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Mevlana Tıp Bilimleri (Mev Med Sci) Dergisi, Necmettin Erbakan Üniversitesi'nin bilimsel, bağımsız, hakemli, açık erişimli yayın organıdır. Her yıl Nisan, Ağustos ve Aralık aylarında üç sayı olarak yayımlanmaktadır. Yayın dili Türkçe ve İngilizce'dir.

Mevlana Tıp Bilimleri dergisi tıp öğrencileri, tıpta uzmanlık öğrencileri, tıp doktorları, araştırmacılar ve bilim adamlarından oluşan geniş bir kitleye hitap eden disiplinli bir dergidir. Temel amaç genel tıp alanında tanı ve tedavideki güncel gelişmeler, cerrahi yenilikler ve bilim dünyasına katkıda bulunacak çalışmaların ulusal ve uluslararası literatürde paylaşımının sağlanmasıdır.

Temel Yayın politikası

Derginin yayın politikası ve süreçleri Uluslararası Medikal Dergisi Editörleri Komitesi (International Committee of Medical Journal Editors-ICMJE), Dünya Tıbbi Editörler Derneği (World Association of Medical Editors-WAME), Bilim Editörleri Konseyi (Council of Science Editors-CSE), Avrupa Birliği Derneği Bilim Editörleri (European Association of Science Editors-EASE) ve Yayın Etiği Komitesi (Committee on Publication Ethics-COPE) ve Ulusal Bilgi Standartları Örgütü (National Information Standards Organization) (NISO) yönergelerini takip eder.

Etik ilkeler ve Feragatname

Dergimiz 'Şeffaflık ve Akademik Yayıncılık En İyi Uygulamalar İlkelerine' (Principles of Transparency and Best Practice in Scholarly Publishing) (doaj.org/bestpractice) uygundur.

Dergiye yüklenen makalelerin daha önce hiçbir yerde yayınlanmamış ve yayın için başka bir dergiye gönderilmemiş olması gerekir. Tüm çalışmalarda etik kurul onayı ve bu onamın belgelendirilmesi gerekmektedir.Tüm çalışmalarda yazarların çalışmaya katkı düzeyi ve onayı bildirilmelidir. Çalışmada veri toplanması, deney aşaması, yazım ve dil düzenlemesi dahil olmak üzere herhangi bir aşamasında finansal çıkar çatışması olmadığı bildirilmelidir. Çalışmada varsa ticari sponsorluk bildirilmelidir.

Mevlana Tıp Bilimleri dergisinde yayımlanan yazılarda ifade edilen ifadeler veya görüşler yazarların görüşleri olup, editörlerin, yayın kurulu ve yayıncının görüşlerini yansıtmaz; editörler, yayın kurulu ve yayıncı, bu tür materyaller için herhangi bir sorumluluk veya yükümlülük kabul etmemektedir.

Bütün makaleler editor ve yayın kurulu tarafından en geç üç ay içerisinde sonuçlandırılacaktır. Fakat elde olmayan gecikmelerden dolayı bu süre uzayabilir.

Yayın Ücretleri

Yazarlardan Mevlana Tıp Bilimleri dergisinde yayımlanacak makalelerin gönderim, değerlendirme ve yayınlanma olmak üzere hiçbir aşamasında ücret talep edilmez. Yazarlar dergiye gönderdikleri çalışmalar için makale işlem ücreti veya gönderim ücreti ödemezler. Derginin tüm giderleri Necmettin Erbakan Üniversitesi, Meram Tıp Fakültesi Dekanlığı tarafından karşılanmaktadır.

Dergi İçeriğine Erişim

Mevlana Tıp Bilimleri dergisi, ücretsiz, açık erişim politikası benimsemektedir. Yayınlanan makalelerin özetleri ve tam metinlerine www.mevlanamedsci.org adresinden ücretsiz erişilebilir.

YAZARLARA BİLGİ

Mevlana Tıp Bilimleri dergisi (Mev Med Sci), hakemli ve açık erişimli bir dergidir. Dergi, Tıp bilimi alanınadaki makaleleri hızı ve düzenli bir şekilde yayınlamayı hedefler. Mevlana Tıp Bilimleri dergisi, tıp bilimine ve akademik çalışmalara katkısı olan editöryal yazıları, orijinal deneysel ve klinik araştırma makalelerini, derlemeleri, olgu sunumlarını, editöre mektupları ve güncel tıp konularına dair makaleleri yayınlar.

Makale gönderilerde dergimize ait yazım kurallarına dikkate alınmalıdır.

Yazarlık

Mevlana Tıp Bilimleri Dergisisine gönderilen çalışmalarda yazar olarak listelenen herkesin ICMJE (www.icmje.org) tarafından önerilen yazarlık koşullarını karşılaması gerekmektedir. ICMJE, yazarların aşağıdaki 4 koşulu karşılamasını önermektedir:

1-Çalışmanın konseptine/tasarımına; ya da çalışma için verilerin toplanmasına, analiz edilmesine ve yorumlanmasına önemli katkı sağlamış olmak;

2-Yazı taslağını hazırlamış ya da önemli fikirsel içeriğin eleştirel incelemelerini yapmış olmak;

3-Yazının yayından önceki son halini gözden geçirmiş ve onaylamış olmak;

4-Çalışmanın herhangi bir bölümünün geçerliliği ve doğruluğuna ilişkin soruların uygun şekilde soruşturulduğunun ve çözümlendiğinin garantisini vermek amacıyla çalışmanın her yönünden sorumlu olmayı kabul etmek.

Yazar olarak belirtilen her kişi yazarlığın dört koşulunu karşılamalıdır ve bu dört koşulu karşılayan her kişi yazar olarak tanımlanmalıdır. Yazar olarak atanan tüm kişiler yazarlık için hak kazanmalı ve hak kazanan herkes listelenmelidir. Dört kriterin hepsini karşılamayan kişilere makalenin başlık sayfasında teşekkür edilmelidir. Finansman alımı, veri toplanması ya da araştırma grubunun genel gözetimi, kendi başlarına, yazarlığı haklı çıkarmaz . Bir ya da daha fazla yazar, çalışma başlangıcından yayınlanmış makaleye kadar, bütün olarak çalışmanın bütünlüğünün sorumluluğunu üstlenmelidir.

Çok merkezli çalışmalarda yazarlık bir gruba atfedilir. Yazar olarak adlandırılan grubun tüm üyeleri, yukarıdaki yazarlık kriterlerini tam olarak karşılamalıdır. Bu kriterleri karşılamayan grup üyeleri, onayları ile birlikte onaylarında listelenmelidir. Mali ve maddi destek de kabul edilmelidir.

Mevlana Tıp Bilimleri Dergisi 'nde yayınlanan makalelerde yapılan tüm açıklama ve görüşler, yazar(lar)ın görüşlerini yansıtmaktadır. Reklamların tüm sorumluluğu reklam veren kuruluşlara aittir.

Dergiye makale gönderen yazarlar bu açıklamaları okumuş ve sorumluluğunu kabul etmiş sayılırlar.

Tüm içerik yazarların sorumluluğundadır. Ulusal ve uluslararası kanunlarla korunan, sunulan tablo, şekil ve diğer görsel materyallerin telif hakları ile ilgili tüm mali sorumluluk ve yasal sorumluluk yazarlara aittir. Yazarlar makaleleriyle ilgili dergiye karşı çıkarılan her türlü yasal işlemden sorumludur.

Bilimsel katkıları ve sorumlulukları ve yazıyla ilgili çıkar çatışması (conflict of interest - COI) konularını açıklığa kavuşturmak için, Yazar Katkı Formu'nun tüm bölümleri ilgili yazar tarafından doldurulmalı ve ICMJE Potansiyel Çıkar Çatışmaları için Beyan Formu tüm yazarlar tarafından çevrimiçi olarak doldurulmalıdır. Her iki form da, orijinal sunum sırasında yazıya dahil edilmelidir.

Yazar isimleri Telif Hakkı Devir Formu'nda listelendiği için yayınlanacaktır. İlgili tüm tarafları korumak için, üyelikteki değişiklikler veya daha sonraki bir tarihte isim değişikliği yapılmayacaktır.

Düzeltme ve Yayından Geri Çekme Talepleri

Mevlana Tıp Bilimleri Dergisi tarafından yayımlanan makaleler nihai versiyondur. Bu nedenle yayımlandıktan sonra düzeltme talepleri, Yayın Kurulu tarafından COPE yönergelerine göre değerlendirilir.

Yazar isimleri, bağlantıları, makale başlıkları, özetler, anahtar kelimeler , herhangi ibr bilgi yanlışı ve dijital nesne anımlayıcılardaki [digital object identifier (DOI)] yazım hataları, bir "erratum" ile birlikte düzeltilebilir. Yayından geri çekme talepleri de Editörün onayına tabidir.

Makale Değerlendirme Süreci

Dergiye gönderilen makalelerin hızlı bir şekilde değerlendirilmesi ve yayınlanması hedeflenmiştir. Tüm makaleler çift kör hakem değerlendirme sürecine tabidir. Makaleler, içerik, özgünlük, alandaki önem, istatistiksel analizin uygunluğu ve sonuçların çıkarılması için iki tarafsız hakem tarafından gözden geçirilecektir. Hakemler arasında tutarsızlıklar olması durumunda, makale üçüncü yada dördüncü bir hakeme gönderilebilecektir. Gönderilen makalelerin kabulüne ilişkin nihai karar, baş Editöre aittir.

Hakemler tarafından bildirilen ve yazarlar için faydalı oldukları değerlendirilen yorum ve değerlendirmeler yazarlara gönderilir. Hakemler tarafından yapılan talimat, itiraz ve talepler kesinlikle yerine getirilmelidir. Yazının gözden geçirilmiş şekliyle yazarlar, hakemlerin taleplerine uygun olarak atılan her adımı açık ve net bir şekilde belirtmelidir. Yazar açıklama notları, hakemlerin değerlendirme sırasına göre numaralandırılmış olarak listelenmelidir. Ayrıca makale içerisinde de gerekli değişiklikleri yapmalı ve bunları makale içerisinde belirterek (boyayarak), revize edilmiş makale ve hakem önerilerine verilmiş yanıtları içeren formlar www.mevlanamedsci.org adresinden titizlikle yüklenmelidir.

