).

Management of ICAD is guided by the extent of the dissection, severity myocardial distal flow and hemodynamic stability (3). Types A and B dissections typically exhibit a favorable clinical progression, while dissections of types C to F are regarded as more severe, leading to a substantial rise in morbidity and mortality rates if not addressed promptly (5). In our case we think the case a Type B coronary dissection and followed the patient with conservative medical treatment. During the relatively short follow up there were no significant cardiac adverse events. In this particular case, dissection’s cause was thought as hydrophilic guidewire which was preferred for tortuosity. However, it is an interesting anecdote that hydrophilic wires are also

used in the treatment of coronary dissection cases (6).

Conclusion:

ICAD continues to be a challenging complication of coronary interventions Future studies should focus on the long-term follow-up of patients with ICAD to better understand the natural history and effectiveness of different treatment approaches.

References

1. Page E, Kostantinis S, Karacsonyi J, et al. Incidence, treatment and outcomes of coronary artery dissection during percutaneous coronary intervention. The Journal of invasive cardiology. 2023;35(7):E341-e54.
2. Boyle AJ, Chan M, Dib J, et al. Catheter-induced coronary artery dissection: risk factors, prevention and management. The Journal of invasive cardiology. 2006;18(10):500-3.
3. Brilakis E. Manual of Percutaneous Coronary Interventions. In: Brilakis E, editor. Manual of Percutaneous Coronary Interventions: Academic Press; 2021.
4. Huber MS, Mooney JF, Madison J, et al. Use of a morphologic classification to predict clinical outcome after dissection from coronary angioplasty. The American journal of cardiology. 1991;68(5):467-71.
5. De Palma R, Aminian A, Muller O, et al. The prevention and management of complications during percutaneous coronary intervention. 2024. In: The PCR-EAPCI Percutaneous Interventional Cardiovascular Medicine Textbook [Internet]. Europa Group, [accessed 28.01.2024].
6. Prashant Ponangi U, Menon R, Kapadia A. Successful angioplasty of three cases of coronary artery dissections using hydrophilic wires. Postepy w kardiologii interwencyjnej = Advances in interventional cardiology. 2014;10(4):289-93.