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Genel Bilgiler

Journal of Human Rhythm uluslararası bir dergidir. Gözlemsel çalışmalar, deneysel araştırmalar, klinik araştırmalar, vaka raporları, Tıptaki simgeler, uzman konsültasyonları, editöre mektup ve incelemeler de dahil olmak üzere tıbbın tüm alanlarından orijinal, hakemli dergileri üç ayda bir yayımlanır.

Journal of Human Rhythm'e gönderilen makaleler başka bir yere sunulmamalıdır. Tüm yazıların yayınlanmadan önce ayrıntılı bir dil ve biçim kontrolü yapılmıştır. Eğer yazılar yazarlara bilgi için uygun değilse ve aynı zamanda dil düzenlemeye ihtiyaç duyarsa, ilgili yazara geri gönderilir. İnsan vücudu üzerindeki fizyoloji inceleyen, mevsimsel ve diğer ritmik değişikliklerin organ sistemlerine etkilerini içeren yazılar öncelikle kabul edilmektedir.

Dergiye gönderilen tüm yazılar, 6 haftada karara varılır.

Yeni ve düzeltilmiş yazılar ve yazı işleri bürosuna yazışmalar için adres:

Makale Ofisi - İnsan Ritim Dergisi

Editör Şef: Ramazan AKDEMİR - Tıp Fakültesi Morfoloji Binası, Kat: 4, Korucuk, Adapazarı, Sakarya, 54290, Türkiye.

İletişim: manuscriptjhr@gmail.com

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Etik İnsanları ilgilendiren tüm çalışmalar, çalışmanın yapıldığı yerdeki etik kurullarının onayına ve tüm kişilerin bilgilendirilmiş onamlarına ihtiyaç duyar.

Dergi Makale Bölümleri

Editörden: Editör 1.500 kelimeyle ve 20 referansla sınırlıdır ve yayınlanan verilere dayanarak yazarın kararını verir.

Orijinal Araştırma Yazısı: Orijinal veya klinik bilimsel bulguları bildiren makale 4.000 kelimeyi, altı şekil veya tabloyu geçmemeli ve 40'dan fazla referans içermemelidir. Türkçe ve İngilizce özet 250 kelimeyi geçmemelidir. Tüm özetler amaç, materyal ve method ve sonuç olarak yapılandırılmalıdır.

Uzman Danışmanlığı: Bu, bir öğretim amacı ile yazılmış ve hastanın klinik karar verme ve tedavisi ile ilgili açık görüşler sunan vaka raporudur. Orijinal bilimsel makalelerin gerekliliklerine uymalıdır.

Görüş: Yazarın herhangi bir konu, prosedür veya tedavide spekülе edileceği şekilde editörler kadar yer verilen görüşlerdir.

Vaka Raporları: Klinik uygulamayla ilgili belirli noktaları gösteren ve tartışan vaka raporları yayınlanacaktır. Makaleler resim gibi herhangi bir kanıt içermez veya benzeri raporlar yayınlanmaz. Olgu sunumlarında en fazla üç yazar, 1,500 kelime, 10 referans ve 2 rakam ve / veya tablo bulunmalıdır. Bir özet (150 kelimeye kadar) sağlanmalıdır.

Makale İncelemeler: Makaleleri, alanında uzman kişiler tarafından tartışılan genel tıbbi bir sorunla ilgilidir. Konu, geniş bir okuyucu kitlesine ilgi duymalı ve önemli tıbbi sonuçları içermelidir. Yazarlar konuyu tarihsel bir perspektiften ele almalı, ancak incelemenin kapsadığı alanda son gelişmelere öncelik vermelidir.

Tıpta Görüntüleme: Bu kategori, elektrokardiyogramlar, ekokardiyogramlar, x ışınları, taramalar veya patoloji örnekleri gibi açıklayıcı tıbbi görüntüler içindir. Resim, en fazla 250 kelime olmalıdır.

Editöre Mektup: Journal of Human Rhythm, son altı ay içerisindeki mektupları kabul eder. Mektuplar çift aralıkla yazılmalı ve 600 kelimeyi ve altı referans uzunluğunu geçmemelidir. Bütün yazarlar mektubu imzalamalıdır.

Kitap Eleştirileri: Journal of Human Rhythm tıp alanındaki seçili kitapları inceler. Kitap rewievları yazar tarafından Journal of Human Rhythm Editorial Office'e gönderilmelidir.

Makale hazırlama: Tüm yazılar, http://www.icmje.org/ adresinde (Ekim 2004'de güncellenir) bulunan Uluslararası Tıp Dergisi Editörleri Kurulu tarafından "Biyomedikal Dergilere Sunulan Yazıların Tekdüzen Gereksinimleri" nde açıklanan şekilde hazırlanmalı ve sunulmalıdır. Buna ek olarak, yazarlar sistematik incelemeler ve meta-analiz raporlarını hazırlarken PRISMA Beyanına (http:// www.prisma-statement.org) danışmalıdırlar ve CONSORT Bildirgesi (http://www.consort-statement.org) randomize kontrollü çalışmaların raporlarının hazırlanmasında kullanılmaktadır.

Metin, referanslar, fi gürler, görüntüler ve tablolar dahil olmak üzere tüm yazılar İngilizce / Türkçe olarak 1 kopyasını e-posta adresine gönderilmelidir. İngilizce yazılar için Türkçe özet ve Türkçe yazılar için İngilizce özet gerekmektedir.

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Makale, iki taraflı, her iki tarafa en az 2.5 cm kenar boşluğu ile klavye ile yazılmış olmalıdır. Makaleler, (1) başlık sayfası, (2) özet (veya vaka raporları için özet), (3) metin, (4) uygun alıntılar alındığında, (5) tartışılan konular, (6) referanslar, (7)) başlıkları ve şekiller olan tablolar ve rakamlar.

Yazarlık ve Telif Hakkı: Yazarlar, yazar olarak listelenen tüm kişilerin yazılarını hazırlamaya katkıda bulunduklarını ve listelenen yazarlardan başka hiçbir kişi veya kişinin hazırlanmasında önemli katkıda bulunmadığını şart koşan, tüm yazarlar tarafından imzalanmış ayrı bir kapsam mektubu sunmalıdır. Yazarlar, yayına kabul edilen makalelerin telif hakkı Canadian Society for Clinical İnvestigation'a aktarılmalıdır. Yayınlanan makalelerin giriş mektubu önceden basılmış materyal veya konuyu açıklayan örnekleri tanımlamaya izin veren kelimeleri içermelidir. Giriş yazısı, basım masrafl arının kabul edildiğini kabul etmeli, üç (3) yorumcu önermeli ve telif hakkının CIM'e imzalandığına dair anlayışa sahip olduğunu kabul etmelidir. Klinik Araştırmalar Etik kurula uygun olmayan insanlar üzerinde yapılacak olan klinik çalışma yayına kabul edilmeyecektir. Hayvanlar üzerinde yapılacak olan çalışmalar hayvan etik kurulundan geçmeden yayınlanamaz.

Özerklik ve gizlilik: Hastaların onamı alınmadan özeli ifşa edilmemelidir. Hastanın adı ve dosya numarası gibi kimlik bilgileri yazılmamalı, fotoğraf ve soy ağacı gibi bilgiler tıbbi gereklilik olsa dahi hasta veya velisinin onamı olmadıkça basılmamalıdır. Aydınlatılmış onamda hasta ile ilgili bilgilerin basılmasının onayı yer almalıdır.

Başlık Sayfası (Sayfa 1, ancak numara verme): Başlık sayfası 50 karakterden daha kısa bir kısa başlık, yazarların tam ve soyadları, ünvanları, çalıştıkları hastaneler ve akademik ünvanları içermelidir. Yazışmalar için adres değişikliği olmuşsa son adreste yazarın tam adı, adresi, telefon, faks numarası ve e-posta adresi yeniden yazışma adresine gönderilmelidir.

Sonraki Başlıklar: Sonraki başlıklar 2-6 kelime arasında ilk sayfada olmalıdır. ÖZET (Sayfa 2) Orijinal bilimsel makalelerin yazarları, aşağıdaki başlıklar altında en fazla 250 kelimeden oluşan bir özet sunmalıdır: Amaç (çalışma gerekçesini açıklayın), Yöntemler ve Sonuçlar (yöntemlerin kısa açıklaması ve önemli sonuçların sunulması), Tartışma (konu ile ilgili bilgileri destekleyen iddialar).

Abstract (Page 2): Olgu sunumları, ana noktaları 150 kelimeyle özetleyen bir özet oluşturmaktadır. Özette referans kullanmayın ve kısaltmalar fazla sayıda kullanmayın. **Anahtar Kelimeler**: En fazla 6 anahtar kelime olmalıdır.

Metin: Metin yeni bir sayfada başlamalı ve bölümler halinde düzenlenmelidir: Giriş, Yöntemler, Sonuçlar, Tartışma. Kalın, küçük harf ve italik başlıklar kullanarak uygun başlıkları ve alt başlıkları yapılmalıdır. Metinde ilk kez belirtildiği üzere şekil ve tabloları sayısal sırayla gösteriniz (Şekil 1, Şekil 2, Tablo 1). İlaçlar için jenerik ismi kullanılmalıdır. Hastalara baş harfl eri ile değil numaralandırma (örneğin hasta 4) ile adlandırılmalıdır. Kısaltmalar SI üniteleri ile tanımlanmalıdır. Kan basıncı mm Hg olarak verilmelidir. Makale sonuna referanstan önce ilaç, ödenek, ekipman desteklerinin ayrıntıları yazılmalıdır.

Çıkar Çatışması: Yazarlar arasında fi kir ayrılığı varsa belirtilmeli yoksa "çıkar çatışması yoktur" yazısı eklenmelidir.

Referanslar: Metin içindeki referanslar Kaynaklar metinde göründükleri gibi sıralı olarak numaralandırılmalıdır. Metindeki referans numaraları üst yazı olarak (parantez içermez) verilmelidir. Referans listesindeki referanslar Index Medicus'un Ulusal Tıp Kütüphanesi stiline göre süreli yayınların başlıklarını kısaltın. Her referansta her yazarın belirtilmesi gerekir. Yazarın baş harfl erinden sonra periyodları kullanmayın.

Dergi Makaleleri – Örnek: Soyadı RS, Soyadı FW, Soyadı GR, Soyadı AJ. Makale başlığı. Kısaltılmış gazete başlığı 2008; 52: 228-34. Et.al'ı kullanın. referans dörtten fazla ada sahipse.

Kitapta Bölüm – Örnek: Soyad SY. Bölüm başlığı. In: Soyadı MM, ed. Kitap başlığı. Yayınevi, Şehir, 2008: 228-34. Özet / tamamlayıcı - Örnek Soyadı R, Soyadı F. Makale başlığı (soyut). Kısaltılmış gazete başlığı 1996; 52 yardımcı 3:48.

Şekiller: Şekil açıklamaları, ayrı sayfalarda çift aralıklarla yazılmalıdır. Rakamlarda görünen kısaltmalar her şeklin sonunda yazılmalıdır. Daha önce basılan herhangi bir materyal için yayıncılardan yazılı izin alınmalıdır.

Figürler: Figürler netlik için gerekli sayıyla sınırlandırılmalıdır. Resimler, tablolarda veya metinde verilen verileri taklit etmemelidir. Renkli olarak sunulan resimler renkli olarak basılacaktır.

Tablolar: Tablolar açıklayıcı olmalıdır ve veriler metni tekrar etmeyecek şekilde eklemelidir. Tablolar, tablonun numarası ve başlığı tablonun üstünde ve açıklayıcı notlarla birlikte ayrı sayfalara çift aralıklarla yazılmalıdır. Tablonun numaraları Arabic olmalı ve metinde sırayla numaralandırılmalıdır. Tabloda kullanılan kısaltmalar dipnot edilmelidir ve alfabetik olarak açıklanmalıdır.

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Bütçe: Renkli yazdırma maliyetinin bir kısmı yazardan tahsil edilecektir. Yazarın maliyetleri, renk rakamlarının maliyeti ve yeniden yazdırma maliyetini içerir (asgari miktar elli tekrar baskıdır). Tekrarlayan basımlar için yazarlara fatura gönderilecektir. Sayfa ücreti yok.

Basım Mektubu

Makale sunumunun bir parçası olarak, eşlik eden bir mektupta şunları belirtmelidir:

1. Çalışmanın tasarımı ve yürütülmesi tüm yazarlar tarafından gerçekleştirilmeli,
2. Makale tüm yazarlar tarafından yazılmış, okunmuş ve onaylanmış olmalı,
3. Bu materyal daha önce veya kısmen yayınlanmamış olması ve başka yerlerde yayınlanması düşünülmediği,
4. Sayfa ücretlerinin kabul edildiğini kabul edildiği,
5. Üç (3) yorumcu önerilmesi,
6. Telif hakkının CIM'e imzalandığına dair bir anlayış olduğunun beyan edilmesi.
7. Çalışma ve olası çıkar çatışmaları için maddi destek açıklanması gerekmektedir.