Yazıların Gönderilmesi

Yazarlar Yayın Hakları devir Formunu sisteme yüklemelidir. Tüm yazışmalar sorumlu yazara gönderilecektir. İlgili sorumlu yazarın, tüm diğer yazışmalar için bir e-posta adresi bildirilmelidir. Yazarlar makalelerininin alındığından kendisine verilen numara ile haberdar edilirler. Bildirilen makale numarası yapılan tüm yazışmalarda kullanılmalıdır.Yazarlara beyan edilir ki; editör ofisinin ilk değerlendirmesi sonucu okuyucunun menfaatine dönük olarak makalelerin içeriği dolayısıyla makalesi geri iade edilebilir. Bu hızlı reddetme süreci, yazarın başka bir yerde makalesini yayınlanmasına olanak sağlar. Mevlana Tıp Bilimleri Dergisi'ne makale gönderilmesi, tüm yazarların, derginin yayın politikalarını ve yayın etiğini okuduğu ve kabul ettiği anlamına gelir. Makale gönderimi ve ilgili diğer tüm işlemler www.mevlanamedsci.org adresinden online olarak yapılacaktır.

Yazıların Hazırlanması:Yazarların, materyallerini göndermeden önce aşağıdaki kuralları okumaları ve makalelerini bu kurallara uygun halde sisteme yüklemeleri gerekmektedir:

Genel yazı biçimi: Tüm makaleler, her tarafta 2,5 cm genişliğinde kenar boşlukları bulunan standart A4 boyutunda bir word dosyası kullanılarak yazılmalı, kaynaklar , resim şekil ya da tablolar metinde geçiş sırasına göre numaralandırılmalıdır. Metin, sol hizalı ve heceli satır sonları olmayan 12 puntolu bir fontta çift boşluk kullanılarak ve Times New Roman karakterinde yazılmalıdır. Kelimeler arasında ve cümle noktası sonrasında tek boşluk bırakmaya özen gösterilmelidir. Paragraf için sol girintiyi sekme tuşulabir kez tıklayarak ayarlanmalıdır. Ölçüm birimleri için Uluslararası Birimler Sistemi (SI) kullanılmalıdır. Makalenin tüm sayfaları sayfa sonunda numaralandırılmalıdır. Tüm yazılar Türkçe yazım kurallarına uymalı, noktalama işaretlerine uygun olmalıdır. Tüm makalelerde; Kapak sayfası, Ön yazı (cover letter), makale dosyası, Şekiller ve Resimler, Telif Hakları Devir Formu, ve gerekli ise hasta onam formu ayrı dosyalar olarak yüklenmelidir Kaynaklar, şekil tablo ve resimler

Makale bölümleri hakkında:

1-Kapak Sayfası: Makalenin Türkçe ve ingilizce tam başlığı ve 50'den fazla karakter içermeyen Türkçe kısa bir başlık, tüm yazarların açık şekilde adları ve soyadları, ORCID numaraları, kurumları, sorumlu yazar ismi iş veya cep telefonu, e-posta ve yazışma adresi belirtilmelidir (Anadili Türkçe olmayan yazarların yüklediği İngilizce makalelerde Türkçe Başlık ekleme şartı mevcut olmayıp opsiyoneldir).Makale daha önce tebliğ olarak sunulmuş ise tebliğ yeri ve tarihi belirtilmelidir. Yazarlar ve kurumları hakkındaki bilgiler başlık sayfası haricinde ana metinde (materyal metot bölümü dahil), tablolarda, şekillerde ve video dokümanlarında yer almamalıdır. Herhangi bir hibe ya da diğer destek kaynaklarının detayları, Makalenin hazırlanmasına katkıda bulunan ancak yazarlık kriterlerini karşılamayan bireylere teşekkür bölümü de kapak sayfasına eklenmelidir.

2-Ana makale dosyası; 1. Başlık , 2. Türkçe özet ve anahtar kelimeler, 3. İngilizce özet ve anahtar kelimeler, 4. Makale ana bölümü, 5. Kaynaklar, 6. Tablolar ve açıklamaları, 7. Resim ve Şekil açıklamaları ile birlikte resim ve şekiller, 8. Alt yazılar şeklinde dizilmelidir:

Başlık:
Makale Word dosyasında en baş kısımda makalenin yazım dilinde tek uzun başlığı yer almalıdır.

Özet:
Editöre Mektup haricinde tüm yazılar Türkçe ve İngilizce özet içermelidir (Anadili Türkçe olmayan yazarların yüklediği İngilizce makalelerde Türkçe Özet ekleme şartı mevcut olmayıp opsiyoneldir). Orijinal araştırma makalelerinin özetleri Amaç, Yöntemler, Bulgular ve Sonuç alt başlıklarını içermelidir. Özetler; kaynak, şekil veya tablo numarası içermemelidir. Sözcük sayısı ve özellikler için Tablo 1'deki veriler dikkate alınmalıdır.

Anahtar sözcükler:
Özelerin sonunda en az üç ile en fazla altı anahtar sözcük bildirilmelidir. Anahtar sözcükler kısaltmalar olmaksızın tam olarak listelenmeli birbirinden virgül yada noktalı virgül kullanılarak ayrılmalıdır. Anahtar kelimeler, "Tıbbi Konu Başlıklarına (MESH)" uygun olmalıdır (Bakınız: www.nlm.nih.gov/mesh/MBrowser.html).Özetlerde ve başlıklarda uluslararası olarak bilinenler hariç kısaltmalar kullanılmamalıdır.

Makalede kullanılacak kısaltmalar, mümkünse ulusal veya uluslararası kabul görmüş olmalı, ilk kullanıldığında metin içinde tanımlanmalı ve parantez içinde yazılmalıdır. Daha sonra metin boyunca o kısaltma kullanılmalıdır. Yaygın olarak kabul edilen kısaltmalar ve kullanım için lütfen "Bilimsel Stil ve Biçim"e bakınız. (https://www.scientificstyleandformat.org/Home.html). Ana metinde Bir ticari markalı ilaç, ürün, donanım veya yazılım programı ana metinde yer aldığında, ürün bilgisi, ürünün adını, ürünün imalatçısını ve şirket ile şirket merkezinin bulunduğu ülkeyi aşağıdaki biçimde parantez içinde verilmelidir: "Discovery St PET / CT tarayıcı (General Electric, Milwaukee, WI, ABD).

Makale ana metni:

Giriş: Konuyu ve çalışmanın amacını açıklayacak spesifik bilgilere yer verilir.

Yöntemler,Materyal/Metot: Etik kurul kararı, çalışmanın gerçekleştirildiği yer, zaman ve çalışmanın planlanması ile kullanılan elemanlar ve yöntemler bildirilmelidir. Verilerin derlenmesi, hasta ve bireylerin özellikleri, deneysel çalışmanın özellikleri ve istatistiksel metotlar detaylı olarak açıklanmalıdır. Çalışmaya alınanlar ve çalışmayı yürütmek için kullanılan tüm yöntemler ayrıntılı olarak açıklanmalıdır. Kullanılan yeni veya modifiye yöntemler ayrıntılı olarak açıklanmalı kaynak belirtilmelidir. İlaçların ve kimyasal ajanların dozları, konsantrasyonları, verilme yolları ve süresi belirtilmelidir. Elde edilen verileri özetlemek ve önerilen hipotezi test etmek için kullanılan tüm istatistiksel yöntemlerin kısa bir raporu, istatistiksel olarak anlamlı farklılık için belirlenen p değeri ölçütleri de dahil olmak üzere bir alt başlık altında sunulmalıdır. Yapılan istatistiksel değerlendirme ayrıntılı olarak açıklanmalıdır. Olabildiğince standart istatistiksel yöntemler kullanılmalıdır. Nadiren kullanılmış veya yeni istatistiksel yöntemler kullanılmışsa konuya ilişkin ilgili referanslar belirtilmelidir. Gerekirse, olağandışı, karmaşık veya yeni istatistiksel yöntemlerle ilgili daha ayrıntılı açıklamalar, çevrimiçi ek veri olarak okuyucular için ayrı dosyalarda verilmelidir.

Bulgular: Elde edilen veriler istatistiksel sonuçları ile beraber ayrıntılı olarak verilmelidir. Bulgular şekiller ve tablolar ile desteklenmelidir. Rakam ve tablolarda verilen bilgilerin gerekli olmadıkça metinde tekrarlanmamalsına özen gösterilmelidir.

Tartışma: Çalışmanın sonuçları literatür verileri ile karşılaştırılarak değerlendirilmeli, yerel ve/veya uluslararası kaynaklarla desteklenmelidir. Yazıyla alakasız veya gereksiz genel bilgiler eklenmemeli, yazının amacına uygun yeterli uzunlukta olmalıdır.

Kaynaklar:

Kaynaklar ayrı bir sayfaya yazılmalıdır. Kaynaklar Vancouver sistemine uygun olarak belirtilmelidir. Buna göre, kaynak numaraları cümle sonuna nokta konmadan ( ) içinde verilmeli, nokta daha sonra konulmalıdır. Kaynak yazar isimleri cümle içinde kullanılıyorsa ismin geçtiği ilk yerden sonra ( ) içinde kaynak verilmelidir. Birden fazla kaynak numarası veriliyorsa arasına ",", ikiden daha fazla ardışık kaynak numarası veriliyor ise rakamları arasına "-" konmalıdır [ör. (1,2), (1- 3)gibi. Kaynaklar metindeki kullanılış sırasına göre numaralandırılıp listelenmelidir. Atıf doğruluğu, yazarın sorumluluğundadır. Kaynaklar orijinal yazım, aksan, noktalama vb. ile tam olarak uyumlu olmalıdır. Metin içindeki tüm kaynaklar belirtilmelidir. Kaynak listesinde mükerrer yazım yapılmamalıdır. **Farklı yayın türleri için kaynak stilleri aşağıdaki örneklerde sunulmuştur:**

Araştırma Makalesi: Kocakuşak A, Yücel AF, Arıkan S. Karına nafiz delici kesici alet yaralanmalarında rutin abdominal eksplorasyon yönteminin retrospektif analizi. Van Tıp Dergisi 2006;13(3):90-6. Vikse BE, Aasard K, Bostad L, et al. Clinical prognostic factors in biopsyproven benign nephrosclerosis. Nephrol Dial Transplant 2003;18:517-23.

Tek Yazarlı Kitaplar:Danovitch GM. Handbook of Kidney Transplantation. Boston: Little, Brown and Company (Inc.), 1996: 323-8.

Kitap Bölümü: Soysal Z, Albek E, Eke M. Fetüs hakları. Soysal Z, Çakalır C, ed. Adli Tıp, Cilt III,İstanbul Üniversitesi Cerrahpaşa Tıp Fakültesi Yayınları, İstanbul, 1999:1635-50.

Davison AM, Cameron JS, Grünfeld JP, et al. Oxford Textbook of Clinical Nephrology. In: Williams G, ed. Mesengiocapillary glomerulonephritis. New York: Oxford University Press, 1998: 591- 613.

Baskıdan önce çevrim içi olarak yayımlanan dergi makalesi: Doğan GM, Sığırcı A, Akyay A, Uğuralp S, Güvenç MN. A Rare Malignancy in an Adolescent: Desmoplastic Small Round Cell Tumor. Turkiye Klinikleri J Case Rep. 10.5336/caserep.2020-77722. Published online: 31 December 2020.