Scope: Journal of Human Rhythm is an international journal. It publishes three months original, peer-reviewed articles from all areas of medicine Health Sciences including observational studies, experimental investigations, clinical trials, case reports, Images in Medicine, expert consults, letter to the editors and reviews. Papers submitted to Journal of Human Rhythm should not be submitted elsewhere. All manuscripts underwent a detailed language and format check before. If manuscript does not suitable for information for authors and also needs the language editing, sent back to the corresponding author. The manuscripts dealing with the biological rhythms in human body, effects of seasonal and other rhythmic changes on organs systems are preferentially accepted.

All manuscripts submitted to the journal reach the final decision within 6 weeks.

Address for new and revised manuscripts and correspondence to the editorial office:

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Ethics: All Studies involving human subjects need their written local ethical committee approval where the study is performed and informed consent from the all subjects.

Journal Article Categories

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Orıgınal Scıentıfic Manuscrıpts: Manuscripts reporting original basic or clinical scientifi c fi ndings should not exceed 4,000 words, six fi gures or tables, and have no more than 40 references. Authors should also provide Turkish and English abstract of up to 250 words. All abstracts must be structured as aim, material and methods, results and conclusion.

Expert Consults: It is a structured case report which was written a teaching purpose and make clear standpoints with regard to clinical decision-making and treatment of the patient. It should conform to the requirements of original scientifi c papers.

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Case Reports: Case reports will be published which illustrate and discuss particular points that are relevant to clinical practice. Manuscripts do not include any proof such as image or similar reports will not be published. Case reports should have no more than three authors, 1,500 words, 10 references and 2 fi gures and/or tables. A summary (up to 150 words) should be supplied.

Revıew Artıcles: Review articles concern a general medical problem, which is discussed by experts in the fi eld. The topic should be of interest to a large readership and have important medical implications. The authors should consider the subject from a historical perspective but give priority to recent developments in the fi eld covered by the review.

Images In Medıcıne: This category is intended for illustrative Medical images such as electrocardiograms, echocardiograms, x rays, scans or pathology specimens. The picture may be emphasized in a 250-word legend.

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Letters To The Edıtor: Journal of Human Rhythm welcomes letters commenting on papers published in the journal in the previous six months. Letters should be typed in double spacing and not exceed more than 600 words and six references in length. All authors should sign the letter.

Book Revıews: Journal of Human Rhythm will review selected books in medicine. Authors interested in having a book reviewed should send a copy to the Journal of Human Rhythm Editorial Office.

Manuscript preparation: All manuscripts must be prepared and submitted in the manner described in "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" by the International Committee of Medical Journal Editors available at http://www.icmje.org/ (updated October 2004). In addition, authors should consult the PRISMA Statement (http://www.prisma-statement.org) when preparing reports of systematic reviews and meta-analyses and the CONSORT Statement (http://www.consort-statement. org) when preparing reports of randomized controlled trials. Submit 1 copy in English/Turkish of the entire manuscript including text, references, fi gures, legends and tables via e-mail. English manuscripts must contain a Turkish abstract and Turkish manuscript should contain an English structured abstract. The manuscript should be typewritten, double-spaced, with at least 2.5 cm margin on all sides. Articles should be arranged as follows (1) title page, (2) abstract (or summary for case reports), (3) text, (4) when appropriate acknowledgment, (5) confl ict of interest, (6) references, (7) tables and fi gures with titles and legends.

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Tıtle Page (Page 1, but do not number): The title page should include a short title of less than 50 characters, the authors' full fi rst and last names, degree(s), hospital and academic affi liations. Under the heading, ''Address for correspondence'', give the full name, address, telephone, fax number and E-mail address of the corresponding author, and address for reprints if different from address for correspondence.

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Abstract (Page 2): Authors of original scientifi c papers must supply a structured abstract of no more than 250 words under the following headings: Aim (describe justifi cation of the study), Methods and Results (brief description of methods and presentation of signifi cant results), Conclusions (make only claims that are supported by data in the paper). For case reports provide an unstructured abstract summarizing the main points in 150 words. Do not cite references in the abstract and limit the use of acronyms and abbreviations.

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Journal Articles – Example: Surname RS, Surname FW, Surname GR, Surname AJ. Article title. Abbreviated journal title 2008; 52: 228-34. Use et.al. if reference has more than four names.

Chapter in book – Example: Surname SY. Chapter title. In: Surname MM, ed. Book title. Publisher, City, 2008: 228-34.

Abstract/supplement – Example: Surname R, Surname F. Article title (abstract). Abbreviated journal title 1996; 52 suppl 3:48.

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Charges: Part of the cost of colour printing will be charged to the author. Author costs include cost of colour fi gures and cost of reprints (minimum quantity is fi fty reprints). A price list for reprints will be sent with the authors' proof. There are no page charges.

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2. The manuscript has been written, read, and approved by all the authors,
3. The material has not been previously published, in whole or in part, and it also is not under consideration for publication elsewhere,
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5. Suggest three (3) reviewers, and
6. Acknowledge an understanding that copyright is being signed over to CIM.
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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

Carotid Intima-Media Thickness in Patients with Obstructive Sleep Apnoea Syndrome

Obstrüktif Uyku Apne Sendromlu Hastalarda Karotis İntima Media Kalınlığı

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ABSTRACT

Objective: This study was performed retrospectively to evaluate the relationship between smoking, weight, biochemical, and hematological parameters and Common Carotid Artery- Intima Media Thickness (CCA-IMT) in patients with obstructive sleep apnoea syndrome (OSAS).

Methods: 96 OSAS patients aged between 30 and 76 years (Average = 47 ±12), and 48 control subjects aged between 22 and 75 years (Average = 53 ±11) were evaluated. Doppler ultrasonography was used to measure CCA-IMT of subjects, grouped based on Apnoea hypopnea index (AHI), smoking habit, and body mass index (BMI).

Results: It is observed that CCA- IMT increases in OSAS patients. The hemoglobin and hematocrit values were significantly different in the OSAS group against the controls. This can be attributed to an increase in erythrocyte due to hypoxia. The levels of triglyceride, CRP, and homocysteine were found to be higher in patients than in controls, though not statistically significant.

Conclusions: Sleep apnoea-related hypoxia has hazardous effects on human health. Hypoxia and apnoea that constitutes an important percentage of disordered breathing events seem to contribute heavily to an increase in IMT. Additionally, CCA-IMT is highly related to smoking; yet even in non-smokers, OSAS is an independent risk factor.

Keywords: Obstructive sleep apnoea syndrome, Smoking, CCA-IMT, Doppler USG

ÖZET

Amaç: Bu çalışmada Obstrüktif Uyku Apne Sendromu (OUAS) hastalarında Common Karotis Arter - Intima Media Kalınlığı (CKA-IMK) ile sigara kullanımı, kilo, biyokimyasal ve hematolojik parametreler arasındaki ilişki retrospektif olarak değerlendirildi.

Yöntem: Doppler Ultrasonografi ile 96 OUAS hastası yaşları 30-76 yaş aralığında (ortalama = 47 ± 12) ve 48 kontrol vakası 22-75 yaş aralığında (ortalama = 53 ± 11) değerlendirildi. Apne Hipopne İndeksi (AHİ), sigara içme alışkanlığı ve Vücut Kitle İndeksine (VKİ) grup temelinde CKA-IMK ölçümleri değerlendirildi.

Bulgular: OSAS hastalarında CKA-IMK'nın arttığı gözlendi. OSAS grubunda hemoglobin ve hematokrit değerleri kontrollere göre anlamlı olarak farklıydı. Bu, hipoksi nedeniyle eritrosit artışına bağlanabilir. Trigliserit, CRP ve homosistein düzeyleri, istatistiksel olarak anlamlı olmasa da, kontrol grubundakinden daha yüksek bulundu.

Sonuç: Uyku apnesine bağlı hipoksinin insan sağlığı üzerinde tehlikeli etkileri vardır. Bozulmuş solunum olaylarının önemli bir yüzdesini oluşturan hipoksi ve apne, intima media kalınlığındaki (IMK) artışa büyük ölçüde katkıda bulunur. Ek olarak, CKA-IMK sigarayla oldukça ilgilidir. Yine de sigara içmeyenlerde bile, OSAS bağımsız bir risk faktörüdür.

Anahtar Sözcükler: Obstrüktif uyku apne sendromu, sigara, CKA-IMK, Doppler USG

INTRODUCTION

Obstructive sleep apnoea syndrome(OSAS) is a disease characterized by episodes of upper airway obstruction and reductions in oxygen saturation, during sleep. OSAS is a common and serious health problem.[1, 2]

In adult populations, OSAS prevalence is 1.2-2.5% in women and 1-5% in men.[3] Epidemiological studies have reported that OSAS prevalence in Turkey is 1.8%.[4] The

relationship between OSAS and cardiovascular disease has been studied for years, and OSAS has been identified as an independent risk factor for cardiovascular diseases.[5, 6] More than half of the patients with cerebrovascular diseases suffer from OSAS.[7,8] OSAS is characterized by inflammation caused by free oxygen radicals and nitric oxide, endothelial damage, and smooth muscle proliferation in the wall of vessels.[9-11]

METHODS

Patients referred to Hendek Government Hospital Sleep Laboratory, between January 2012 and January 2013, were included in this study. The test results were evaluated by the same doctor. Before polysomnography, the participants were asked to fill a questionnaire to assess the sleep-related symptoms. Based on this questionnaire, basic OSAS symptoms like snoring, apnoea, and daytime somnolence were assessed. Epworth sleepiness scale was used to evaluate daytime somnolence. ENT evaluation was performed. After each patient in the study was examined, the patients were invited for all-night polysomnography at our sleep disorders laboratory. Patients were informed in advance not to take any drink or food containing caffeine, sleep medications (antihistamines, antidepressants, hypnotics, etc) or alcohol, and not to sleep during the day of polysomnography.

Polysomnography

Polysomnography (PSG) (Compumedics, Melbourne, Australia, Model: Somte PSG, Ser. No: 3127 CAB2-06), Electroencephalography (EEG), electrooculography (EOG), chin electromyography (EMG), oral and nasal airflow (nasal-oral thermistor and nasal cannula), thorax movements, abdominal movements, arterial oxygen saturation, ECG, and snoring records (>6 hours) were obtained.

OSAS patients and controls were grouped according to their age (<40, 40-50, and >50). Patients with AHI <5 were considered as the control group, while OSAS patients were divided into 3 subgroups (AHI < 15, 15 ≤ AHI < 30, and 30 ≤ AHI). Patients were classified according to their smoking status (non-smoker, smoker, and ex-smoker). Cigarette smoke exposure was calculated as packs/year and grouped into 3 subgroups (<10, 10-20, and >20 packs/year). A signed informed consent form was obtained from each patient.

The exclusion criteria included hypertension, cerebrovascular and peripheral vascular diseases, systemic diseases requiring prescription medications, and drug abuse. Systolic and

diastolic blood pressure and heart rate were within the normal range in both the patients and the controls. None of the subjects had diabetes, hypercholesterolemia, or BMI >30.

Doppler ultrasonography

CCA-IMT measurements were made from anterior and posterior walls using a standard 5-10 MHz linear transducer using the same bidirectional Doppler system (DC-T6 Ultrasound System, Shenzhen Mindray Bio-Medical Electronics Co. Ltd., China) by the same, experienced radiologist.

Patients were evaluated in a dark room, in the supine position, by holding the Doppler probe slightly inclined parallel to carotid lumen diameter, and images were manipulated to obtain the best image. The average of measurements from three neighboring regions was recorded as carotid artery intima-media complex.

The measurements were made from both right and left carotid arteries, in proximal CCA without plaques, 1.5 cm away from the carotid bulb.

Biochemical analyses

The blood samples were centrifuged within 30 minutes after collection, and the samples were stored at -40 °C until analysis. All samples were analyzed in a single session.

Serum fasting total homocysteine, cholesterol, triglyceride, and glucose levels were measured using calibrators and kits in a biochemical analyzer (Olympus AU 640 Analyzer, Olympus Corporation, Tokyo, Japan).

Statistical analysis

Paired t-test and Kruskal-Wallis test were used to compare carotid intima-media thickness and other continuous parameters between the two groups. Dunn's test was used to compare pairs of the group. Continuous variables were presented as an average ±standard deviation. Chi-square test was used to examine the association between categorical variables and presented as number and percentage. Pearson's correlation coefficients were used to determine the correlation between carotid intima-media thickness and other parameters. P-value <0.05 was considered significant. All the analyses were made using commercial software (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY).

Regression analyses were performed on factors that affect IMT in OSAS patients. Smoking status and duration, total cholesterol, triglycerides, low-density lipoprotein, high-density lipoprotein, and BMI were evaluated. IMT measurement was made in 3 neighboring regions

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and averaged. The groups were compared with Student's t-test or Mann-Whitney U test. P-value of <0.05 was considered statistically significant. One-way ANOVA was used to compare subgroups according to the duration of exposure.

RESULTS

The ages of all the subjects were between 22 and 76 years (Average = 53 ±11). The control group consisted of 46 patients aged between 22 and 45 years (Average = 47 ±13). The OSAS group consisted of 96 volunteers aged between 30 and 76 years (Average = 53 ±11) (Table 1). The two groups were not identical in terms of age and gender distribution, as the OSAS group consisted more of male and older patients. No significant difference in height was found between the groups; however, the difference between their weights was statistically significant. BMI was higher in the OSAS group, even though not statistically significant. This could be due to the OSAS patients being slightly taller. When CCA-IMT patients were compared with the control groups, the difference was found to be significant in mild OSAS patients with AHI 5-15, those younger than 50 years of age, those who smoked <20 packs/year, non-smokers, and smokers (Table 2).

It is plausible that smoking contributes to the difference between the two groups, but the difference between non-smoking patients against controls demonstrates that OSAS alone can cause an increase in CCA-IMT probably due to hypertension and hypoxia.[12,13]

The absence of this difference between ex-smokers might explain the fact that smoking has a comparable effect between the two groups, and that OSAS might not contribute significantly to an additional effect.

DISCUSSION

Obstructive sleep apnoea (OSA) is correlated with increased cardiovascular morbidity and mortality. As in the case of smokers and OSAS patients, exposure to carbon monoxide, nitric oxide, and free radicals might contribute to an increase in IMT.[14-16]

When OSAS and control groups were compared in terms of CCA-IMT, the difference was found to be significant in mild OSAS patients with an AHI between 5 and 15, those younger than 50 years of age, ex-smokers, who smoked < 20 packs/year, non-smokers, and current smokers. It is plausible that smoking contributes to the difference between the two groups, but the difference between non-smoking patients against controls demonstrates that OSAS alone

can cause an increase in CCA-IMT, probably due to sequelae like hypertension and hypoxia. The absence of difference between ex-smokers might indicate that smoking has the same effect between two groups, and OSAS might not have an additional effect.

The cholesterol level in the OSAS group was found to be lower; this might be because obese patients tend to care more about their diet. Statistically lower levels of HDL can be attributed to lack of exercise.[17] Triglyceride, CRP, and homocysteine levels were found to be higher in patients than do controls, yet not in statistically significant proportions. An increased level of homocysteine has been proposed as an independent risk factor for atherosclerosis and cardiovascular diseases but its relationship with OSA remains a controversy. Hemoglobin and hematocrit values were significantly different in the OSAS group compared to the controls. This might be attributed to an increase in erythrocyte due to hypoxia.[18]

CONCLUSION

It is observed that carotid IMT increases in OSAS patients. Sleep apnoea-related hypoxia has hazardous effects on human health. Hypoxia apnoea that constitutes an important percentage of disordered breathing events seems to contribute heavily to an increase in IMT. Additionally, CCA-IMT is highly related to smoking; yet even in non-smokers, OSAS is an independent risk factor.

Table1. Comparison of patient characteristics between the patient and control groups.

		Control (n=46)	Patient (n=96)	p value
AHI	**0-5 (Control)**	46 (100)	0 (0)	**<0.001**
	5-15 (Slight)	0 (0)	16 (16.7)	
	15-30 (Mild)	0 (0)	7 (7.3)	
	>30 (Severe)	0 (0)	73 (76)	
Age	**<40**	9 (19.6)	11 (11.5)	0.193
	40-50	19 (41.3)	33 (34.4)	
	>50	18 (39.1)	52 (54.2)	
Gender	**Male**	26 (56.5)	75 (78.1)	**0.014**
	Female	20 (43.5)	21 (21.9)	
Smoking	**Non-Smokers**	23 (50)	43 (44.8)	0.565
	Smokers	18 (39.1)	36 (37.5)	
	Ex-Smokers	5 (10.9)	17 (17.7)	
Smoking (pack-years)	**None**	23 (50)	43 (44.8)	0.584
	<10	1 (2.2)	3 (3.1)	
	10-20	9 (19.6)	13 (13.5)	
	>20	13 (28.3)	37 (38.5)	
AHI		2.27±1.12	52.01±28.79	**<0.001**
Age		47.17±12.6	52.95±11.35	**0.007**
Height		167±8.54	169.48±8.15	0.097
Weight		78.74±13.57	85.08±11.31	**0.004**
BMI		28.21±4.29	29.55±2.74	0.056
IMT left		0.81±0.17	0.95±0.66	**0.008**
IMT right		0.82±0.16	0.91±0.25	0.151
Homocysteine		14.77±4.47	15.28±5.69	0.591
Hematocrit		40.39±6.96	42.78±5.14	**0.043**
Hemoglobin		12.41±3.4	13.99±2.28	**0.016**
LDL Cholesterol		130.76±39.61	121.3±34.77	0.149
HDL Cholesterol		45.68±11.31	41.24±9	**0.022**
Total Cholesterol		212.38±43.76	203.82±39.73	0.247
Triglycerides		192.41±91,15	217.17±102.22	0.164
C-Reactive Protein		4.46±7,76	7.45±9.55	0.102
Mean O_2 Saturation		94,87±1,41	88,78±4,62	**<0.001**
O_2 Desaturation İndex		2,08±1,05	50,45±27,37	**<0.001**
Minimum O_2 Saturation		88,43±2,21	73,27±10,13	**<0.001**

Table 2. Comparison of carotid intima media thickness among several characteristics for the control and patient groups.

		Control (n=46)			Patient (n=96)		
		n	Left IMT (Mean±SD)	Right IMT (Mean±SD)	N	Left IMT (Mean±SD)	Right IMT (Mean±SD)
AHI	**0-5 (Control)**	46	0.81±0.17	0.82±0.16	0	-	-
	5-15 (Slight)	0	-	-	16	0.76±0.11	0.79±0.12
	15-30 (Mild)	0	-	-	7	0.91±0.23	0.91±0.23
	>30 (Severe)	0	-	-	73	0.99±0.75 [a]	0.93±0.27
	p-value		-	-		**0.032**	0.141
Age	**<40**	9	0.67±0.07	0.72±0.1	11	0.76±0.09	0.75±0.14
	40-50	19	0.79±0.15	0.83±0.16	33	1±1.1	0.87±0.28
	>50	18	0.89±0.18 [a]	0.86±0.16	52	0.96±0.22 [b.c]	0.97±0.23 [b.c]
	p-value		**0.002**	0.102		**0.002**	**0.001**
Gender	**Male**	26	0.83±0.18	0.85±0.17	75	0.99±0.74	0.93±0.26
	Female	20	0.78±0.16	0.78±0.13	21	0.81±0.18	0.84±0.19
	p-value		0.273	0.154		0.290	0.139
Smoking	**Non-Smokers**	23	0.74±0.13	0.76±0.12	43	0.84±0.19	0.87±0.21
	Smokers	18	0.83±0.15	0.85±0.15	36	1.09±1.04	0.94±0.29
	Ex-Smokers	5	1.02±0.22 [d]	0.98±0.18 [d]	17	0.94±0.25	0.94±0.25
	p-value		**0.009**	**0.008**		0.168	0.506
Smoking (pack-years)	**None**	23	0.74±0.13	0.76±0.12	43	0.84±0.19	0.87±0.21
	≤20	10	0.77±0.18	0.79±0.15	16	0.82±0.13	0.83±0.19
	>20	13	0.95±0.15 [e.f]	0.95±0.14 [e]	37	1.14±1.02 [f]	0.99±0.29 [f]
	p-value		**0.001**	**0.001**		**0.019**	**0.045**

According to pai wise comparison of Kruskall Wallis test; [a]: Statistically significantly different from AHI=5-15 group, [b]: Statistically significantly different from Age<40 group, [c]: Statistically significantly different from Age=40-50 group, [d]: Statistically significantly different from non-smoker group, [e]: Statistically significant different from none pack-years group, [f]: Statistically significantly different from ≤20 pack-years group, other pairwise comparisons were not statistically significant.

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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

Relationship Between Bilirubin Levels and Heart Rate Recovery in Polycystic Ovary Syndrome Patients

Polikistik Over Sendromlu Hastalarda Bilirubin Düzeyleri ile Kalp Hızı Toparlanması Arasındaki İlişki

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Abstract

Aim: Bilirubin is a final product of heme metabolism and also has antioxidant properties. But there is no information on the effect of bilirubin in the pathogenesis of in Polycystic Ovary Syndrome (PCOS). The goal of the present study was to

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investigate the relationship between bilirubin levels, PCOS and heart rate recovery (HRR).

Material and Methods: Subjects were included in this study from our center's Department of Gynecology & Obstetrics between March 2012 and May 2013. Serum bilirubin levels and other blood parameters in at least 12-hour fasting states were determined. Exercise stress test was performed on all patients and control participants.

Results: Thirty four patients with a diagnosis of PCOS aged younger than 40 year and twenty seven healthy women matched by age, BMI, heart rate and blood pressure were included in the study. Total bilirubin levels in PCOS group were significantly lower than the control group. The HRR was significantly decreased in women with PCOS compared the control group. In the Pearson correlation test, HRR was significantly correlated with homeostasis model assessment insulin resistance (HOMA-IR) index and bilirubin levels.

Conclusions: The bilirubin levels may affect HRR in PCOS patients. Therefore, in the treatment of PCOS patients, oxidative stress and its harmful effects should be considered.

Key words : Bilirubin, heart rate recovery, polycystic ovary syndrome, exercise test

Özet

Amaç: Bilirubin antioksidan özelliklere sahip Hem metabolizmasının son ürünüdür. Bilirubin Polikistik Over Sendromu (PCOS) patojenezi üzerindeki etkisi bilinmemektedir. Çalışmamızın amacı bilirubin, PCOS ve kalp toparlanma hızı (HRR) arasındaki ilişkiyi araştırmaktır.

Materyal ve Metod: Jinekoloji ve Obstetrik Bölümünde Mart 2012 ve Mayıs 2013 arasındaki hastalar çalışmaya dahil edildi. Serum bilirubin düzeyleri ve diğer kan parametreleri en az 12 saat açlık sonrası ölçüldü. Egzersiz testi tüm hasta ve kontrol grubuna uygulandı.

Bulgular: PCOS tanılı 40 yaşından genç Otuz Dört hasta ve yas, vücut kitle indeksi, kalp hızı ve kan basıncı açısından eşit olan Yirmi Yedi sağlıklı bayan çalışmaya dahil edildi. Toplam bilirubin düzeyleri PCOS grubunda anlamlı şekilde daha düşüktü. Kalp toparlanma hızı PCOS grubundaki hastalarda kontrol grubuna göre anlamlı şekilde daha düşüktü. Pearson korelasyon testinde, Kalp toparlanma hızı bilirubin düzeyleri ve homeostaz modeli değerlendirme insülin direnci (HOMA-IR) endeksi ile anlamlı şekilde korele idi.

Sonuç: Bilirubin düzeyleri PCOS hastalarında kalp toparlanma hızını etkileyebilmektedir. Bu etkiden

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dolayı, PCOS hastalarının tedavisinde oksidatif stres ve zarar verici etkileri dikkate alınmalıdır.

Anahtar kelimeler: Bilirubin, kalp toparlanma hızı, polikistik over sendromu, egzersiz test

Introduction

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder in women. The estimated prevalence is between 4-14%.[1] Metabolic and endocrine factors are dominant in the pathogenesis of PCOS. Although there is no clear relationship, these factors are responsible for the high prevalence of pathologies in PCOS patients such as diabetes mellitus[2], hypertension[3], dyslipidemia[4], diastolic dysfunction.[5] Increased oxidative stress may be one of the possible mechanisms. There are studies showing that decreased antioxidant defenses and increased oxidative stress in patients with PCOS.[6-8] Increased oxidative stress is associated with increased production of reactive oxygen species (ROS). ROS leading to oxidative damage to cellular lipids, proteins and DNA that alter cell and tissue functions. Autonomic nervous system is also damaged tissue is one of these. Hoeldtke and colleagues found that sympathetic dysfunction associated with increased oxidative stress.[9] In another study showed that the severity of diabetic neuropathy is associated with oxidative stress.[10]

For the first time in 1994, Imai and colleagues found that vagally mediated heart rate recovery (HRR) after exercise is accelerated in well trained athletes but blunted in patients with chronic heart failure.[11] In another study showed that decreased vagal activity is a strong predictor of mortality independent of the extent of myocardial ischemia.[12] This negative result explained by an increased risk of arrhythmia depending reduced vagal activity as a result of impaired

autonomic balance.[13] There are studies indicating that impaired HRR observed in PCOS patients.[14-15] However, the underlying mechanisms are not known.

Bilirubin is a final product of heme metabolism and also has antioxidant properties.[16-18] Therefore bilirubin is located in the pathogenesis of many diseases such as coronary artery disease.[19-20] diabetes mellitus[21,22], metabolic syndrome. [23] But there is no information on the effect of bilirubin in the pathogenesis of PCOS. The goal of the present study was to investigate the relationship between bilirubin levels, PCOS and HRR.