Cai L, Yeh BM, Westphalen AC, Roberts JP, Wang ZJ. Adult living donor liver imaging.DiagnIntervRadiol. 2016 Feb 24.doi: 10.5152/dir.2016.15323. [Epub ahead of print].

Toplantı Raporları: Bengisson S. Sothemin BG. Enforcement of data protection, privacy and security in medical informatics. In: Lun KC, Degoulet P, Piemme TE, Rienhoff O, editors. MEDINFO 92. Proceedings of the 7th World Congress on Medical Informatics; 1992 Sept 6-10; Geneva, Switzerland. Amsterdam: North-Holland; 1992. pp.1561-5.

Bilimsel veya Teknik Rapor: Cusick M, Chew EY, Hoogwerf B, Agrón E, Wu L, Lindley A, et al. Early Treatment Diabetic Retinopathy Study Research Group. Risk factors for renal replacement therapy in the Early Treatment Diabetic Retinopathy Study (ETDRS), Early Treatment Diabetic Retinopathy Study Kidney Int: 2004. Report No: 26.

Tez: Kaplan SI. Post-hospital home health care: elderly access and utilization (dissertation). St Louis (MO): Washington Univ; 1995.

Web sayfası ve Sosyal Medya araçları: Yazar. Başlık. Erişim linki: URL. Erişim tarihi ve yılı

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Tablo 1. Makale türlerine göre sınırlamalar

Makale türü	Sözcük sınırı	Özet sınırı	Kaynak sınırı	Tablo sınırı	Şekil sınırı
Araştırma Makalesi	3500	300	50	6	6
Derleme	5000	300	80	6	10
Olgu Sunumu	1500	200	15	3	5
Editöre Mektup	1000	Özet içermez	8	Tablo içermez	Şekil içermez

Makale Türleri:**Mevlana Tıp Bilimleri Dergisi'nde aşağıda kısaca** açıklanan makale türleri yayınlamaktadır:

Araştırma Makaleleri: Orijinal araştırmalara dayanan yeni sonuçlar sağlayan en önemli makale türüdür. Orijinal makalelerin ana metni Giriş, Yöntemler, Bulgular, Tartışma, Sonuç ve Kaynaklar alt başlıklarıyla yapılandırılmalıdır. Sözcük sayısı ve özellikler için lütfen Tablo 1'e bakınız.İstatistiksel analiz genellikle sonuçları desteklemek için gereklidir. İstatistiksel analizler uluslararası istatistik raporlama standartlarına uygun olarak yapılmalıdır (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals. Br Med J 1983:7;1489–93). İstatistiksel analizler hakkında bilgi Materyaller ve Yöntemler bölümünde ayrı bir alt başlık ile sağlanmalı ve süreç boyunca kullanılan istatistiksel yazılım belirtilmelidir. Birimler Uluslararası Birimler Sistemine (SI) uygun olarak hazırlanmalıdır. Makalenin kısıtlılıkları, sakıncalar ve eksik yönler, sonuç paragrafından önce Tartışma bölümünde belirtilmelidir.

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ARAŞTIRMA MAKALESİ/RESEARCH ARTICLE

OLGU SUNUMU/CASE REPORT

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Assessment of in-Flight Spatial Disorientation Events Among Military Pilots

Askeri Pilotlarda Uçuşta Yaşanılan Spasyal Dezoryantasyon Olaylarının Değerlendirilmesi

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ÖZET

Havacılıkta Spasyal Dezoryantasyon (SD), bir pilotun uçağın yeryüzüne veya yakınındaki diğer hava araçlarına göre konumunu veya hareketini yanlış algılaması durumudur. SD olaylarının uçuşta ne sıklıkta yaşandığını ve ne seviyede tehlike yarattığını değerlendirmek amacıyla yaşları 24-46 arasında değişen 203 pilota anket uygulanmıştır. Helikopter pilotları en sık 'Gece Görüş Gözlüğü (GGG) kullanımına bağlı his yanılgısı' (%93.8) ve 'Brownout- whiteout illüzyonu (%93.8) nakliye uçağı pilotları en sık 'Yaklaşma ve iniş sırasında his yanılgısı' (%82.6) ve jet pilotları en sık 'Anti-collision ışıklarının bulut/sis yansımalarının yarattığı his yanılgısı' (%92.7) ve 'Leans illüzyonu' (%92.7) nedeniyle SD yaşamıştır. Genel maksat helikopteri pilotları ile taarruz helikopteri pilotları arasında 'Brownout- whiteout illüzyonu'nun uçuşta yarattığı tehlike skorları açısından anlamlı bir fark bulunmuştur ($p<0.001$). Bu pilotlar arasında 'Yeryüzü gökyüzü ışıklarının birbirine karıştırılması yanılgısı' yaşanma sıklığı açısından da anlamlı bir fark bulunmuştur ($p=0.035$). Jet, helikopter ve nakliye pilotları arasında da bu illüzyonun yaşanma sıklığı açısından anlamlı bir fark saptanmıştır ($p<0.001$). Havacılıkta hala sürmekte olan SD sorunu ve bunun uçuş emniyeti üzerindeki yıkıcı etkileriyle başa çıkabilmek için, pilota özel uçuş profilleri geliştirilmeli ve her bir uçak modeline özgü SD simülasyonların fizyolojik eğitimlere dahil edilmelidir.

Anahtar Kelimeler: Pilot, Spasyal dezoryantasyon, Uçuş, Havacılık, İnsan Faktörleri

ABSTRACT

Spatial Disorientation (SD) in aviation is the incorrect perception that a pilot has of the position or movement of the aircraft in relation to the Earth or other nearby air vehicle. A survey was conducted on 203 military pilots, with ages between 24-46. Helicopter pilots had the largest number of illusions caused by 'NVG (Night Vision Goggle)- related illusions' (93.8%) and 'Brownout-whiteout illusion' (93.8%), while transport aircraft pilots had the highest number of 'SD during final approach and landing' (82.6%), and jet pilots had the highest number of 'Illusion of anti-collision light reflection from clouds/fog' (92.7%) and 'Leans illusion' (92.7%). A significant difference in severity scores of 'Brownout- whiteout illusion' was found between utility helicopter pilots and attack helicopter pilots ($p<0.001$). There was also a significant difference in the frequency of 'Star-ground light confusion illusion' between those pilots ($p=0.035$). Significant difference in the frequency of this illusion was also found among jet, helicopter and transport pilots ($p<0.001$). To cope with the ongoing problem of SD and its detrimental effects on flight safety, it is crucial to develop pilot-specific flight profiles and incorporate SD simulations particular to each aircraft model into the physiological trainings.

Key words: Pilot, Spatial disorientation, Flight, Aviation, Human factors

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INTRODUCTION

The human body is well-suited for maintaining its orientation and perception on Earth at a gravitational force of 1 G. This is upheld by the interaction of the somatosensory, vestibular, and visual systems. However, during flight, as the maneuverability and technological capabilities of the air vehicles have shown notable changes in time, it has been observed that aerial dynamics, some excessive movements, and unusual flying situations turn out to be causing misinterpretation of insufficient or conflicting orientational inputs provided by these sensory systems. Therefore, it is inevitable that pilots will encounter difficulties in maintaining their spatial orientation in the aerospace environment, where they are subjected to movements with varying power, duration, and direction, as well as different visual alterations and illusions (1).

Spatial Disorientation (SD) in aviation refers to a pilot's erroneous perception of the position or motion of the aircraft in relation to the Earth or other nearby aircraft. During flight, pilots may experience various events and illusions linked to SD, which can pose a threat to flight safety and lead to near misses and accidents. SD is a critical issue in aviation medicine due to its significant impact on flight safety and its role in causing accidents (2). The rate of SD-caused aircraft accidents in military aviation has been reported to be as high as 20%, with approximately 80% of these accidents resulting in fatalities (3.4). From 1991 to 2000, SD accounted for 20.2% of Class A accidents in the United States Air Force (USAF), making it the main cause. Additionally, the fatal accident rate for SD accidents was three times greater compared to accidents not caused by SD (1). A 2003 study conducted on helicopter accidents in the USAF revealed that the prevalence of SD was 27% (5).

Mishap data has been shown to be a valuable resource to learn about the impact of SD and its detrimental consequences in flight operations. Nevertheless, these data sometimes provide limited information and remain inadequate for assessing additional contributing factors. In some mishap investigation reports, it may be said that SD was decontextualized and a variety of contents of SD were individually assessed as contributing factors although they could have explicitly been attributed to SD (6.7). Gibb et al's (3) article highlights two key factors that may have received little attention in mishap reports: the lack of information regarding the pilot's behavior prior to the accident, and the investigators' inadequate evaluation of the effects of SD. These factors were potentially overlooked due to underreporting and inaccuracies in the mishap reports. Besides, that SD requires multi-pronged assessment and involves a wide range of illusions and misperceptions may sometimes cause failure to recognize and determine SD as a substantial contributor to the accident. The personal statements and experiences of each pilot regarding their misperceptions during flight provide an additional source of information that is not involved in reported incidents. Survey-based studies can provide sufficient information about episodes of SD and its potential hazards because pilots can accurately characterize the SD-related situations, clarify the misperceptions, and explain how these factors affect their flight skills. Hence, their statements and experiences can serve as strong evidence that may help in clarifying the underlying reasons, categorizing the illusions, and clearly identifying additional scenarios associated with SD.

The frequency distribution of SD illusions and their correlations with a variety of factors, including mission profiles, types of air vehicles, psychological factors, flying experience, meteorological conditions, use of various displays and viewing devices, and so forth, have been surveyed in many studies from different countries (8-11). Even though SD has plagued Turkish military pilots and caused numerous accidents, no survey-based research has been conducted to date. In this study, we aimed to collect comprehensive information from Turkish Armed Forces (TAF) pilots by employing a questionnaire-based survey about the frequency, types, and risk levels of each SD episodes that they experienced in different types of air vehicles.

METHODS

Subjects

A survey was conducted on 215 active pilots who applied to periodic aeromedical examinations and physiological trainings at the Aircrew Health Research and Training Center, Turkey. In accordance with the health aptitude regulations for Turkish military personnel, all pilots serving in TAF are required to undergo physiological trainings (Human centrifuge, SD, Hypobaric hypoxia, Ejection seat, and Night vision trainings) in this center every four years (12). Therefore, it was possible to interact with pilots operating various air vehicles in different regions and squadrons throughout the country. Each pilot was subjected to a close interview to enhance their awareness through the study, minimize any errors, and thus collect more accurate data.