Methods

Subjects

All patients were referred to our Department of Gynecology & Obstetrics between March 2012 and May 2013. Thirty four patients with a diagnosis of PCOS aged younger than 40 year and twenty seven healthy women matched by age, BMI, heart rate and blood pressure were included in the study. All patients underwent physical examination, 12-lead electrocardiography (ECG) and transthoracic echocardiographic evaluation. Patients with any cardiovascular disorder including hypertension, diabetes mellitus, thyroid and renal diseases, hyper-cortisolism, use of oral contraceptives or other hormonal therapy within the prior 3 months, pregnancy or breast-feeding, hyper-prolactinemia, congenital adrenal hyperplasia, androgen-secreting tumors, signs or symptoms of other endocrinopathies, smoking, chronic alcohol consumption, or history of use of any medications in the last 3 months were excluded. PCOS was diagnosed according to the Rotterdam criteria in the presence of at least two of the following three features: oligo or

anovulation, hyperandrogegism, and polycystic ovaries. The study protocol was approved by the local Medical Research Ethics Committee and consistent with the Declaration of Helsinki.

Measurements

Blood glucose, high-density lipoprotein (HDL), low-density lipoprotein (LDL) cholesterol, TG, insulin and transaminase enzyme levels in at least 12-hour fasting states were determined. Serum bilirubin concentrations were determined by the enzymatic colorimetric method by a clinical chemistry auto analyzer. Insulin resistance was calculated by using the homeostasis model assessment insulin resistance index (HOMA-IR) according to the formula described by Matthews et al. [24]

Exercise Stress Test Protocol

Subjects underwent a maximal graded exercise test on an electronic treadmill with Bruce protocol. Predicted peak heart rate was calculated as (220 - age) and the aim was to reach at least 85% of the age-predicted heart rates. Blood pressure, heart rate, and symptoms were recorded every minute. HRR was calculated as the difference between heart rate at peak exercise and heart rate at first minute of the cool-down period. Estimated workload, expressed in metabolic equivalents (METs; 1 MET equals 3.5 mL of oxygen uptake per kilogram of body weight per minute) was recorded into the database.

Statistics

Statistical analyses were performed using SPSS version 20.0 (SPSS, Inc.,Chicago, IL). After certification of normal distribution, data were reported as mean ± SD; categorical variables were defined as percentage. Two group comparisons were performed using independent Student's t tests for continuous variables and the chi-square test for categorical variables. Correlation

analyses were performed using the Pearson coefficient of correlation. $P < 0.05$ was considered significant.

Results

Clinical characteristics and laboratory findings of patients included in the study are shown in Table 1. Compared the control group, PCOS group was had significantly higher BMI, waist-to-hip ratio, fasting glucose, insulin and HOMA-IR levels. On the other hand, the total bilirubin levels in this group were significantly lower than the control group. The HRR was significantly decreased in women with PCOS compared the control group (Table 2).

In the Pearson correlation test (Table 3), HRR was significantly and negatively correlated with HOMA-IR (r: -0.359, p: 0.005) and bilirubin levels were positively and significantly correlated with HRR (r: 0.556, p: 0.001). No correlation was found for the other parameters.

Discussion

To the best of our knowledge, this is the first study to examine the relationship between total bilirubin levels and polycystic ovary syndrome. In addition, serum bilirubin levels were associated with heart rate recovery. Pearson correlation analysis showed that HRR was significantly correlated with bilirubin and HOMA-IR.

Oxidative mechanisms are important in energy production, but also they provide a potentially harmful reactive oxygen species.[25] If the amount of ROS reaches levels that the body's defense mechanism cannot overcome, a number of disorders occur in cells and tissues. Oxidative stress may be one of the reasons underlying the pathogenesis of PCOS. There are many studies about this relationship. Sabuncu and colleagues found that increased oxidative stress and insufficient

antioxidative status are in PCOS patients. [26] A similar result was also observed in another study.[27] Antioxidant enzyme PON-1 activity was found to decrease in PCOS patients.[7] A recent meta-analysis found that markers of the oxidative stress are abnormal in PCOS patients regardless of weight [28]. Increased oxidative stress is likely to be associated with insulin resistance[29], obesity[30] and hormonal changes.[6] However, PCOS and a molecule antioxidant bilirubin relationship has not been studied previously. In our study, PCOS group compared to the control group had lower levels of bilirubin. Lin et al found that the low serum bilirubin levels are strongly associated with increased HOMA-IR and insulin levels.[31] In accordance with these results, PCOS group had low bilirubin levels and high insulin resistance status compared with control group in our study. Similar results were observed in a study in patients with metabolic syndrome. [23] Thus, decreased bilirubin levels may be responsible from some negative effects caused oxidative stress in PCOS patients.

HRR is an indirect indicator of autonomic nervous system effect on the heart and it has been associated with many disorders.[12,32-34] PCOS is one of them. Giallauri and colleagues found in their study, PCOS women showed a significantly reduced HRR compared to healthy controls.[15] Another study found similar results and researchers suggested increased catecholaminergic stimulation might be responsible from these adverse effects.[14] There are studies that ovarian sympathetic tone or general sympathetic tone could be responsible from this adverse effect.[35] Our hypothesis was that impaired HRR in PCOS patients may relationship with damaged autonomic nervous system caused by oxidative stress. Sears and colleagues found that in their study nitric oxide synthase inhibition affect heart rate recovery by cholinergic system.[36] In an animal study, improvement in autonomic function was monitored by reduction of oxidative stress.[37] A study

conducted in patients with impaired fasting glucose showed that cardiac autonomic function associated with oxidative stress and insulin resistance.[38] Our study had similar results. Bilirubin levels were lower in the PCOS group and in this group bilirubin level had a positive correlation between the HRR. These findings may indicate indirectly that oxidative stress responsible from impaired HRR in PCOS patients.

The present investigation has several limitations. Firstly, there were a small number of patients. The second limitation of our study was the lack of other markers of oxidative stress such as malondialdehyde, superoxide dismutase. However our study leads way in furthering the efforts to understand the connecting links between PCOS and oxidative stress. Large control studies are needed to understand and validate our results.

As a result of our study, we found bilirubin levels associated HRR in polycystic ovary syndrome patients. Therefore, adverse effects of oxidative stress were shown on cardiac autonomic function. In the treatment of PCOS patients, this point should be considered.

Conflict of interest

The authors declare that they have no conflict of interest.

All persons gave their informed consent prior to their inclusion in the study.

Table 1 : Baseline clinical and biochemical PCOS patients and control subjects.

Variables	**PCOS (n=34)**	**Controls(n =27)**	**P**
Age	24.7 ± 6.7	24.7 ± 5.3	0.998
BMI (kg/m2)	26.3 ± 4.9	23 ± 4.1	**0.003**
Metabolic Syndrome %(n)	55(19)	66(18)	0.39
Waist circumference (cm)	84.2 ±13.3	79.9 ± 10.1	0.168
Waist to hip ratio	0.80 ± 0.7	0.75 ± 0.8	**0.004**
SBP (mmHg)	106 ± 8.7	111 ± 11.6	0.490
DBP (mmHg)	64.4 ± 5.8	68.8 ± 8.8	0.563
Heart rate (beat/min)	81.6 ±13.3	86.7 ± 2.2	0.455
Fasting glucose (mg/dl)	95.6 ±13.8	83.1 ± 9.1	**0.001**
Low-density lipoprotein (mg/dl)	104.1±176	98.1 ± 11.6	0.135
Triglycerides (mg/dl)	111.3 ±40.2	109.5 ±27.7	0.840
Fasting insulin (mIU/l)	15 ± 5.9	10.4 ± 2.2	**0.001**
HOMA-IR	2.9 ± 0.9	2 ± 0.5	**0.001**
Bilirubin(mg/dl)	0.38 ±0.08	0.45 ± 0.08	**0.001**

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AST(U/L)	18.3 ± 8.6	18.4 ± 7.8	0.991
ALT(U/L)	24.3 ± 7.5	22.6 ± 6.2	0.355

HOMA-IR - homeostasis model assessment - insulin resistance, PCOS - polycystic ovary syndrome

Table 2: Comparison of treadmill exercise test parameters

Variables	**PCOS (n=34)**	**Controls(n=27)**	**P**
Maximal METs	11 ± 1.3	10.8 ± 2.1	0,105
Exercise duration (minutes)	9.9 ± 1.3	9.3 ± 1.2	0,648
Maximal heart rate (beat/min)	178.6 ± 9.4	176.3 ± 12.1	0,421
Heart rate recovery at 1 min (beat/min)	27.8 ± 11.2	34.2 ± 10.8	**0.027**

METs = metabolic equivalent

Table 3: Correlation between heart recovery rate (HRR) and risk factors

	HRR	
	r value	**p**
BMI	- 0,167	0,347
Waist circumference	- 0,178	0,315
Waist to hip ratio	0,211	0,232

LDL	- 0,153	0,386
TG	0,051	0,774
Bilirubin	0,556	**0.001**
Fasting insulin	- 0,018	0,918
HOMA-IR	- 0,359	**0.005**
Fasting glucose	- 0,204	0,247

LDL: Low-density lipoprotein TG: Triglycerides
HOMA-IR: Homeostasis model assessment - insulin resistance

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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

Social Problem Solving Approach, Caregiving Role, Depression and Quality of Life in Stroke Caregivers

İnmeli Bireylere Bakım Verenlerde Sosyal Problem Çözme Yaklaşımının Bakım Verme Rolü, Depresyon Ve Yaşam Kalitesi Üzerine Etkisi

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ABSTRACT

Aim: The aim of this study is to investigate the effect of social problem solving approach on caregiving role, depression and quality of life in caregivers of stroke individuals.

Methods: Sixty-one stroke caregivers were included in this study. Caregivers were divided into two groups as the study and control groups. Basic occupational therapy strategies were explained for groups in hospital environment. Moreover, social problem solving approach started to be carried out in the hospital environment until post-discharge 12th week was used for the study group. The outcomes were evaluated using Bakas Caregiving Outcomes Scale, Beck Depression Inventory, Nottingham Health Profile and Person Environment Fit Scale.

Results: When the groups were compared after the social problem solving approach, a statistically

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significant difference was found in favor of the study group in terms of the burden of care, and depression level and the emotional reaction subdivision scores of the quality of life ($p<0.05$).

Conclusion: Social problem solving approach provided positive outputs in increasing the quality of life, decreasing depression level and caregiving load of stroke individuals' caregivers.

Key words: Occupational therapy, caregiving, depression, quality of life, social problem solving

ÖZET

Amaç: Bu çalışmanın amacı inme geçirmiş hastalara bakım verenlerde, sosyal problem çözme yaklaşımının bakım verme rolü, depresyon ve yaşam kalitesi üzerine etkisini araştırmaktır.

Yöntem: Çalışmada altmış bir inme geçirmiş hastaya bakım veren kişi yer aldı. Bakım verenler kontrol ve çalışma grubu olarak ikiye ayrıldı. Her iki gruba hastanede temel ergoterapi stratejileri açıklandı. Bununla birlikte çalışma grubuna hastane ortamında başlatılıp taburculuk sonrası 12. haftaya kadar sosyal problem çözme yaklaşımı anlatıldı. Sonuçlar Bakas Bakım Verme Etki Ölçeği, Beck Depresyon Ölçeği, Nottingham Sağlık Profili ve Kişi Çevre Uygunluğu Skalası ile değerlendirildi.

Bulgular: Gruplar sosyal problem çözme yaklaşımı sonrası karşılaştırıldığında, bakım yükü ve depresyon düzeyi ile yaşam kalitesinin emosyonel reaksiyon alt bölümü açısından istatistiksel olarak çalışma grubu lehinde anlamlı farklılar bulundu ($p<0.05$).

Sonuç: Sosyal problem çözme yaklaşımı inme geçirmiş hastalara bakım verenlerde yaşam kalitesini artırma, depreyon düzeyi ve bakım yükünü azaltma yönünde pozitif kazanımlar sağlamıştır.

Anahtar kelimeler: Ergoterapi, bakım verme, depresyon, yaşam kalitesi, sosyal problem çözme.

Introduction

Stroke is defined as a familial disease.[1] Caregivers may need to leave work or school to meet caregiving demands.[2] However, it is stated that caregiving process negatively effects work and leisure activities and participation to social life.[3,4] It was also stated that, especially, psychological health was affected, and depression at different levels was noticed in 40% of caregivers.[5,6] Moreover, early period support was reported to create a positive emotional

mood change in caregivers, and also provided cost efficacy as alternative to the traditional caregiving understanding.[7]

Patient relatives and health professionals are use different post-stroke intervention strategies. Providing special services for the caregivers, presenting social support by individuals at similar ages, counseling and trainings were included in these programs, and had positive effects upon caregivers.[8]

Occupational therapists benefit from therapeutic modalities in dealing with the client. One of the most frequently used modes is social problem solving.[9] Social problem-solving approach have five basic principles (identify the problem, brainstorm solutions, critique the solutions, choose and implement a solution and evaluate the outcome). In social problem-solving, individuals attempt to identify or discover effective coping responses for problems they encounter in their social environment, such as the home. According to social problem-solving theory, family caregivers who use social problem-solving skills should have positive outcomes because they solve problems optimistically using a systematic and objective approach.[10] It has been shown in the literature that problem solving is an important approach in dementia patients and caregivers, and that this can be applied by occupational therapists, nurses and social workers.[11] It has been reported that occupational therapy practices, which include social problem solving approach in individuals with breast cancer, have positive effects on function, quality of life and emotional status.[12] Similarly, the positive results of the social problem-solving approach applied by the occupational therapists and the physiotherapist in family-based interventions of spinal cord injured individuals have been shown.[13] The social problem-solving approach implemented by different professionals, such

as occupational therapists, nurses, social workers, has shown positive results for caregivers of stroke patients.[14]

No studies have investigated the effects of social problem solving approach to caregivers of stroke individuals in our country. The aim of this study was to research the effect of social problem solving approach included in occupational therapy interventions in stroke individuals' caregivers upon caregiving role, depression, and life quality.