Survey design

A comprehensive survey was developed by evaluating some studies that used questionnaires to gather information on in-flight SD events experienced by military pilots (5,8,13). The questionnaire collected data on the pilots' demographic characteristics, total flight hours, most flown air vehicle type, flight conditions during which SD events occurred, frequency of illusions experienced primarily in the air vehicle type with the greatest number of flight hours, and severity levels of the experienced illusions. Pilots were instructed to consider

their SD experiences encountered on real flight missions, rather than their training flights, while responding to the questions. The ones who have experience flying various air vehicles throughout their career were requested to respond to the questions based on the type of air vehicle they flew the most frequently during their active missions. Questions about illusions included a brief definition for each, helping to refresh the individual's knowledge. The participants were requested to choose the frequency grades of each illusion they experienced. The grades were categorized as "Never", "Seldom", "Often", and "Usually". The pilots who selected the "Never" grade were considered to have not experienced the illusion, while those who selected any of the other grades were considered to have experienced so.

The pilots were also asked to declare the severity scores they thought the illusion they experienced during the flight created. The severity levels of each illusion in flight were determined using a Visual Analog Scale (Figure 1). The numerical scale ranged from 1 to 10, with 1 representing an SD event defined as "Flight safety not in danger, easy to control, no risk of accident", and 10 indicating an event defined as "Flight safety at risk, difficult to control, high risk of accident". Additionally, if any, pilots were requested to write the most notable illusion they experienced during a flight. The air vehicles questioned were classified into three main categories: jet, transport aircraft (TA), and helicopter. Helicopters of various types were categorized as Utility Helicopters and Attack Helicopters, based on their intended purposes.

Statistical Analysis

Descriptive statistics of the data were computed using the arithmetic mean, standard deviation, percentage values, minimum, and maximum values. The study examined the associations between different groups using Chi-square and Fisher's Exact test. The "One-Sample Kolmogorov-Smirnov test" was applied to assess the normality of the data distribution. The "Student t test" was used for comparing paired groups with normal distribution and homogeneity of variance. The "Mann-Whitney U test" was employed for comparing parameters that weren't comparable to a normal distribution and lacked homogeneity of variance. The groups of three were compared using "Analysis of variance" for parameters that had a normal distribution and homogeneity of variance followed by Tukey's multiple comparison, and "Kruskal Wallis H Test" for parameters that did not have a normal distribution and did not have homogeneity of variance. For the analyses, a significance level of α=0.05 was used. Values below this threshold were considered to indicate a statistically significant difference. The statistical analysis was carried out using the SPSS 19.0 software.

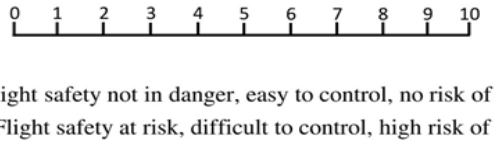

Figure 1. Visual Analog Scale used for the severity levels of each illusion in flight

RESULTS

A total of 12 pilots were found to have not fully completed the surveys and excluded from the study. The study analyzed the surveys of 203 pilots, aged between 24 and 46, with an average age of 32.83±4.95. These pilots had total flight hours ranging from 500 to 6200, with an average of 1710.59±1029.53. Out of 203 pilots, 68 (33.5%) were jet pilots, 112 (55.2%) were helicopter pilots, and 23 (11.3%) were transport aircraft pilots (Table 1). The pilots were requested to rank the flying conditions in which they experienced SD most frequently compared to the flight conditions in which they experienced it least frequently (Table 2). 78 pilots (38.4%) specifically identified VFR (visual flight rules) to IFR (instrument flight rules) transitions as the flight conditions when they most frequently faced SD. Upon analyzing the air vehicle types separately, it was shown that VFR-IFR transitions were the most reported flight condition associated with SD, followed by night IFR conditions.

The frequency rates of all questioned illusions depending on the type of air vehicle was analyzed (Table 3), and it was found that pilots experienced the highest rate of 'SD during final approach and landing' (78.8%), followed by 'Illusion of anti-collision light reflection from clouds/fog' (75.9%)

Table 1. Distributions of air vehicles and pilots

Air vehicle categories	Air vehicle types	Pilots	
		n	%
Jet	F-16	33	48.5
	F-4	29	42.6
	F-5	4	5.9
	T-38	2	2.9
Helicopter	UH-1	62	55.4
	AH-1	16	14.3
	AS-532	12	10.7
	UH-60	11	9.8
	AB-212	8	7.1
	AB-412	3	2.7
Transport Aircraft	CN-235	14	60.9
	C-130	4	17.4
	C-160	4	17.4
	KC-135R	1	4.3

Table 2. Distribution of flight conditions in which pilots with different air vehicles experienced illusions

Flight conditions		Jet (n=68)	Helicopter (n=112)	Transport (n=23)	Total (n=203)
VFR-IFR transitions	n (%)	28 (%41.2)	39 (%34.8)	11 (%47.8)	78 (%38.4)
Night IFR	n (%)	26 (%38.2)	10 (8.9)	9 (%39.1)	45 (%22.1)
Day IFR	n (%)	7 (%10.3)	7 (%6.3)	2 (%8.7)	16 (%7.9)
Day VFR	n (%)	2 (%2.9)	5 (%4.5)	1 (%4.3)	7 (%4.3)
Night VFR	n (%)	2 (%2.9)	2 (%1.8)	1 (%4.3)	5 (%2.5)

Table 3. Frequency distribution of all illusions experienced by each air vehicle type. NVG: Night Vision Goggle, HUD: Head Up Display

Illusions and misperceptions	Jet (n=68)	Helicopter (n=112)	Transport Aircraft (n=23)	Total (n=203)
Illusions during final approach and landing	53 (%77.9)	88 (%72.1)	19 (%82.6)	160 (%78.8)
Illusion of anti-collision light reflection from clouds/fog	63 (%92.7)	79 (%70.6)	12 (%52.2)	154 (%75.9)
NVG-related illusions	15 (%28.3)	105 (%93.8)	-	120 (%72.7)
Leans illusion	63 (%92.7)	62 (%55.4)	18 (%81.3)	146 (%71.9)
Fascination illusion	47 (%70.2)	74 (%66.1)	15 (%65.3)	136 (%67.7)
Vection illusion	46 (%67.7)	71 (%63,4)	9 (%39.2)	126 (%62.1)
Illusion of cockpit lights reflection on the windscreen	54 (%79.5)	61 (%54.5)	6 (%26.1)	121(%59.6)
Star- ground light confusion	49 (%72.1)	64 (%57.2)	5 (%21.8)	118 (%58.1)
Coriolis illusion	50 (%73.6)	49 (%43.8)	13 (%56.6)	112 (%55.2)
Autokinesis	42 (%61.8)	60 (%53.6)	9 (%39.2)	111 (%54.7)
HUD-related illusions	36 (%56.3)	19 (%48.8)	-	55 (%53.3)
Tendency to fly level to sloping clouds or terrain	42 (%61.8)	46 (%41.1)	13 (%56.6)	101 (%49.8)
Fixation to the stars	41 (%60.29)	48 (%42.9)	2 (%8.7)	91 (%44.8)
Nose-down illusion	50 (%78.9)	14 (%12.5)	12 (%52.2)	81 (%39.9)
Flicker vertigo	-	54 (%48.5)	-	-
G-excess illusion	34 (%50)	35 (%31.3)	8 (%34.8)	77 (%37.9)
Nose-up illusion	49 (%72.1)	13 (%11.7)	15 (%65.3)	77 (%37.9)
Giant hand phenomena	31 (%45.6)	30 (%26.8)	10 (%43.5)	71 (%35)
Graveyard spiral	19 (%28)	22 (%19.7)	2 (%8,7)	43 (%21.2)
Inversion illusion	28 (%41.2)	2 (%1,8)	7 (%30.5)	37 (%18.2)
Brownout- whiteout illusion	-	105 (%93.8)	-	-

and 'Night Vision Goggle (NVG)-related illusions' (72.7%). Helicopter pilots had the largest number of illusions caused by 'NVG- related illusions' (93.8%) and 'Brownout-whiteout illusion' (93.8%), while transport aircraft pilots had the highest number of 'SD during final approach and landing' (82.6%). The most prevalent forms of illusions experienced by jet pilots were 'Illusion of anti-collision light reflection from clouds/fog' (92.7%) and 'Leans illusion' (92.7%). The overall frequency rates of all illusions were also depicted in Figure 2.

Upon analyzing the severity scores of pilots, it was found that helicopter pilots had the highest score (7.85±2.19) for the 'Brownout-whiteout illusion', jet pilots had the highest score (6.68±2.03) for the 'Coriolis illusion', and transport aircraft pilots had the highest score (6.93±2.19) for the 'Fascination illusion' (Table 4). 93.8% of helicopter pilots experienced the 'Brownout-whiteout illusion', and the severity score associated

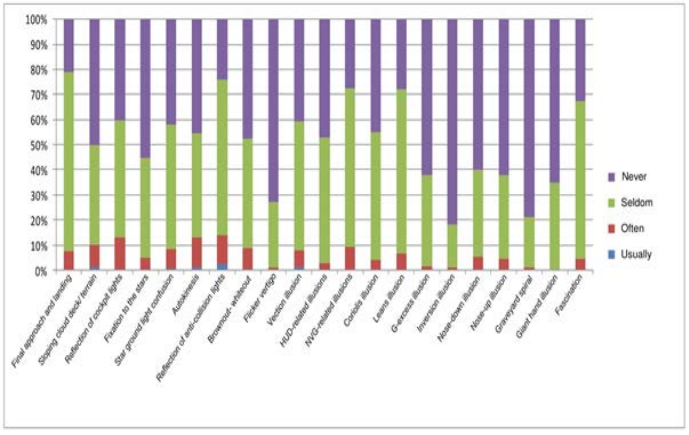

Figure 2. The overall frequency rates of all illusions

Table 4. Severity scores of illusions according to aircraft types. NVG: Night Vision Goggle, HUD: Head Up Display

Illusions and misperceptions	Jet (n=68)	Helicopter (n=112)	Transport Aircraft (n=23)	Total (n=203)	p value
NVG-related illusions	6.53± 2.00	7.05± 2.19	-	6.98± 2.16	0.338
Fascination illusion	6.23± 2.32	6.57± 2.12	6.93± 2.19	6.49± 2.19	0.560
Leans illusion	6.62± 1.94	5.85± 2.41	6.33± 1.65	6.42± 2.11	0.302
Giant hand phenomena	6.13± 2.35	6.23± 2.51	5.50± 2.07	6.08± 2.36	0.558
Coriolis illusion	6.68± 2.03	5.41± 2.15	5.85± 2.15	5.98± 2.08	0.749
Graveyard spiral	5.74± 1.79	5.82± 1.99	5.50± 3.54	5.77± 1.91	0.969
Vection illusion	5.54± 2.05	5.54± 2.34	5.44± 1.74	5.53± 2.18	0.983
Star- ground light confusion	5.69± 2.53	5.08± 2.16	4.80± 2.95	5.32± 2.35	0.367
Illusion of anti-collision light reflection from clouds/fog	5.76± 1.98	5.08± 2.17	4.17± 1.40	5.29± 2.08	0.021
HUD-related illusions	4.92± 1.99	5.84± 2.32	-	5.24± 2.13	0.138
G-excess illusion	4.62± 2.00	5.63± 2.13	4.50± 1.77	5.06± 2.08	0.104
Tendency to fly level to sloping clouds or terrain	4.55± 1.90	5.39± 2.15	4.62± 1.66	4.94± 2.01	0.201
Fixation to the stars	4.78± 1.85	5.04± 2.18	2.00± 1.41	4.86± 2.05	0.145
Nose-up illusion	5.08± 2.03	4.46± 1.27	4.87± 1.85	4.84± 1.88	0.651
Illusion of cockpit lights reflection on the windscreen	4.78± 1.92	4.77± 2.14	3.83± 1.60	4.73±2.01	0.670
Autokinesis	4.45± 1.97	4.73± 2.09	4.22± 1.92	4.59± 2.02	0.734
Inversion illusion	5.04± 1.67	3.67± 0.58	4.57± 1.99	4.29± 1.75	0.072
Nose-down illusion	3.69± 1.57	4.29± 2.05	3.92± 2.27	3.83± 1.76	0.658
Flicker vertigo	-	5.59± 1.79	-	-	-
Brownout- whiteout illusion	-	7.85± 1.99	-	-	-

with this illusion was 7.85±1.99. The severity scores of this illusion between utility helicopters (8.27±1.94) and attack helicopters (6.38±1.20) were evaluated, and a statistically significant difference was found (p<0.001). Helicopter pilots (93.8%) were also found to be the most susceptible to experiencing 'NVG-related illusions' during flight. Additionally, they had the highest average severity score, with an average of 7.05±2.19.

It was observed that jet pilots (72.1%) were the most likely to experience the 'Star- ground light confusion illusion' and the mean severity score for this illusion was 5.69±2.53. There was no statistically significant difference observed among jet, helicopter and transport pilots in terms of the severity scores of this illusion (p=0.367); however, there was a statistically significant difference between those pilots in terms of the frequency of experiencing this illusion (p<0.001). There was also a statistically significant difference between pilots of utility helicopters and attack helicopters in terms of the frequency rates of experiencing this illusion (p=0.035). Jet pilots had the highest rate, at %79.5, of experiencing the 'Illusion of cockpit lights reflection on the windscreen', and there was a statistically significant difference between pilots of utility helicopters and attack helicopters in terms of the severity scores of experiencing this illusion (p=0.016). It was found that jet pilots (61.8%) were the most likely to experience the 'Autokinesis illusion'. There was no statistically significant difference observed among jet, helicopter and transport pilots in terms of the frequency of experiencing this illusion (p=0.734). There was a statistically significant difference between utility helicopter pilots and attack helicopter pilots in terms of the frequency of experiencing this illusion (p<0.001).

DISCUSSION AND CONCLUSION

Upon an overall evaluation of all the illusions investigated in our study, it's obvious that pilots experienced the highest frequency of SD events during the final approach and landing phases of the flight. During the final approach and landing phase, the pilot's workload typically increases as they've got to concurrently evaluate multiple factors, such as assessing meteorological and runway conditions, communicating with Air Traffic Control, considering runway condition, etc. Additionally, they should pay attention to maintain an accurate final approach angle. Research carried out in the US Air Force and the US Navy revealed that approximately 12 to 25% of accidents linked to SD took place during the final approaching and landing stages (4.14). A study investigating commercial airplane accidents revealed that 70% of controlled flight into terrain (CFIT) incidents occurred during landing phases, indicating the presence of the same problem within civilian aviation (15).

Transport aircraft pilots were found to have the highest occurrence of 'SD events during the final approach and

landing', compared to pilots of the other two air vehicle types. Transport aircraft pilots typically perform multi-location flights, requiring takeoffs and landings on different runways. Many studies reported that pilots were more likely to experience illusions while landing on runways that they are not familiar with (16,17). Given the frequent meteorological changes and climate variations in Turkey (18), as well as the unique structure of each runway due to its physical characteristics and surroundings, it can be concluded that the likelihood of transport aircraft pilots encountering 'SD events during the final approach and landing' was increased.

Our analysis revealed that VFR-IFR transitions were the common flight conditions during which all pilots experienced the highest occurrence of SD events. Pilots operating jets, helicopters, and transport aircraft have reported the highest occurrence of SD events during VFR-IFR transitions, and during IFR conditions at night or in adverse weather conditions, respectively. The study conducted by Bellenkes et al. (14) revealed that VFR-IFR transitions significantly contribute to a large number of accidents linked to SD. According to a survey, including 440 pilots in the United Kingdom, it was found that the most severe SD events experienced by pilots were during VFR- IFR transitions (19). Studies reported that VFR- IFR transitions significantly increased the occurrence of SD events (10,20). During transitions between VFR and IFR flights, the flight conditions undergo rapid and successive changes. The pilot tries to quickly maintain an adaptation to these continually changing flight conditions, increasing the likelihood of experiencing SD. During these transitions, the quick entry and exit to and from cloud clusters may induce motion parallax, potentially leading to pilot misperception, particularly in formation flights. This SD event may be depicted by the experience of an F-4 aircraft pilot who participated in our study:

"During a formation flight, I felt I was flying faster than the leader during repeated VFR-IFR transitions through the clouds. As a result, I suddenly pulled the throttle, lowering my speed and leaving the formation. Fortunately, I was able to get out of the cloud clusters, regain my visibility, and rejoin the formation."

The recent helicopter crash, that resulted to the tragic loss of NBA superstar Kobe Bryant, his daughter Gianna, and six other people might also be considered a significant example of accidents related to SD, especially in conditions when there is a lack of external visual cues. On January 26, 2020, the Sikorsky S-76B helicopter collided into a hillside close to the Southern California coast. The National Transportation Safety Board (NTSB) accident investigation concluded that the crash was probably caused by the pilot's inability to maintain proper orientation while flying in fog, partly low clouds and mist covering the hillsides. The adverse weather conditions led to inadvertent entry into instrument meteorological conditions (IMC), which in turn caused the pilot to encounter SD and lose control (21).

'Leans illusion' was found to be one of the commonly experienced illusions by jet pilots in our study. Furthermore, this illusion is the second most prevalent misperception experienced by transport pilots, with a frequency of 81.3%. It was also found to be the most severe illusion compared to others, with a mean score of 6.93±2.19. 'Leans illusion' leads to an erroneous sensation of banking when the attitude indicator show that the aircraft is flying straight and level, or a sensation of flying straight and level when the cues and indicator show the opposite (1). It has been reported as the primary sensory illusion experienced by pilots in numerous studies (1,8,22). This illusion can insidiously develop, and even if the attitude indicator accurately displays the aircraft's position, the pilot may struggle to accept it as true until visual references become available, since the vestibular and proprioceptive system have a stronger influence (23). One of the participants, an F-16 pilot, described it vividly:

"After taking off, we entered a cloud cluster at 2000 ft and came clear of the clouds at 10.000 ft. My exit was, I remember, 90 degrees banked and about 25 to 30 degrees nose up. I was particularly struggling to convince myself that I was in level flight while I was flying inside the clouds. I haven't sweated this much in my sixteen years of flying. All went back to normal as soon as I emerged from the clouds and provided full visibility."

'Coriolis illusion', with a mean severity score of 6.68±2.03, was identified as the most severe illusion experienced by jet pilots. Among all three types of aircraft, jet pilots had the highest frequency rate of experiencing 'Coriolis illusion', at 73.6%. A study showed that the 'Coriolis illusion' was experienced by 39% of pilots, with a majority of those affected being F-4 pilots (24). 'Coriolis illusion', which is a highly dangerous illusion that causes a pilot to experience an unpleasant feeling of rotating immediately after moving their head during a prolonged, constant rotational turn, is commonly encountered in highly maneuverable jet aircraft, as well as in helicopters and transport aircraft. A survey research conducted on SD in the US Air Force revealed that the prevalence of 'Coriolis illusion' was 62.2% among jet pilots and 42.6% among helicopter pilots (5). Within the scope of our investigation, a significant proportion of helicopter pilots, specifically 43.8%, stated having experienced this illusion. According to Previc (25), there have been reports of helicopter pilots experiencing this problem while performing steep turns during flights. An UH-1 pilot among the participants had an extensive experience with this illusion:

"During a left bank turn, the second pilot, who had turned his head to check the left side, unexpectedly overbanked the

helicopter to the left. I quickly took control and maintained level flight."

During our interviews, helicopter pilots also reported that they employed head movements in order to check out the flying area because their field of view was restricted when using NVGs. They also mentioned that they particularly experienced 'Coriolis illusion' while performing sharp turns. A study found that the susceptibility to vestibular sensory illusions linked to rotation is increased when using a NVG, suggesting that visual field limitation can impact vestibular sensitivity (26). Therefore, helicopter pilots ought to remember to abstain from making abrupt and rapid head movements while flying with NVGs.

Our study found that 'NVG-related illusions' had the third highest frequency, accounting for 72.7% of events. Additionally, these illusions were regarded as the most severe, with a score of 6.98±2.16. A research conducted in the USA found that helicopter pilots had a higher incidence of 'NVG-related illusions' compared to jet and training pilots, with a rate of 72.3% (5). NVGs are optical devices that improve vision by amplifying the available light in the surrounding area, even in low-light conditions. Aside from enabling efficient flight capabilities, NVGs and advanced night vision systems also have several side effects, including diminished contrast, decreased visual acuity, limited visual field, and impaired depth perception. Besides, the use of focal vision, characterized by the clear and conscious identification of objects, poses challenges in effectively and accurately performing additional tasks that demand meticulous and conscious visual participation, such as reading and understanding flight displays, evaluating the flight plan, and navigating. These side effects and cognitive workload may contribute to an increased risk of encountering misperceptions (27). Some negative effects of NVGs, such as limited vision field and impaired depth perception, may be highlighted by a noteworthy experience of a helicopter pilot encountered during a flight using NVG:

"While I flew with NVG, I noticed the runway too late on my initial approach. I thought I was descending too fast as I got closer to the ground, and I lost my sense of orientation. We avoided a possible accident when the other pilot took control."