Materials and Methods

Sampling

Sixty-one stroke patients and their caregivers who voluntarily agree to participate to the study were included. The patients with the diagnosis of acute stroke were being treated in three different hospitals (state hospital, research and application hospital, private hospital). Twenty-nine patients in the treatment group and twenty-eight patients in the control group were followed up with the diagnosis of ischemia. Two patients in the treatment group and two patients in the control group were followed up with the diagnosis of hemorrhage.

Caregivers of all stroke patients in the hospital who were admitted under the research were first listed and numbered. The second author used a simple randomization strategy to assign participants to the treatment group or to the control group. The second author had no information about the caregiver. The inclusion criteria of stroke caregiver were being the first degree relative of acute stroke patients who had it for the first time (husband/wife, daughter, son or daughter-in-law), being a volunteer caregiver, having adequate communication for

understanding the problem solving strategies with basic interview and scales, having no disease that would affect the communication process and regular participation to the evaluation and study program defined for the study process. Caregivers of patients who have recurrent stroke history during study were excluded from the study.

This study was conducted on caregiver of stroke patient. However, since the level of involvement of caregivers is primarily related to the patient, certain characteristics must be common to patients. Inclusion criteria of stroke patient; followed by neurology physician for acute stroke in hospitals where the study was conducted, independent of daily life activities before stroke, do not have psychiatric or neurological problems in the past, patients who have adequate communication to respond to scales by basic interview. In this context, the patient who could not speak, the patient who could not be fed, the patient with PEG and the patient with NG were not included in this study. All patients were receiving physiotherapy and rehabilitation during their hospitalization.

Design

Basic occupational therapy strategies related to caregiving were explained to both groups in hospital environment (general information related to the disease and basic strategies they could use during their daily life activities). There was no intervention in the control group caregivers except for informing However, in the hospital environment, social problem solving method was taught to the study group caregivers.

Procedure

In cases in the study group, telephone-assisted social problem solving approach was used. The program was started in the hospital environment, completed on telephone calls made in post-

discharge 2nd, 3rd, 4th, 6th, 8th, 10th and 12th weeks, and no more calls were made until the 24th week when the last evaluation was carried out. The interventions in the hospital environment were caregivers' describing the problems related to acute period, sharing ideas on creating solutions, caregivers' presenting their own solutions, finding the most appropriate solution, and making a consensus on practice. In the hospital, a program was conducted in line with the requirements of the caregivers such as how physical aid related to the needs of the patients would be provided (such as direct transfer), providing cognitive aids during the activities (such as using more simple orders for the patient), and teaching in-room arrangements (decorating the room in a way patient's bed and caregiver's area would be comfortable). A list related to the activities caregiver had to fulfill and caregiver would like to fulfill was created; and home visit was actualized at the 1st week after discharge. This visit was completed at a totally 3-hour period, and the problem solving method that was started previously in the hospital was repeated at home. After home visit, the program was maintained through the telephone calls. In each telephone conversation, the caregivers were asked to explain the problems they encountered until the current time from the previous phone call, the solutions they found for these problems, and to tell about whether they practice these solutions or not. During the conversation, the reasons for the solutions not to be practiced were discussed. Moreover, a common solution was tried to be found with the researcher for the situations that could not be solved or considered to be inadequate. Recently defined problems, solutions of these and their practice were also discussed. All interviews were registered.[10]

Instruments

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After registering the data related to the socio-demographical properties of stroke patients and their caregivers (age, gender, educational background, etc), the scales mentioned below were performed during the pre- and post-implementations. The first and last measurements were made by a therapist who mastered occupational therapy and continued her PhD program.

The Functional Independence Measure (FIM): The FIM has a total of 18 items in 2 main sections of motor functions (13 items) and cognitive functions (5 items). The evaluation is made over 7 points and the total FIM points can range from 18-126. Higher points indicate a higher level of independence.[15]

Bakas Caregiving Outcomes Scale (BCOS): BCOS was used to measure the change in life of stroke individuals' families. The scale included totally 15 questions scored between +3 (the best direction) and -3 (the worst direction). The scale included 15 items and 1 more item related to how individuals were affected from the caregiving; and the scoring was included in a different category. The Turkish version of BCOS was used in this study.[16]

Beck Depression Inventory (BDI): BDI included 21 items related to the depressive symptoms such as pessimism, feeling of failure, dissatisfaction, feeling of guilty, uneasiness, fatigue, poor appetite, indecision, sleep disorder, and social withdrawal. Scoring was determined between 0 and 3, and the highest score indicated the increase at depression. The Turkish version of BDI was used in this study.[17]

Nottingham Health Profile (NHP): NHP is a general life quality scale aiming to measure health status perceived by the individual's self in terms of physical, emotional, and social aspects. The scale included 38 items relayed to sleeping, level of energy, emotional status, social isolation, physical mobility and pain. Each item is answered as 'yes' or 'no'. The

positive answers indicate the decrease at life quality. The Turkish version of NHP was used in this study.[18]

Evaluation of the Physical Environment: The compatibility of stroke individuals and caregivers with the environment they lived in was evaluated using Person Environment Fit Scale (PEFS). It was a scale including the pre-stroke health status of the stroke individuals, their daily life activities, their using supportive instruments, and home status and physical health of the caregiver was evaluated. Scoring between 1 and -1 was defined for each of these six categories. High score indicated that individuals were compatible with the environment they live in.[19]

Assessment of Socio-Economic Environment: In the evaluation, caregivers were asked to list the problems they experienced during the process (the dependency level of the patient and how this affected the caregiver, patient's communication problem, limitedness in leisure time period, increasing workload due to the disease, economic difficulties, and social role switch) and explain the economic difficulties they experienced related to the stroke process in the 24th week. The economic status was described as sufficient or insufficient. In this study, whether state support was granted or not was investigated related to the economic status .[20,21]

Statistical Analysis

SPSS 18.0 package software was used for the statistical analyses of the data. The variables determined by the measurement are expressed as the mean ± standard deviation and the difference ± standard deviation, and the percentage value is calculated for the variables determined by the count. Kolmogorov-Smirnov Test was benefited to find whether the distribution was normal for the comparison of the pre- and post-intervention evaluation results. Because the measurement results did not create a normal distribution, non-parametric

tests were preferred. Difference values between the first and last measurements were taken. Inter-group evaluation was done according to difference scores. Qualitative data were turned into quantitative data, and Chi-square test was used for the analysis. The Mann Whitney U test was used to compare the numerical values of two groups.

Ethical Issues

This study complied with the Declaration of Helsinki, and the protocol was approved by the Clinical Research Ethics Committee of University's Faculty of Medicine. Before the study, written informed consent was obtained from caregivers after all procedures had been fully explained.

Results

The mean age of patients in treatment group were 69.19±10.48 years, and the mean age of patients in control group were 70.66±11.77 years. There was no significant difference among the patients in terms of age, pre-stroke employment status and educational levels ($p>0.05$).

Functional Independence Measurement (FIM) was used to evaluate the independence levels of patients at the beginning and end of the study. Motor and cognitive levels of patients were defined. According to the first evaluation results of FIM, seventeen patients in the treatment group and fifteen patients in the control group were dependent on toilet use, the last evaluation results of FIM five patients in the treatment group and seven patients in the control group were dependent on toilet use. The mean FIM score of patients in treatment group were

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68.03±24.91 and the mean FIM score of patients in control group were 68.66±28.84 at first evalution. The mean FIM score of patients in treatment group were 108.90±21.13 and the mean FIM score of patients in control group were 104.90±22.93 at last evalution.

Nineteen of the patients in the treatment group were given care at their home, twelve of the patients in the treatment group were given care at the home of their child. Twenty of the patients in the control group were given care at their home, ten of the patients in the control group were given care at the home of their child.

The mean age of stroke caregivers in treatment group were 56.45±6.69 years, and the mean age of stroke caregivers in control group were 58.56± 9.94 years.

There was no significant difference among the caregivers in terms of age, employment status, social security and affinity to the stroke individual ($p>0.05$). Difference was obtained between the educational levels of the caregivers ($p<0.05$). The results are presented in Table 1.

According to difference values between BCOS and BDI' first and last measurements scores of the caregivers, significant decrease at caregiving load and depression level was noticed in the study group ($p<0.01$). Similarly significant difference in favor of the study group was found in emotional reaction in NHP'difference scores ($p<0.05$). The results are presented in Table 2.

It was determined for both groups that increased dependency level of the patient was the most among the problem solving difficulties related to the socio-economic environment (Table 3).

When home evaluation scores and PEFS scores related to the first and last evaluations of the caregivers in the study and control groups were compared, no significant difference was determined between the groups ($p>0.05$).

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It was determined for the 24th week that, 22 cases (71%) in the study group and 13 cases (43.3%) in the control group had sufficient economic status, and there was a significant difference in favor of the study group between two groups ($p<0.05$). It was also specified that 3 cases (9.7%) in the study group and 5 cases (16.7%) in the control group granted state support at the end of 6 months, and there was no difference between the groups ($p>0.05$).

Discussion

It was found social problem solving approach provided positive outputs for increasing the quality of life, decreasing depression level and caregiving load of stroke individuals' caregivers in this study.

Needs of the stroke caregivers varied from the request of being informed about the recovery period to being trained on helping to daily life activities of the patient and modifications related to reaching to social resources, emotional sharing, and post-discharge adaptation to home.[22] Caregivers also need support in terms of psychological support as well as physical aid, being informed and social terms.[23] It has been mentioned that when both stroke individual and the caregiver are informed and supported on roles, relationship changes, and decreased autonomy, then positive changes are possible to be provided.[24] In our study, in the 24th week, it was noticed that the problems determined during the intervention process were possible to appear at times, and the solution could be found and practiced by the caregiver more easily for study groups. This result proved as similar to the studies in the literature that caregivers experienced some problems as of the early period, they needed a correct approach during the solution process, and social problem solving approach created awareness for the caregivers through a comprehensive viewpoint.

It was reported that long-term caregiving of stroke individuals' caregivers caused change in working conditions, and this change caused increased economic stress.[25] It was presented that caregivers of the physically dependent individuals faced with increased time waste and decreased level of income.[26] In our study, in parallel with the research results in the literature, post-discharge economic difficulties related to stroke were determined. In the study group, one case was suggested on part-time working, three cases were suggested on taking caregiving money, and two cases were suggested on turning back to work gradually. In continuing telephone calls, positive results of the suggestions were reported.

Greenwood et al.[24] stated that stroke caregivers could not leave the patients alone due to security problems at home, and sometimes they even could not leave the room they were in, and experienced the feeling of being prisoned in their own homes. In our study, caregivers mentioned that they experienced security problems at homes where they live with the stroke individual. In the study group, arrangements in a way supporting the mobility such as creating uninterrupted areas, using wall bar in toilet and restrooms, and in-room furniture order were provided. As a result, the caregivers of the study group achieved positive gains from these recommendations.

Pierce et al.[27] indicated that caregivers of stroke individuals followed for one year were anxious for both the patient and themselves, experienced a specific tiredness, their lives were lost during the caregiving, and appropriate supportive trainings related to caregiving role were needed. Preiffer et al.[28] proved that telephone supported problem solving method provided decrease at depression level, physical complaints, and caregiving load and a significant increase at leisure time in caregivers of stroke individuals. In our study, it was noticed that caregiving load of study group caregivers decreased at a long term. In the study group, it was

thought that the maintenance load was reduced by offering alternatives such as stress reduction factors and interviews with friends.

It was mentioned that caregivers of stroke individuals experienced changes in feelings-moods as of the acute period, and anxieties experienced during this period caused changes in the emotional status.[29] In a study carried out on husband/wife of stroke individuals, it was reported that caregiving load and depression at a serious level was noticeable in 12th-24th weeks as of the discharge, and there was a decrease at relationship status.[30] Grant et al.[31] stated in their study they administered telephone-supported social problem solving approach in caregivers of stroke individuals that study group was better in problem solving and experienced less depression when compared with the control group. In our study, level of depression decreased in study group in the 24th week; however, no change was noticed in control group. The positive change in emotional mood of the study group was considered to be related with providing any kind of physical correct use of body mechanics and emotional support on caregiving. Moreover, social problem solving approach provided awareness related to being within real life. So that, caregivers were determined to be stronger against the difficulties including the social life, and they experienced less emotion-mood change.