'Brownout-whiteout illusion' is one of the misperceptions that frequently lead to helicopter pilots experiencing SD events. Our study found that 93.8% of helicopter pilots experienced this illusion, with a mean severity score of 7.85±1.99. Furthermore, a significant proportion of helicopter pilots, specifically 17.2%, reported experiencing this misperception as "Usually". 'Brownout-whiteout illusion' happens when the helicopter's fast rotating propellers generate a dense cloud of dust or snow on a sandy or snowy terrain, causing visibility abruptly to decrease to zero. The frequency of this illusion and its impact on accidents are primarily influenced by operational and meteorological factors. During the Gulf War in 1991, US Army helicopters often encountered brownout events while operating in the desert (28). In a study, which investigated incidences of SD in helicopter flights in the USA between 2002 and 2011, it was shown that there was an increase in the frequency of accidents linked to SD in 2003. It was also noted that this increase occurred coincided with the beginning of Operation Iraqi Freedom (OIF) and was attributed to the lack of preparedness for desert conditions and the presence of sandstorms and dust clouds in the operation region, which had a negative impact on low-altitude flight conditions (29). A different study found that 65% of 68 helicopter pilots experienced 'Brownout-whiteout illusion' (30). Out of the helicopter pilots included in our study, 82.2% (n=91) were affiliated with the Land Forces Command and Gendarmerie General Command. 98.9% of them experienced 'Brownout-whiteout illusion', with 18.7% experiencing it 'usually'. The mean severity score was determined to be 7.88±2.01. Furthermore, a statistically significant difference ($p<0.001$) was observed between utility helicopters (8.27±1.94) and attack helicopters (6.38±1.20) in relation to the severity of this illusion.

Utility helicopter pilots primarily operate in Eastern and Southeastern Anatolia, along the border where mountainous terrain is prevalent, and frequently perform operational flights (31,32). These missions involve quick transportation of personnel and supplies to border outposts and forces in active operations. Additionally, aeromedical evacuation operations are frequently conducted. In countries with difficult ground transportation, the lack of appropriate runways often prevents helicopters from landing near outposts and operational sites where troops are stationed. The utility helicopter is the most used type of helicopter in all these missions. It can land on the terrain during good conditions and hovers close to the sandy or snowy ground during adverse conditions. These factors increase the risk of accidents due to Brownout-whiteout illusion. An UH-1 pilot mentioned about his SD experience due to this illusion:

"In 2008, when flying in the operation region in Southeastern Anatolia, I experienced SD due to the lack of external references and whiteout illusion while hovering just a few feet above the snow-covered terrain during personnel landing. I had to quickly hand over control to the other pilot."

The jets have a bubble-like or dome-shaped canopy that provides a wide visual field to the pilot. As a result, the stars in the sky are viewable to the pilot in their peripheral vision while flying in the open air. Our investigation revealed a statistically significant difference among the pilots regarding the frequency of 'Star-ground light confusion', a condition in which a false sensation can be experienced when ground lights are mistaken for stars ($p<0.001$). It was hypothesized

that jet pilots may be more susceptible to this misperception as a result of the unique design of the canopy structure. There is an assumption that a similar relationship between the canopy structure and the 'Star- ground light confusion' might also exist in the 'Illusion of cockpit lights reflecting on the windscreen' and the 'Autokinesis illusion'. 'Autokinesis illusion', which is characterized by the appearance of a stationary light as if moving after being glanced at for an extended period in the darkness, can arise from the reflection of multiple light sources, including stars in an unclouded sky, certain light sources from the ground, or the reflection of cockpit lights from the canopy. A survey study on SD revealed that 56% of participants had 'Autokinesis illusion', and the pilots involved in the study reported several types of autokinesis (8). The F-16 aircraft's bubble canopy acts as a reflective surface, enabling the cockpit lights to reach the pilot's field of vision and giving rise to the perception of virtual images (33). It was found in our study that jet pilots, comprising 79.5% of the sample, were the most susceptible to the 'Illusion of cockpit lights reflecting on the windscreen'. Furthermore, there was a statistically significant difference between pilots operating utility helicopters and attack helicopters (AH-1) in terms of their rate of experiencing this illusion ($p=0.016$). Regarding the 'Autokinesis illusion', jet pilots were shown to have the highest incidence of autokinesis, with a rate of 61.8%. When the questionnaires were analyzed in detail, 1 jet pilot and 1 helicopter pilot, who reported experiencing the 'Autokinesis illusion' "Frequently" were specifically F-16 and AH-1 pilots, respectively. There was a statistically significant difference in the frequency of experiencing this error between utility helicopter and attack helicopter pilots ($p<0.001$). Based on the layout and coverage of the canopy of jet aircraft and AH-1 helicopter, it can be said that pilots of aircraft with bubble canopies are more susceptible to this illusion. Furthermore, there was a statistically significant difference between the pilots of utility helicopters and attack helicopters in terms of the frequency of experiencing this illusion ($p=0.035$). The AH-1 helicopter differs itself from other helicopters by featuring a dome-shaped canopy structure (34). According to a research, 36% of helicopter pilots experienced 'Autokinesis illusion' due to reflections of in-cockpit lights on the canopy. Our study hypothesized that the canopy structure could be a contributing factor to the higher incidence of this illusion among AH-1 pilots compared to other helicopter pilots.

SD has been one of the major problems in military aviation by decreasing operational effectiveness and causing accidents resulting in the loss of air vehicles and personnel (35). Therefore, it necessitates a comprehensive evaluation from multiple angles. Pilots' knowledge of SD has progressively grown alongside improvements in SD trainings. The current approach of training for SD continues to rely on the utilization of simulators and units that accurately replicate flying conditions in a safe ground environment (36,37,38). These trainings provide an extensive variety of realistic illusions, as well as assistance on how to deal with them. Despite an increased awareness of SD among pilots and development of advanced training devices enabling to demonstrate veridical ground-based training profiles, SD-related accidents continue to occur. Military pilots in all NATO member countries undergo regular SD training, which includes frequently updated application profiles (39). While updating, it would be beneficial to collect a brief account of each pilot's previous SD experiences at the beginning of the training process. This will assist instructors to identify the specific conditions and maneuvers in which they experienced SD events. By doing so, pilot-specific flight profiles could be developed and implemented, enabling a focused approach to addressing SD during trainings. This approach is considered to enhance awareness as well as readiness for SD.

Etik Kurul: The Ethical Committee of the Gulhane Military Medical Academy approved the protocol of the study. (Date: 11th of March, 2014, Number: 50687469-1491-223-14/ 1648.4-592).

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REFERENCES

1. Benson AJ, Stott JR. Spatial Disorientation in Flight. Ernsting's Aviation Medicine, 4th Edition, Edward Arnold Ltd, New York, 2006, 433- 58.
2. Newman RL, Rupert AH. The magnitude of the spatial disorientation problem in transport airplanes. Aerosp Med Hum Perform. 2020;91(2):65–70.
3. Gibb R, Ercoline B, Scharff L. Spatial disorientation: decades of pilot fatalities. Aviat Space Environ Med. 2011;82(7):717-24.
4. Lyons TJ, Ercoline WR, Freeman JE, et al. Classification problems of U.S. Air Force spatial disorientation accidents, 1989-91. Aviat Space Environ Med. 1994 Feb;65(2): 147-52.
5. Matthews RJS, Previc F, Bunting A. USAF spatial disorientation survey. In: Spatial disorientation in military vehicles: causes, consequences and cures. La Coruña, Spain, 15-17 April 2002. Report No: NATO RTO-MP-086. https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/avs/MP-086-07.pdf (Accessed 10 June 2024).
6. Accident Investigation Board Report: F-16CM, T/N 89-2108, Utah Test and Training Range, Department of the U.S. Air Force; 22 June 2009. https://www.airandspaceforces.com/PDF/SiteCollectionDocuments/Reports/2009/September%202009/Day30/F-16_crash_AIB_062209.pdf (Accessed 06 June 2024).