Ogunlana et al.[32] stated that caregivers of stroke individuals had decrease at their quality of life in relation with their increased caregiving load. Akosile et al.[33] reported that there was a negative response in stroke individuals' caregivers quality of life, and more serious responses were noticed in general health and role restrictions related to emotional problems. Evidence based training guides including access to social resources, post-discharge training, talent acquisition, and counseling were reported to be an efficient intervention for development quality of life and health of caregivers.[34,35] In our study, at the 24th week, it was observed that

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the emotional responses of the caregivers in the study group decreased more than the caregivers of the control group. The results were thought to be related to the reduction in maintenance load.

It was decided that the social problem-solving approach was an appropriate intervention method in identifying possible problems occurring in both acute and chronic periods, creating solutions and implementing solutions in our study. Furthermore, administering the intervention as telephone based was also considered to be an intervention in which caregivers were easily be reached and which did not require a post-discharge cost.

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Table I. Comparison of the Demographic Information Related to Caregivers (Chi-square test)

	Treatment Group (n=31)		Control Group (n=30)		p
	n	%	n	%	
Gender					
Female	25	80.6	23	76.7	0.704
Male	6	19.4	7	23.3	
Affinity to Stroke Individual					0.570
Husband/Wife	19	61.3	20	66.7	
Daughter	6	19.4	6	20.0	
Son	2	6.5	3	10.0	
Daughter-in-law	4	12.9	1	3.3	
Marital Status					0.478

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Married	30	96.8	27	90.0	
Single	1	3.2	2	6.7	
Widow			1	3.3	
Level of Education					0.008*
Illiterate	2	6.5	7	23.3	
Elementary	22	71.0	21	70.0	
Secondary	-	-	2	6.7	
High School	7	22.6	-	-	
Employment Status					0.360
Employed	1	3.2	3	10.0	
Unemployed	18	58.1	21	70.0	
Retired	10	32.3	5	16.7	
Quit work due to stroke	2	6.5	1	3.3	
Social Security					0.144
Yes	31	100	28	93.3	
No			2	6.7	

*P<0.01

Table II. Comparison of the Results Related to the Caregivers in Treatment and Control groups (Mann Whitney U Test)

	Treatment Group X±SD	Control Group X±SD	z	p
BCOS				
Total	5.48±8.00	1.00±8.02	-2.238	0.025*
Life change	0.45±1.28	0.16±1.59	-1.019	0.308
BDI				
Total	-2.90±4.79	0.26±7.58	-2.416	0.016*
NHP				
Pain	-6.45±20.37	0.83±27.64	-0.942	0.346
Energy Level	-16.11±33.15	-0.00±30.33	-1.804	0.071
Emotional Reaction	-16.14±26.24	1.10±24.79	-2.225	0.026*

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Social Isolation	-5.80±22.02	3.33±27.33	-1.220	0.222
Physical Activity	-3.62±18.87	0.00±19.42	-0.588	0.556
Sleeping	-10.32±28.69	-6.00±29.31	-0.717	0.474
Total	-58.46±108.03	-0.73±88.96	-1.673	0.094

BCOC: Bakas Caregiving Outcomes Scale

BDI: Beck Depression Inventory

NHP: Nottingham Health Profile

Table III. Problem Solving Difficulties Related to Socio-Economic Environment

Defined Difficulties	**Treatment Group**		**Control Group**	
	n	%	n	%
Stubbornness of the patient	3	9.67	2	6.66
Communication problem with the patient	3	9.67	2	6.66
Over attention request of the patient	4	12.9	-	-
Unwillingness of the patient	6	19.35	1	3.33
Increased dependency level of the patient	7	22.58	9	30
Patient's inattention to risk factors	2	6.45	-	-
Inadequacy of social support networks	4	12.9	3	10
Caregiver's being over-worried	4	12.9	1	3.3

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Negative effect of the social surrounding	1	3.22	-	-
Excessive home visits	1	3.22	-	-
Experiencing economic difficulty	1	3.22	9	30
Insufficient time	-	-	1	3.33

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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

Hemşirelik Öğrencilerinde Merhamet Düzeyi

Compassion Level of Nursing Students

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Özet

Amaç: Araştırmanın amacı, hemşirelik öğrencilerinin merhamet düzeylerini belirlemektir.

Gereç ve Yöntem: Tanımlayıcı nitelikteki bu çalışma, Türkiye'nin batısında yer alan iki devlet üniversitenin hemşirelik bölümünde öğrenim gören öğrencilerde Mayıs -Aralık 2017 tarihleri arasında gerçekleştirilmiştir. Çalışmanın örneklemini 518 öğrenci oluşturmuştur. Araştırmanın verileri, "Öğrenci Tanıtım Formu" ve "Merhamet Ölçeği" kullanılarak toplanmıştır. Veriler, SPSS 21.00 paket programı aracılığı ile analiz edilmiştir ve Mann-Whitney U testi, Kruskall-Wallis H testi kullanılmıştır.

Bulgular: Çalışma bulgularına göre öğrencilerin %84.9'un kadın, %53.3'ünün 20 yaş ve altında olduğu belirlenmiştir. Hemşirelik öğrencilerinin %33.3'ünün merhamet kavramını empati

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yapabilme, %25'inin vicdan, %18.1' inin ise bireye saygı duyma olarak ifade ettikleri belirlenmiştir. Öğrencilerin %52'si merhamete ilişkin en temel davranışın yardım etme olduğunu belirlemiştir. Öğrencilerin merhamet ölçeğinden aldıkları puan incelendiğinde, ölçek toplam puan ortalaması 98.64±10.8 olarak bulunmuştur.

Sonuç: Araştırmamız sonuçları hemşirelik öğrencilerinin merhamet düzeylerinin yüksek olduğunu, merhamet düzeylerinin cinsiyetten etkilendiğini, öğrenim görülen sınıfa göre de değişkenlik gösterdiğini ortaya koymuştur. Algılanması, anlatılması ve de içselleştirilmesi zor olan merhamet kavramının bireydeki düzeyi aslında bireyin değerler dizgesinde nasıl yer buluşu ile doğrudan ilişkilidir. Bu bağlamda bireylerin yaşamlarının anlamını oluşturan değerlerin öğretiminin nasıl gerçekleştirildiği oldukça önemlidir.

Anahtar Sözcükler: Hemşirelik, Öğrenci, Merhamet

Abstract

Aim: The aim of the study was to determine the level of compassion of nursing students.

Materials and Methods: This descriptive study was carried out between May-December 2017 at students studying from departments of nursing in two state university west of Turkey. The sample of the study was 518 students. The data were collected by using "Student Presentation Form" and "Compassion Scale". The data were analyzed by SPSS 21.00 package program and Mann-Whitney U test, Kruskall-Wallis H test was used.

Results: According to the study findings, 84.9% of the students were female and 53.3% were under 20 years of age. It was determined that 33.3% of nursing students expressed the concept of compassion as empathy, 25% conscience, 18.1% respecting the individual.52% of the students determined that the most basic behavior of compassion was helping.When the points taken from the students' compassion scale were examined, the mean total score of the scale was 98.64±10.8.

Conclusion: The results of our study showed that the levels of compassion of the nursing students were high, the levels of compassion were affected by gender, and they showed variability according to the class they studied.The individual's level of compassion, which is difficult to internalize, to be told and to be internalized, is in fact directly related to the invention of the individual in the string of values.In this context, it is very important how the teaching of the values that make up the meaning of the lives of individuals is realized.

Keywords: Nursing, Student, Compassion

Giriş

Hemşirelik öğrencilerinin mesleki eğitimlerinde değer öğretimi önemli bir yere sahiptir. Bu bağlamda hedef; temel bilgi ve beceriye sahip bir meslek profesyoneli olmanın yanı sıra "insan haklarına ve onuruna saygı duyan ve bunları koruyan, merhametli, birey merkezli bakım sunabilen bir hemşire yetiştirmektir. Sağlık bakımının vazgeçilmez bir değeri olan merhamet bir bireyin acısını hafifletme arzusunda olmadır. Temel dayanağı etik değerler olan merhamet de temel istek bireyin iyiliğini, refahını sağlamaktır.[1-3]

Merhamet kavramı birçok disiplin içerisinde kendisine geniş yer bulmuş ve farklı bakış açıları ile tanımlanmıştır. Merriam-Webster sözlüğüne göre ise merhamet, “acı ya da talihsizliğe maruz kalan birine karşı duyulan derin sempati ve üzüntü hissi ile birlikte çekilen acı ve acı sebeplerini ortadan kaldırma arzusudur.[4] Gilbert (2005) merhameti, başkasının acısını giderme isteğini, acının kaynağını anlamayla ilgili bilişsel süreci ve merhametli eylemlerde bulunmakla ilgili davranışsal bir süreç olarak tanımlamaktadır.[5] Yani merhamet; güdü, duygu, düşünce ve davranışın bileşiminden meydana gelir. Merhamet Sprecher ve Fehr (2005)’in çalışmalarında ise merhametli (duyarlı) sevgi olarak kavramsallaştırılmıştır.[6] Merhametli (duyarlı) sevgi, diğer insanları sıkıntılı ve ihtiyaç duydukları zamanlarında onları desteklemeye yönelik, davranışsal, bilişsel ve duygusal bir tutum olarak ifade edilmiştir.[7] Hemşirelik özelinde merhamet kavramı ele alındığında ise; hemşirelik bakımı temelinde bireyin onurunu koruyarak, konforu sağlama noktasında etik bir yükümlülük olarak karşımıza

çıkmaktadır. Bu bağlamda; Amerikan Hemşireler Birliği [American Nurses Association (ANA)] ve Uluslararası Hemşireler Konseyi (International Council of Nurses)'nin etik kodlarında ve deklarasyonlarında merhameti temel almaktadır. ANA'nın 2001 yılında etik hükümlerinin 1. maddesinde; "hemşire, tüm profesyonel ilişkilerde, her bireyin değer ve tekliği, sosyal ya da ekonomik statüsü, kişisel nitelikleri ya da sağlık sorunlarının doğasına göre ayırt etmeksizin sınırsız merhamet ile kişilik onuruna saygı gösterir." cümlesi yer almaktadır.[4] Merhamet, hemşirelik mesleği için yardımcı bir duygudur. Mark Pettus hastaların bir anlık bile olsa merhamete duyduğu ihtiyaca işaret eden incelikli mesajlarının fark edilip, "bir gözyaşı, bir gülüş, bir bakış, hatta sessizlik" biçimini alan "davet"lere karşılık verilmesinin çok önemli olduğunu söylemektedir. Merhamet duygusu, hemşirenin insanı "insan" olarak görmesini sağlar. Merhamet o kadar önemlidir ki hastaların merhametli bir tutuma ve önemsemeye olan ihtiyaçları pek çok kez hastaların teknik bakıma olan ihtiyaçlarından çok daha fazladır.[8]

Tüm bunlar doğrultusunda hemşirelik bakımın etkin ve etik çerçevede yürütülmesinde merhamet önemli bir unsur olarak yer almaktadır. Bu bağlamda da hemşirelik öğrencilerinde merhamet duygusunun geliştirilmesi önemlidir. Bunun içinde öncelikli olan konuya ilişkin mevcut durum saptamasıdır. Bu görüşten hareketle bu çalışmanın amacı hemşirelik öğrencilerinde merhamet düzeyinin ve ilişkili faktörlerin belirlenmesidir. Bu görüşten hareketle bu çalışmanın amacı, hemşirelik öğrencilerinde merhamet düzeyinin belirlenmesidir.

Gereç ve Yöntem

Tanımlayıcı nitelikteki bu çalışma, Türkiye'nin batısında yer alan iki devlet üniversitenin hemşirelik bölümünde Mayıs -Aralık 2017 tarihleri arasında gerçekleştirilmiştir. Örneklem seçimine gidilmemiş olup, çalışmaya katılmayı kabul eden ve veri toplama formlarını eksiksiz

dolduran 518 öğrenci örneklemi oluşturmuştur. Araştırma için etik kurul, kurum izni ve Merhamet Ölçeğinin Türkçe geçerlik ve güvenirlik çalışmasını yapan yazarlarından yazılı izin alınmıştır. Veriler araştırmacılar tarafından yüz yüze görüşme tekniği ile "Öğrenci Tanıtım Formu" ve "Merhamet Ölçeği" kullanılarak toplanmıştır.

Öğrenci Tanıtım Formunda; ilgili literatür bilgileri ışığında araştırmacılar tarafından oluşturulmuş olup, öğrencilerin yaş, cinsiyet, sınıf bilgileri ile merhamet kavramına ilişkin 4 açık uçlu soru yer almıştır. Sorular; merhamet kavramı algısı, merhametli bakım ve ilgili davranış örneklerini sorgulamaktadır. Merhamet Ölçeğinin orijinal versiyonu Pommier (2011) tarafından geliştirilmiştir. Ölçeğin Cronbach Alpha değeri 0.85 olarak bulunmuştur.[9] Ölçeğin Türkçe Geçerlik ve Güvenirlik çalışması ise Akdeniz ve Deniz tarafından 2016 yılında gerçekleştirilmiştir. Sevecenlik, Umursamazlık, Paylaşımların Bilincinde Olma, Bağlantısızlık, Bilinçli Farkındalık ve İlişki Kesme olmak üzere altı alt boyut, 24 maddeden oluşan ölçek Likert tipi beş uygunluk derecelendirmesine sahiptir. Ölçeğin umursamazlık, bağlantısızlık ve ilişki kesme alt boyutları ters çevrilerek hesaplanmaktadır. Bu hesap sonrasında toplam puan ortalaması alınmaktadır. Ölçekten alınan toplam puan arttıkça merhamet düzeyi de artmaktadır. Akdeniz ve Deniz'in (2016) çalışmasında ölçeğin Cronbach Alpha değeri 0.80 olarak bulunmuştur.[10] Bu çalışmada ise Cronbach's Alpha değeri 0.86 olarak hesaplanmıştır.