7. Aircraft Accident Investigation Board Report. F-15E, T/N 90-0231, 366 EFS, 455 AEW. Afghanistan United States Air Force: U.S. Air Force; 2009:18. https://media.defense.gov/2009/Dec/01/2001452962/-1/-1/0/18%20July%20F-15E%20AIB%20Report%20FINAL.pdf (Accessed 07 June 2024).
8. Sipes WE, Lessard CS. A spatial disorientation survey of experienced instructor pilots. IEEE Eng Med Biol Mag 2000;19 (Pt 2):35–42.
9. Holmes SR, Bunting A, Brown DL, et al. Survey of spatial disorientation in military pilots and navigators. Aviat Space Environ Med 2003; 74:957–65.
10. Takada Y, Hisada T, Kuwada N, et al. Survey of severe spatial disorientation episodes in Japan Air Self-Defense Force fighter pilots showing increased severity in night flight. Mil Med. 2009 Jun;174(6):626-30.
11. Pennings HJM, Oprins EAPB, Wittenberg H, et al. Spatial Disorientation Survey Among Military Pilots. Aerosp Med Hum Perform. 2020 Jan 1;91(1):4-10.
12. Turkish Armed Forces, The Gendarmerie General Command and Coast Guard Command Health Aptitude Regulation; 29885, 11.11.2016. 6674-6675. https://www.msb.gov.tr/Content/Upload/Docs/basin/saglik_2017.pdf (Accessed 01 June 2024).
13. Holmes SR, Bunting A, Bostock S, et al. Preliminary Survey of Spatial Disorientation in UK Military Pilots and Navigators. In: Spatial disorientation in military vehicles: causes, consequences and cures. La Coruña, Spain, 15-17 April 2002. Report No: NATO RTO-MP-086. https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/avs/MP-086-08.pdf (Accessed 10 June 2024).
14. Bellenkes A, Bason R, Yacavone DW. Spatial disorientation in naval aviation mishaps: A review of class A incidents from 1980 through 1989. Aviat Space Environ Med. 1992;63(2):128-31.
15. Scott WB. New Research Identifies Causes of CFIT. Aviation Week and Space Technology, Vol. 144, No.25, 1996, pp. 40-41.
16. Hartman, BO, Cantrell, GK. 'Psychological Factors in "Landing-Short" Accidents'. Flight Safety: J Aeromed Int 1968; 2:26-32.
17. Jin L, Lo E. A Study of Accidents and Incidents of Landing on Wrong Runways and Wrong Airports. 19th International Symposium on Aviation Psychology, 2017;107-112. https://corescholar.libraries.wright.edu/isap_2017/55 (Accessed 10 May 2024).
18. Toros H, Mokari M, Abbasnia M. Regional variability of temperature extremes in the maritime climate of Turkey: A case study to develop agricultural adaptation strategies under climate change. Model. Earth Syst. Environ. 2019;5:857–65.
19. Durnford SJ. Disorientation and flight safety of UK Army aircrew. Proceedings of the Advisory Group for Aerospace Research and Development. Aircraft accidents: Trends in aerospace medical investigation techniques. Neuilly-Sur-Seine, France: AGARD; 1992; AGARD-CP- 532: 32- 1-14. https://apps.dtic.mil/sti/tr/pdf/ADA258745.pdf (Accessed 23 May 2024).
20. Tormes FR, Guedry FE Jr. Disorientation phenomena in naval helicopter pilots. Aviat Space Environ Med. 1975;46(4 Sec 1):387-93.
21. National Transportation Safety Board. Year. Rapid Descent into Terrain, Island Express Helicopters Inc., Sikorsky S-76B, N72EX, Calabasas, California, January 26, 2020. Aircraft Accident Report NTSB/AAR-21/01. Washington, DC. https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR2101.pdf (accessed 16 June 2024).
22. Navathe PD, Singh B. Prevalence of spatial disorientation in Indian Air Force aircrew. Aviat Space Environ Med. 1994;65(12):1082-5.
23. Landman A, Davies S, Groen EL, et al. In-flight spatial disorientation induces roll reversal errors when using the attitude indicator. Appl Ergon. 2019;81:102905.
24. Diamantopoulos I, Markou I. A Spatial Disorientation Survey of Hellenic Air Force Pilots. In: Spatial disorientation in military vehicles: causes, consequences and cures. La Coruña, Spain, 15-17 April 2002. Report No: NATO RTO-MP-086. https://apps.dtic.mil/sti/tr/pdf/ADA413343.pdf (Accessed 02 June 2024).
25. Previc FH. Psychological Factors, Spatial Disorientation in Aviation, Volume 203, American Instıtute of Aeronautics and Astronautics Inc, Virginia, 2004, pp. 145-94.
26. Cheung B. Vestibular suppression while using NVGs. NATO RTA HFM 141 Symposium on "Human Factors and Medical Aspects of Day/Night All Weather Operations: Current Issues and Future Challenges" Crete, Greece; April 2007; 8-1 – 8-10.
27. Biernacki MP, Lewkowicz R. The role of visual conditions and aircraft type on different aspects of pilot workload. Appl Ergon. 2024;118:104268.
28. Previc FH, Ercoline WR. Historical Background, Concepts and Terminology. Spatial Disorientation in Aviation, Volume 203, American Institute of Aeronautics and Astronautics Inc, Virginia, 2004, pp. 1-36.
29. Gaydos SJ, Harrigan MJ, Bushby AJ. Ten years of spatial disorientation in U.S. Army rotary-wing operations. Aviat Space Environ Med. 2012;83(8):739-45.
30. Lewkowicz R, Biernacki MP. A survey of spatial disorientation incidence in Polish military pilots. Int J Occup Med Environ Health. 2020;33(6):791-810.
31. McGregor A. Arming for Asymmetric Warfare: Turkey's Arms Industry in the 21st Century. Jamestown Foundation, 2008. https://jamestown.org/wp-content/uploads/2008/06/Jamestown-McGregorTurkishArmsIndustry.pdf (Accessed 10 June 2024).
32. Kasapoğlu C, Ülgen S. Operation Olive Branch: A political-military assessment. Foreign Policy & Security 2018/2. https://edam.org.tr/wp-content/uploads/2018/01/Operation-Olive-Branch-01.pdf (Accessed 10 June 2024).
33. Kuipers A, Kappers A, van Holten CR, van Bergen JHW, Oosterveld WJ., 'Spatial Disorientation Incidents in the R.N.L.A.F.F16 and F5 Aircraft Suggestions for Prevention' AGARD CP-478: Situational Awareness in Aerospace Operations, AGARD, 1990.pp. OV-E- 1- OV-E-16. https://apps.dtic.mil/sti/tr/pdf/ADA223939.pdf (Accessed 09 June 2024).
34. Lynn R, Harse J. The Bell Helicopter AH-1 Cobra-Past, present, and future. In: Aircraft Design, Systems and Operations Conference. 1990. p. 3271. https://doi.org/10.2514/6.1990-3271
35. Lessard CS. Spatial disorientation: dealing with aeronautical illusions. IEEE Eng Med Biol Mag 2000; 19: 25 – 7.
36. Powell-Dunford N, Bushby A, Leland RA. Spatial Disorientation Training in the Rotor Wing Flight Simulator. Aerosp Med Hum Perform. 2016;87(10):890-3.
37. Lawson BD, Curry IP, Muth ER, et al. Training as a countermeasure for spatial disorientation mishaps: Have opportunities for improvement been missed? In: Mitigating Hazards to Rotary Wing Flight in Degraded Visual Environments STO-EN-HFM- 265. The NATO Science and Technology Organization; 2017. p. 3A-1–20. https://www.sto.nato.int/publications/STO%20Educational%20Notes/STO-EN-HFM-265/EN-HFM-265-03A.pdf (Accessed 12 June 2024).
38. van den Hoed A, Landman A, Van Baelen D, et al. Leans Illusion in Hexapod Simulator Facilitates Erroneous Responses to Artificial Horizon in Airline Pilots. Hum Factors. 2022;64(6):962-72.
39. NATO Standard, AAMedP-1.2. Aeromedical Training of Flight Personnel. Edition A Version 1. NATO Standardization Office (NSO), 2018. https://www.coemed.org/files/stanags/04_AAMEDP/AAMedP-1.2_EDA_V1_E_3114.pdf (Accessed 15 June 2024).

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Determination Food Addiction Frequency and Its Affecting Factors in People Who Consulting to Trabzon Fatih Healthy Life Center Healthy Nutrition Consultancy

Trabzon Fatih Sağlıklı Hayat Merkezi Sağlıklı Beslenme Danışmanlığına Başvuranlarda Yeme Bağımlılığı Sıklığının ve Yeme Bağımlılığı Sıklığını Etkileyen Faktörlerin Belirlenmesi

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ÖZET

Amaç: Bu araştırmanın amacı Trabzon/Ortahisar'da sağlıklı beslenme danışmanlığına başvuran yetişkinlerin yeme bağımlılığı sıklığını ve bu sıklığı etkileyen faktörleri belirlemektir.
Yöntem: Araştırma kesitsel türdedir. Çalışma kapsamına 181 erişkin alınmıştır. Çalışma verilerinin toplanmasında demografik özellikler formu ile Yale Yeme Bağımlılığı Ölçeği kullanılmıştır. p değeri 0.05'ten küçük olduğunda anlamlı kabul edilmiştir.
Bulgular: Araştırma katılımcılarının %79.6'sı kadın ve %69.1'i evliydi. Ortalama yaş 37.16±11.7 yıl ve ortalama beden kitle indeksi 31.44±6.09 kg/m² idi. Başvuranların %21.7'sinde yeme bağımlılığı belirlendi. Yeme bağımlılığı ile psikolog/psikiyatristle görüşme durumu, sigara kullanma, beden kitle indeksi ve katılımcı beyanına göre yeme hızı değişkenleri arasında anlamlı ilişki belirlendi (sırasıyla p=0.001, 0.032, 0.005, 0.045). Yeme bağımlılığı ile diğer değişkenler arasında anlamlı ilişki belirlenmedi.
Sonuç: Araştırma sonucunda yeme bağımlılığı sıklığı %21.7 olarak belirlenmiştir. Bu sıklık yüksek olup, literatürdeki yurt içi ve yurt dışı çalışmalarla uyumludur. Bu önemli halk sağlığı sorunu, sağlıklı beslenme danışmanlığı, beslenme klinikleri, aile sağlığı merkezleri ve okulları kapsayacak şekilde gerçekçi uygulamalar ve müdahaleler gerektirmektedir.

Anahtar Kelimeler: Gıda bağımlılığı, beslenme değerlendirmesi, beslenme anketleri

ABSTRACT

Aim: The aim of this research is to determine the frequency of food addiction and the factors affecting this frequency in adults who consulted to healthy nutrition counsultancy in Trabzon/Ortahisar.
Methods: The study was cross-sectional. 181 adults were included in the study. Demographic charecteristics form and Yale Food Addiction Scale were used to collect study data. When the p value was below 0.05, it was considered as significant.
Results: 79.6% of the applicants were women and 69.1% were married. The mean age was 37.16±11.7 years and the mean body mass index was 31.44±6.09 kg/m². Food addiction was determined in 21.7% of the applicants. A significant relationship was found between food addiction and interview with a psychologist/psychiatrist, smoking status, body mass index, and eating speed according to applicant's statement (p=0.001, 0.032, 0.005, 0.045 respectively.). No significant relationship was found between food addiction and other variables.
Conclusion: As a result of the study, the frequency of food addiction was determined to be 21.7%. This frequency is high and is consistent with national and international studies in the literature. This important public health issue requires realistic practices and interventions, including healthy nutrition consultancy, nutrition clinics, family health centres and schools.

Key words: Food addiction, Nutrition assessment, Nutrition surveys

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INTRODUCTION

Nutrition-related health problems have increased recently. One of the important risk factors for non-communicable diseases that cause 41 million deaths each year is unhealthy diet (1). Globally, 13% of adults were obese and 39% were overweight in 2016 (2). It is reported that eating disorders bulimia nervosa and anorexia nervosa, which are marked by concerns about body weight and abnormal eating, affected 14 millions people, 3 millions of whom are children and adolescents, in 2019 (3).

Nutrition and nutrition-related diseases, which can lead to conditions that are important sources of mortality and morbidity, have been intensely investigated over the last few decades. Food addiction, which is one of the behavioral addictions, is one of these researched problems. In food addiction, people may indicate signs of addiction to food, similar to the typical symptoms of substance abuse. It is also thought that obesity and eating disorders may be related to food addiction (4). Although there has consisted extensive literature on food addiction over the years, it is a controversial issue whether food addiction is a real addiction (5). Some researchers argue that food and sex are natural rewards and cannot be addictive (6, 7). However, there are researchers who argue that foods may also create addiction-like effects via dopamine, as in substance abuse (8, 9). While pica, anorexia nervosa, bulimia nervosa, and binge eating disorder are classified as abnormal eating behavior patterns in the Diagnostic and Statistical Manual of Mental Disorders (DSM) V, food addiction is not included in these patterns. Food addiction can be evaluated under the title of 'Other unspecified nutrition and eating disorders' in DSM V (10).

In a meta-analysis, the prevalence of food addiction was calculated as 12% in population-based samples and 19% in overweight/obese samples for children and adolescents (11). In another meta-analysis, it was found 17% under the age of 35 and 22.2% over the age of 35 (12).

In this study, it was aimed to evaluate the frequency of food addiction in adults who consulted to Fatih Healthy Life Center-Healthy Nutrition Consultancy (HLC-HNC) in Ortahisar district of Trabzon and the factors affecting this frequency.