Araştırmadan elde edilen veriler SPSS 21.00 paket programı aracılığı ile analiz edilmiştir. Elde edilen verilerin normallik testleri Kolmogorov-Smirnov testi ile yapılmıştır. Puanların normal dağılmamasından dolayı parametrik olmayan testler tercih edilmiştir. İki gruplu karşılaştırmalarda Mann-Whitney U testi, üç ve daha fazla gruplu karşılaştırmalarda ise Kruskall-Wallis H testi kullanılmıştır. Anlamlılık düzeyi için $p<0,05$ olması durumunda

anlamlı farklılığın olduğu, p>0,05 olması durumunda ise anlamlı farklılığın olmadığı kabul edilmiştir**.**

Bulgular

Çalışma bulgularına göre öğrencilerin %84.9'un kadın, %53.3'ünün 20 yaş ve altında olduğu belirlenmiştir. Ayrıca öğrencilerin %37.8'inin hemşirelik bölümü ikinci sınıf öğrencileri olduğu saptanmıştır **(Tablo 1).** Hemşirelik öğrencilerinin %33.3'ünün merhamet kavramını empati yapabilme, %25'inin vicdan, %18.1' inin ise bireye saygı duyma olarak ifade ettikleri belirlenmiştir. Öğrencilerin %52'si merhamete ilişkin en temel davranışın yardım etme olduğunu belirlemiştir. Merhametli bakım kavramını ise öğrencilerin yalnızca %5 tanımlayabilmiştir. Bu tanımlamalarda öne çıkan tanımların odak noktası hastaya özenli ve bütüncül bakım vermedir. Öğrencilerin %38'i merhametli bakım davranışına örnek olarak; hastanın onurunu koruma, mahremiyetini sağlama, hastaya doğruları söyleme davranışlarını vermiştir.

Öğrencilerin merhamet ölçeğinden aldıkları puan incelendiğinde, ölçek toplam puan ortalaması 98.64±10.8 olarak bulunmuştur (Tablo 2). Ölçeğin alt boyutlarının puan ortalamasına bakıldığında dağılımın; sevecenlik alt boyutunda 16.56±2.54, umursamazlık alt boyutunda 7.37±2.7, paylaşımların bilincinde olma alt boyutunda 16.13±2.68, bağlantısızlık alt boyutunda 7.56±2.43, bilinçli farkındalık alt boyutunda 16.04±2.31 ve ilişki kesme alt boyutunda 7.16±2.62 şeklinde olduğu saptanmıştır **(Tablo 2).**

Ölçekten alınan puanların sosyo-demografik dağılımına bakıldığında; cinsiyet değişkeninin kadınlarda umursamazlık, bağlantısızlık ve ilişki kesme alt boyutlarında farklılık yarattığı belirlenmiştir. Bu alt boyut puan ortalamaları kadınlarda erkeklerin puan ortalamalarına göre anlamlı derecede düşüktür (p<0.05). Sevecenlik, paylaşımların bilincinde olma, bilinçli farkındalık alt boyut puan ortalamaları ise kadınlarda erkeklere göre anlamlı derecede

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yüksektir (p<0.05). Sınıf düzeyi ilişkisinde son sınıflara gelindikçe sevecenlik, paylaşımların bilincinde olma, bilinçli farkındalık alt boyutlarından alınan puan ile ölçek toplam puanının anlamlı derecede azaldığı görülmüştür. Hemşirelik bölümü birinci sınıf öğrencilerinde sevecenlik alt boyutu için sınıflar arasında anlamlı farklılık bulunmuş (p<0,05) ve ilgili toplam puanın anlamlı derecede yüksek olduğu belirlenmiştir Yine sınıf arttıkça ölçek bağlantısızlık alt boyutu puan ortalaması artmakta, istatistiksel olarak anlamlı olan bu değişimde düşük bir ilişki olduğu da görülmektedir (p<0.005). Umursamazlık alt boyutu puanları açsından da sınıflar arasında anlamlı farklılık saptanmıştır (p<0,05). Birinci sınıf öğrencilerinde toplam puan diğer sınıflardan anlamlı derecede düşük olarak belirlenmiştir. Paylaşımların Bilincinde Olma alt boyutunda ise, birinci ve ikinci sınıf öğrencilerinin puanlarının üçüncü ve dördüncü sınıf öğrencilerine göre daha yüksek olduğu bulunmuştur (p<0,05). Bağlantısızlık alt boyutu için dördüncü sınıf öğrencilerinin puanları birinci ve ikinci sınıf öğrencilerinden anlamlı derecede yüksek olarak saptanmıştır (p<0,05). **(Tablo 3).**

Tartışma

Hemşirelik bölümü öğrencilerinin merhamet düzeyleri ile etkileyen faktörlerin incelendiği çalışmada öğrencilerin merhamet ölçeği puan ortalamasının 98.64±10.8 olarak belirlenmiştir. Ölçekten alınan puan arttıkça merhamet düzeyi de yükselmektedir. Merhamet ölçeğinden alınabilecek en yüksek puanın 120 olduğu düşünüldüğünde öğrencilerin merhamet düzeylerinin yüksek olduğu ifade edilebilir. Ülkemizde Çingöl ve arkadaşları (2018) tarafından yapılan çalışmada; çalışmamızla ortak aynı ölçek kullanılmış olup, hemşirelik öğrencilerinin merhamet düzeyi yüksek bulunmuştur.[11] Bu benzer sonuç, hemşirelik eğitiminde etik eğitiminin önemli bir yer buluşu ile açıklanabilir. Hemşirelik öğrencilerinin meslek ile henüz ilk tanışma anları hemşireliğin felsefesinin insan onurunu korumaya

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dayanması noktasında olmaktadır. Bir bireyin onurunu korumak onun iyiliğini düşünmek, refahını sağlamak ve bu doğrultuda davranmaya temellenmektedir. Bu noktada ortaya konulan davranışların unsuru ise merhamettir. Bu bağlamda ortaya çıkan kavramda merhametli hemşirelik bakımıdır. Merhametli bakım ile hastanın holistik ve hümanistik yaklaşım ile iyileşme süreci hızlandırılıp, iyilik hali arttırılmaktadır.[12-14]

Çalışmamızda merhametin kavramsal boyutuna ve davranış örneklerine dair açık uçlu sorulan sorular ile hemşirelik öğrencilerin yarısına yakınının merhamet, merhametli bakım kavramlarına ve bunlara ait davranış örneklerine ilişkin bilgilerinin olduğu belirlenmiştir. Bray ve arkadaşlarının (2014) yaptıkları çalışmada; merhamet, hemşirelik eğitiminin temelini oluşturan bir değer olarak tanımlanmıştır.[1] Jack ve Tetley (2016) tarafından yapılan bir diğer araştırmada da hemşirelik öğrencilerinin merhamet kavramını tanımlayabildikleri bulunmuştur.

Öğrencilerin en yüksek ölçek alt boyut puan ortalamalarının sevecenlik ve bilinçli farkındalık alt boyutunda bulunduğu belirlenmiştir.[15] Çingöl ve arkadaşları (2018) tarafından yapılan çalışmada da benzer bulgu elde edilmiştir.[11] Sevecenlik alt boyutunun maddeleri; bireye içinde bulunduğu zor durumda ve mutsuz olduğu anlarda ona destek olma ana fikrini kapsamaktadır. Hemşirelik zaten yardım sunan bir meslektir ve amacı bireyin iyiliğini sağlamaktır. Bilinçli farkındalık alt boyutunun maddeleri ise bireyleri dinlemeye, onların sözel ya da sözel olmayan ifadelerinin farkına varabilmeye odaklanmaktadır. Hemşirenin iyi bir dinleyici olabilmesi hasta ile ilgili veri toplarken, onu anlamaya çalışırken sahip olması gereken en önemli özelliğidir.[16] Her iki alt boyutta yer alan ve merhamet düzeyinin olumluluğu için beklenen bu özellikler hemşirelik öğrencilerinin eğitiminde ilk yıllarından itibaren içselleştirmeleri için uğraş verilen temel kavramlardır. Dolayısıyla sonuç şaşırtıcı olmamıştır.

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Araştırmamızdan alınan en düşük ölçek alt boyut puan ortalaması ilişki kesme boyutundadır. Yine Çingöl ve arkadaşları (2018) tarafından yapılan benzer çalışmada da aynı bulgu elde edilmiştir. Bu alt boyutun maddeleri bireyin içinde bulunduğu olumsuzluğa ilişkin duyarsız kalmayı tercih etmeyi içermektedir.[11] Hemşirelik eğitimi alan öğrencilere meslek öğretimlerinde bireyin tüm yünleriyle desteklenmesi, gönencinin sağlanması, ihtiyaçlarının karşılanması öğretilmektedir. Bunun içinde esas olan yararlı bir hemşirelik bakımı sunarak, ilgili bir tedavi gerçekleştirerek, merhamete dayalı davranışlar ile bireyin gereksiniminin karşılanacağının bir etik yükümlülük olduğunun içselleştirilmesidir.[17] Bu bağlamda, ilgili kazanımlar meslek öğretiminde sağlanmaktadır. Dolayısıyla öğrencilerin bir bireyin zor durumuna sessiz ve ilgisiz kalması zaten beklenmemektedir.

Çalışmamızda cinsiyet değişkenine göre kadınların merhamet düzeylerinin erkeklerden daha yüksek olduğu bulunmuştur. Yine Sevecenlik, paylaşımların bilincinde olma, bilinçli farkındalık alt boyut puan ortalamaları da kadınlarda erkeklere göre daha yüksek bulunmuştur. Çingöl ve arkadaşları (2018) tarafından yapılan çalışmada da benzer sonuçlar elde edilmiştir.[11] Bu sonuçlar kadınların daha duygusal, anaç, şefkatli, başkalarının sorunlarına karşı daha duyarlı ve empati düzeylerinin daha yüksek olması ile açıklanabilir.

Hemşirelik öğrencilerinin sınıfları artıkça sevecenlik, paylaşımların bilincinde olma, bilinçli farkındalık alt boyutlarından alınan puan ortalamaları büyük farklar ile olmasa da düşmüştür. Bağlantısızlık alt boyut puan ortalamaları sınıf artıkça yükselmiştir. Paylaşımların Bilincinde Olma alt boyutunda ise, birinci ve ikinci sınıf öğrencilerinin puanlarının üçüncü ve dördüncü sınıf öğrencilerine göre daha yüksek olduğu bulunmuştur. Bu sonuçlar öğrencilerin sınıflarının ilerlemesi oldukça sempatiden çok empati kavramını içselleştirmeleri ile açıklanabilir. Yanı sıra, bu sonuçlar öğrencilerin kişisel ve kültürel değerlerinin farklılığından etkilenmektedir.

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Sonuç

Araştırmamız sonuçları hemşirelik öğrencilerinin merhamet düzeylerinin yüksek olduğuna işaret etmektedir. Yanı sıra, öğrencilerin merhamet düzeylerinin cinsiyetten etkilendiği, öğrenim görülen sınıfa göre de değişkenlik gösterdiği belirlenmiştir. Algılanması, anlatılması ve de içselleştirilmesi zor olan merhamet kavramının bireydeki düzeyi aslında bireyin değerler dizgesinde nasıl yer buluşu ile doğrudan ilişkilidir.

Hemşirelikte merhamet, hemşirenin etik yükümlülükleri içinde bulunan etik değerlerinden biridir. Merhamet kavramı duyarlı olmak, sevgi, saygı, hoşgörü, adalet, sorumluluk, alçakgönüllülük gibi çeşitli değerlerle bağlantılıdır. Bu bağlamda merhamet değerinin öğretilmesinde aslında derinlerde, bireyin insan onurunu koruyan ilgili değerlerin öğretimi de yatmaktadır ve hemşirelerin insan onurunu koruyan etkili bakımı gerçekleştirmelerinde oldukça önemlidir. Bunun yanı sıra, merhamet kavramı bireylerin empati davranışlarını geliştirmekte, farkındalıklarını da arttırmaktadır. Özellikle sağlık sistemi içindeki hemşirelerin daha duyarlı oluşuna ve farkındalıklarının artışına da bu sayede katkı sağlayacaktır. Tüm bunlar doğrultusunda, iyi tutum geliştiren hemşirelerde iyi bakım eylemleri de ortaya çıkacaktır. Merhamet aslında bir duygudur da, dolayısıyla hissetmekle ilgilidir. Ancak merhamet duygusu bir görevdir, kişilere zorla dayatılamayan, ancak geliştirilebilen ve geliştirilmesi gereken bir duygudur. Bu bağlamda, çok yönlü bir süreçle aslında merhamet duygusu geliştirilmektedir. Çeşitli çalışmalar, deneyler merhamet duygusunun bireylerin öncelikli sempati düzeylerini, motivasyonlarını, duyarlılıklarını, empati düzeylerini, tolesrasyonlarının arttırılması, yargılayıcı olmayan tavır ve tutum sergilenmeye yönelik davranış becerilerini geliştirmesi gerektiğini ve tüm bunlar doğrultusunda da mesleki boyutta merhamet duygusunun öğretilebilir olmasının mümkün olacağına vurgu yapmaktadır. İlgili lisans öğretiminin içerisinde öncelikle bireylerde bu bahsi

geçen duyguların yerleşimi ve bunlar üzerinden merhamet duygusunun oluşturulması ve geliştirilmesi oldukça önemlidir. Bu bağlamda belirli bir değer algısı ile üniversite öğrenimleri için karşımıza gelen hemşirelik öğrencilerin öncelikle kendi değerler siteminde çözümleme yapmalarına olanak tanınmalıdır. Tam da bu süreçte mesleki değerlerin ve profesyonel öğretilerin kazandırılması amaçlanmalıdır. Buradan hareketle merhamet gibi insanın varoluşuna temellenen ve bireyin iyilik halini sağlamada kilit rol oynayan kavramların doğru tutumla içselleştirilmesi önemlidir. Bu nedenle de bizim çalışmamızda da yaptığımız gibi mevcut durum belirlemeleri ve ihtiyaca yönelik süreç yönetimi oldukça anlamlıdır. Bu konuda farklı bakış açıları ve değişkenler ile yeni çalışmalar yapılmalıdır.

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Tablo 1: Hemşirelik Öğrencilerine Ait Özellikler

	Sayı (n)	**Yüzde (%)**
Yaş (20.5±1.5)		
20 yaş ve altı	276	53.3
20 üstü	242	46.7
Cinsiyet		
Kadın	440	84.9
Erkek	78	15.1
Sınıf		
1.sınıf	88	17.0
2.sınıf	196	37.8
3.sınıf	166	32.0
4.sınıf	68	13.1
Toplam	518	100

Tablo 2: Öğrencilerin Merhamet Ölçeği ve Alt Boyut Puan Ortalamaları

	Ort	**SS**	**Min**	**Max**
Sevecenlik	16,56	2,54	4	20
Umursamazlık	7,37	2,7	4	19
Paylaşımların Bilincinde Olma	16,13	2,68	4	20

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Bağlantısızlık	7,56	2,43	4	19
Bilinçli Farkındalık	16,04	2,31	4	20
İlişki Kesme	7,16	2,62	4	20
Genel Toplam	98,64	10,8	58	119

Tablo 3: Öğrencilere Ait Özelliklerin Merhamet Ölçeği ve Alt Boyutlarıyla Karşılaştırılması

Değişken	Sevecenlik	Umursamazlık	Paylaşımların Bilincinde Olma	Bağlantısızlık	Bilinçli Farkındalık	İlişki Kesme	Genel Toplam
Cinsiyet							
Kadın	16.17±2.43	7,12±2,55	16.26±2.58	7.38±2.4	16.25 ±2.21	6.95±2.49	99,83±10,29
Erkek	15.38±2.85	8.78±3.06	15.37±3.08	8.58±2.38	14.9±2.52	8.33±3.03	91.96±11.18
İstatistik Analiz	Z=-4,165 p=0,001	Z=-4,943 p=0,001	Z=-2.542 p=0,001	Z=-4.271 p=0,001	Z=-4.859 p=0,001	Z=-4.158 p=0,001	Z=-5.827 p=0,001
Sınıf							
1	17,67±2,1	6,65±2,17	16,44±2,68	6,97±1,92	16,91±1,91	6,45±6,45	102,95±8,32
2	16,6±2,36	7,14±2,38	16,59±2,47	7,33±2,21	15,96±2,03	7,02±7,02	99,66±9,42
3	16,28±2,68	7,71±2,96	15,68±2,88	7,95±2,75	15,95±2,62	7,46±7,46	96,79±12,04
4	15,72±2,75	8,13±3,19	15,47±2,45	8,03±2,61	15,37±2,43	7,75±7,75	94,65±11,9
İstatistik Analiz	H=28,88 p=0,001	H=12,345 p=0,006	H=16,452 p=0,001	H=10,892 p=0,012	H=19,265 p=0,001	H=9,432 p=0,024	H=23,142 p=0,001

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CASE REPORT

Chronic Total Occlusion Of The Left Main Coronary Artery In Patient With Ventricular Tachycardia

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ABSTRACT: Chronic total occlusion (CTO) of the left main coronary artery (LMCA) is an extremely rare angiographic process which is described by lack of opacification of the LMCA in the absence of the antegrade blood flow to the left anterior descending artery (LAD) and circumflex artery (LCx). We report a case of a patient with chronic totally occluded LMCA who was presented with ventricular tachycardia and heart failure.

CASE REPORT: A 61-year-old man was admitted to the emergency room with shortness of breath and syncope. He had a medical history of hypertension. On admission, he had a blood pressure 80/50 mmHg, a regular pulse of 210 beats per minute, and a breath rate of 28 per minute with 92 % partial oxygen saturation. Chest auscultation revealed apical 3/6 holosystolic murmur and bilateral pulmonary crackles throughout to apices. The

electrocardiogram (ECG) showed a monomorphic ventricular tachycardia. The patient immediately underwent electrical cardioversion, and the rhythm was successfully converted without complication. The hemodynamic stabilization was obtained after the restoration of the sinus rhythm. Parenteral administration of amiodarone, nitroglycerine and furosemide was initiated. On medical treatment, pulmonary crackles disappeared within 48 hours. Troponin I levels did not increase significantly during hospitalization. The transthoracic echocardiography demonstrated severely decreased left ventricular systolic function with an ejection fraction of 15 % and regional left ventricular wall motion abnormalities including akinesia of the anterior and anterolateral free wall, and apical aneurysm. Coronary angiography performed on the third day of hospitalization. Left coronary angiogram revealed a CTO of the LMCA without antegrade flow to LAD and LCx (Fig. 1). Right coronary injection demonstrated a dominant right coronary artery without significant stenosis, and extensive collateral communicating the sinus node artery and conus branch of the RCA to the LAD and LCx (Fig. 2). Thallium-201 myocardial perfusion scan (SPECT) was performed to evaluate viable myocardium. The test demonstrated minimal viable and ischemic tissue on the anterior wall. Optimal medical therapy accepted as the treatment of choice instead of surgical revascularization. Also, isolated implantable cardioverter defibrillator (ICD) was implanted to prevent sudden cardiac death, because he had an episode of sustained ventricular tachycardia and depressed left ventricular systolic function without wide QRS complex. Following an uneventful period, he discharged from the hospital with intensive medical treatment. On the third month visit, he has remained well without symptom.

DISCUSSION: Total occlusion of the LMCA is a rare manifestation that is characterized by complete absence of antegrade blood flow to the left coronary system. Prognosis of the

disease is poor because a large area of the myocardium is at risk. The reported prevalence of the disease ranges from 0.04 %-0.4 % (1). Acute occlusion of the LMCA is a clinical catastrophe that usually presents with anterior myocardial infarction, cardiogenic shock or sudden cardiac death. The management is based on an emergency restoration of coronary flow with immediate primary percutaneous coronary intervention. The time between symptoms and revascularization procedure is commonly associated with survival. CTO of the LMCA is often a silent process that usually occurs over a period of more than 3 months. Emergency revascularization is not usually required, because of adequate blood supply from the collateral circulation via the right coronary system. The most common cause of chronic LMCA occlusion is an atherosclerotic process. Vasculitis such as polyarteritis nodosa, Takayasu's arteritis, syphilitic arteritis; mediastinal irradiation and congenital heart diseases such as William’s syndrome and truncus arteriosus are different etiologic causes of this disease. Most of these patients referred to the hospital with a prolonged period of angina, exercise intolerance, or signs of congestive heart failure. In our case, the patient presented with syncope, shortness of breath, and an episode of sustained ventricular tachycardia. The treatment of choices in this disease depends on the quality of the collateral circulation and extent of ischemia. Surgical revascularization is mandatory in a patient with moderate to the large area of viable myocardial tissue. Percutaneous revascularization is not recommended because of the limited success of the procedure and high restenosis rate and revascularization (2). In our case, there was an adequate collateral circulation and minimal viable myocardial area on the SPECT. So, medical therapy with prophylactic ICD implantation was adopted as a treatment option. In conclusion; CTO of the LMCA is an extremely rare angiographic situation. Various etiologic factors may have a role in the occurrence of the disease. The symptoms and treatment options depend on the quality and adequacy of collateral vessels.

Although emergency revascularization is required in a patient with acute LMCA occlusion, immediate restoration of the LMCA flow is not mandatory in chronic cases. The recommended treatment is surgical revascularization in symptomatic patients with moderate to a large area of myocardial ischemia.

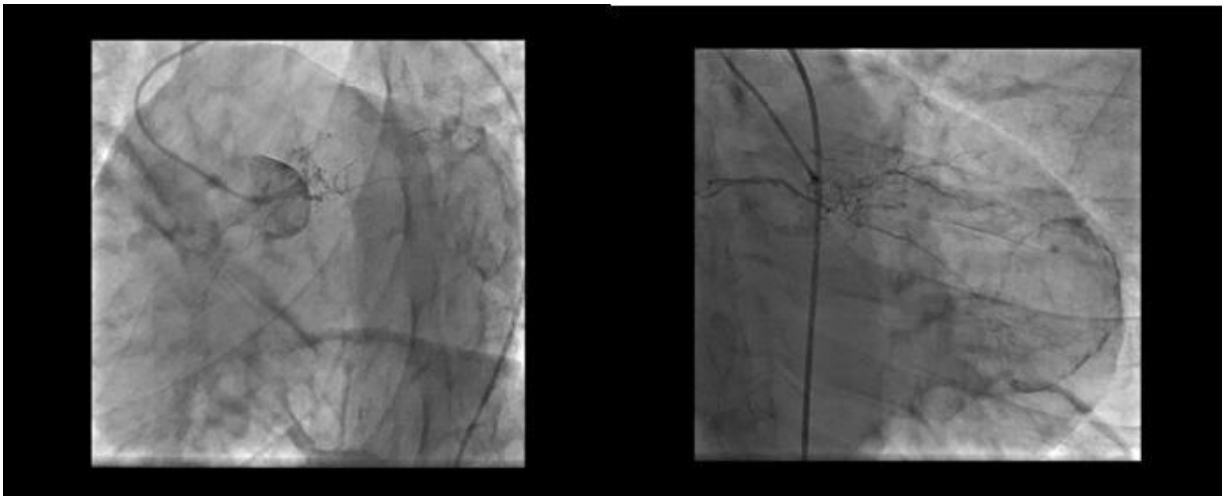

Figure 1. Coronary angiographic view. Left coronary angiogram showed chronic total occlusion of the left main coronary artery.

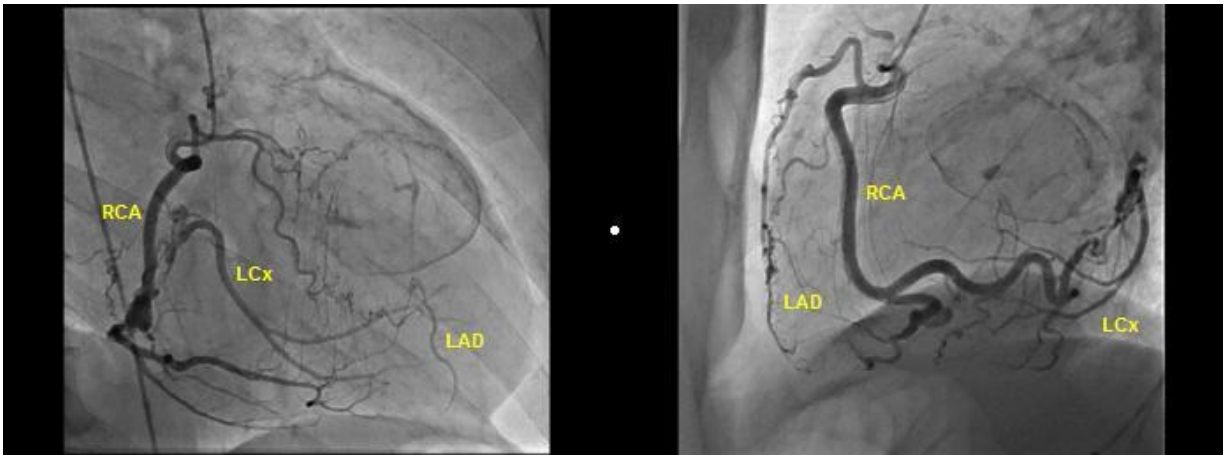

Figure 2. Coronary angiogram from left anterior oblique and left lateral projection. Right coronary angiogram showed retrograde filling of the LAD and LCx by collaterals from the right coronary system.

References

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