MATERIALS AND METHODS

The research was of cross-sectional type. The population of the research comprises people who consulted to Fatih HLC-HNC in Ortahisar district of Trabzon province. Due to the emergence of the Covid-19 pandemic and the closure of Fatih HLC-HNC, the number of applicants to the centre remained limited, with approximately 300 applications in 2020. The sample size was calculated as a minimum of 160 people with G Power program version 3.1.9.4, with an effect size of 0.3 at maximum 7 degrees of freedom, 5% type 1 error and 80% power for the Chi-square test (13). The research was conducted on men and women aged 18-65 who consulted to Fatih HLC-HNC, who gave verbal consent to include in the study. Except for these three conditions (applying to the relevant centre, being between 18-65 years of age and volunteering to participate in the study), no other inclusion/exclusion criteria were used.

A 34-question questionnaire and Yale Food Addiction Scale (YFAS) were used to collect data, in which the sociodemographic characteristics of the individual, nutritional habits, some life events and anthropometric measurements were recorded. YFAS is a 27-item scale. In 2009 Gearhardt et al. developed the YFAS and in 2012 Bayraktar et al. adapted the scale to the Turkish language (14, 15). YFAS was prepared by evaluating the substance addiction criteria in DSM IV-TR. The scale consists of eight subscales. The subscales are: Substance taken in larger amount and for longer period than intended (Subscale 1: Questions 1, 2, 3), persistent desire or repeated unsuccessful attempt to quit (Subscale 2: Question 4, 22, 24, 25), much time/activity to obtain, use, recover (Subscale 3: Question 5, 6, 7), important social, occupational, or recreational activities given up or reduced (Subscale 4: Question 8, 9, 10, 11), use continues despite knowledge of adverse consequences (Subscale 5: Question 19), tolerance (Subscale 6: Question 20, 21), withdrawal symptoms (Subscale 7: Question 12, 13, 14), and use causes clinically significant impairment or distress (Subscale 8: Question 15, 16) (14). When calculating the scale score, the scores of the subscales are calculated first. A score of 0 in a subscale means that the criterion is not met, while scores of 1 and above mean that the criterion is met. A score of at least 3 in the other 7 subscales is considered as food addiction, provided that at least 1 point is obtained from the 'use causes clinically significant impairment or distress' subscale (14, 15). Since the response types of the items that constitute the scale are different from each other (items 1-16 are in Likert type from 0 to 4 and items 17-27 are in yes-no type), Kuder Richardson alpha value was calculated to determine the reliability and 0.78 was found.

Research data were collected between 01.01.2020-31.10.2020. The data collection forms were given to the people and participants completed the form under observation.

With in the research, permission was obtained from Feyza Bayraktar, who adapted YFAS into Turkish. To conduct the study, institutional and ethical approval was obtained.

The research data were analyzed using SPSS (SPSS for Windows, Version 16.0. Chicago, SPSSInc.). Arithmetic mean, standard deviation (SD), median, min and max values were used in summarizing numerical data, numbers and percentages were used in summarizing categorical data. Chi-square test and t test for independent groups were used

to determine the relationships between variables. It was considered significant when the p value was less than 0.05.

RESULTS

Sociodemographic Characteristics of the Applicants

181 people took part in the study. 79.6% (n=144) of the applicants were women. The age range of the applicants was

Table 1. Study Applicants' Sociodemografic Characteristics (Trabzon, 2020)

Characteristics		n	%
Sex	Female	144	79.6
	Male	37	20.4
Marital status	Single	54	29.8
	Married	125	69.1
	Widow/Divorced	2	1.1
Educational status	Primary school graduate	23	12.7
	Secondary school graduate	12	6.6
	High school graduate	67	37.0
	University	76	42.0
	Postgraduate	3	1.7
Employment status	Working	77	42.5
	Not working	104	57.5
Chronic disease	Existing	40	22.1
	Absent	141	77.9
Interview with a psychologist/psychiatrist	Yes	55	30.4
	No	126	69.6
Smoking status	Yes	35	19.3
	No	146	80.7
Alcohol status	Yes	11	6.1
	No	170	93.9
Physical activity for sport	Yes	61	33.9
	No	119	66.1

Descriptive statistics (n and %)

Table 2. Nutrition-related Characteristics of Applicants (Trabzon, 2020)

Characteristics		n	%
Main meal	1	4	2.2
	2	62	34.3
	3	113	62.4
	4 and over	2	1.1
Snack	1	45	24.9
	2	88	48.6
	3	38	21.0
	4 and over	10	5.5
Eating speed according to applicant's statement	Fast	71	39.2
	Normal	99	54.7
	Slow	11	6.1
Eating by emotion change	Yes	127	70.2
	No	54	29.8
Discomfort from eating in crowded environments	Yes	82	45.3
	No	99	54.7
Prefering to be alone while eating	Yes	60	33.5
	No	119	66.5
Applicant's perception of her/his own body	Underweight	4	2.2
	Normal	29	16.0
	Overweight	100	55.2
	Obese	48	26.5
Fear of gaining weight	Yes	158	87.3
	No	23	12.7
Previous weight loss attempt and its result	No	66	36.5
	Yes, positive	78	43.1
	Yes, negative	37	20.4

Descriptive statistics (n and %)

18-63 years and the mean age was 37.16±11.07 years. The The sociodemographic characteristics of the applicants are shown in Table 1.

The mean body weight of the research applicants was 85.22±17.05 kg and the mean height was 164.67±8.15 cm. The mean body mass index (BMI) was 31.44±6.09 kg/m2. The daily time spent in physical activity for sport ranges from 10-90 minutes; the mean was 36.33±18.62 minutes.

Nutrition-related Characteristics of Applicants

It was determined that 63% (n=114) individuals ate in front of the TV and/or computer. 62.4% (n=113) applicants were consumed as 3 main meals. Some of the nutrition-related characteristics of the research applicants are shown in Table 2.

In order of frequency, the most frequently consumed foods in snacks were nuts such as walnuts and hazelnuts (34.3%), cakes and biscuits (31.5%), fruit (30.4%), pastries such as bagels and buns (17.1%), chips, chocolate and candies (15.5%), and milk, ayran and yogurt (14.4%).

Applicants' Scale Scores and Related Factors

The median score of the subscale of substance taken in larger amount and for longer period than intended was 0 (0-3), and the median score of Persistent desire or repeated unsuccessful attempt to quit was 2 (0-8). The subscale scores of the applicants are shown in Table 3.

Food addiction was determined in 39 (21.7%) of the individuals participating in the study. It was found that there were statistically significant differences between Subscale 1, Subscale 3, Subscale 4, Subscale 7 and Subscale 8 in terms of the levels of meeting the subscales of the scale in participants with and without food addiction (Table 4).

While no relationship was found between age and eating addiction (t=1.141, p=0.255), a significant difference was found between BMI and food addiction groups (absent of food

Table 3. Scores of the Research Applicants from the Subscales and Scales of the YALE Food Addiction Scale (Trabzon, 2020)

Subscales	Median	Min	Max
Substance taken in larger amount and for longer period than intended (Subscale 1)	0.00	0.00	3.00
Persistent desire or repeated unsuccessful attempt to quit (Subscale 2)	2.00	0.00	8.00
Much time/activity to obtain, use, recover (Subscale 3)	0.00	0.00	3.00
Important social, occupational, or recreational activities given up or reduced (Subscale 4)	0.00	0.00	11.00
Use continues despite knowledge of adverse consequences (Subscale 5)	1.00	0.00	1.00
Tolerance (Subscale 6)	1.00	0.00	2.00
Withdrawal symptoms (Subscale 7)	0.00	0.00	3.00
Use causes clinically significant impairment or distress (Subscale 8)	0.00	0.00	2.00
Total score	3.00	0.00	6.00
Total score of applicants with food addiction	5.00	3.00	6.00
Total score of applicants without food addiction	3.00	0.00	5.00

Descriptive statistics (Median, Minimum and Maximum)

Table 4. Levels of meeting of the subscales of the scale in applicants with and without food addiction (Trabzon, 2020)

Food addiction	Test statistics	Absent		Existing		p value
		n	%	n	%	
Subscale 1	Not meeting the criterion	12	30.8	104	73.8	24.640
	Meeting the criterion	27	69.2	37	26.2	<0.001
Subscale 2	Not meeting the criterion	1	2.6	17	12.1	3.059
	Meeting the criterion	38	97.4	124	87.9	0.080
Subscale 3	Not meeting the criterion	9	23.1	120	85.1	57.889
	Meeting the criterion	30	76.9	21	14.9	<0.001
Subscale 4	Not meeting the criterion	13	33.3	97	68.8	16.165
	Meeting the criterion	26	66.7	44	31.2	<0.001
Subscale 5	Not meeting the criterion	24	61.5	62	44.0	3.778
	Meeting the criterion	15	38.5	79	56.0	0.052
Subscale 6	Not meeting the criterion	13	33.3	41	29.1	0.263
	Meeting the criterion	26	66.7	100	70.9	0.608
Subscale 7	Not meeting the criterion	16	41.0	126	89.4	42.857
	Meeting the criterion	23	59.0	15	10.6	<0.001
Subscale 8	Not meeting the criterion	0	0.0	139	98.6	168.791
	Meeting the criterion	39	100.0	2	1.4	<0.001

Chi-square test

addiction=30.80±6.06, existing of food addiction=33.89±5.63, t=2.859, p=0.005). Additionally, interview with a psychologist/psychiatrist, smoking status, and eating speed according to applicant's statement showed significant differences between people with and without food addiction. The significance for eating speed according to applicant's statement was due to fast and normal groups. However, no statistical results were determined for alcohol status, main meal, and fear of gaining weight because the chi-square test assumptions were not met. Other factors associated with food addiction are shown in Table 5.

DISCUSSION

In our research, the frequency of food addiction in people who consulted to healthy nutrition counsultancy was 21.7%. In the study by Bayraktar et al. (2012), the norm score of food addiction was found 11.6% (15). In the study by Mutlu and Sargın (2021) with obese people, the frequency of food addiction was 35.1%, in the study by Atabay et al. (2019) in the diet outpatient clinic, the frequency of food addiction

Table 5. Factors Associated with Food Addiction (Trabzon, 2020)

		Food addiction Absent		Existing		Test statistics	p value
		n	%	n	%		
Sex	Female	111	78.7	33	84.6	0.663	
	Male	30	21.3	6	15.4	0.416	
Marital status*	Single/Widow/Divorced	40	28.4	13	33.3	0.362	
	Married	101	71.6	26	66.7	0.547	
Educational status*	High school and below	84	59.6	17	43.6	3.170	
	University and above	57	40.4	22	56.4	0.075	
Employment status	Working	62	44.0	14	35.9	0.816	
	Not working	79	56.0	25	64.1	0.366	
Chronic disease	Existing	32	22.7	8	20.5	0.084	
	Absent	109	77.3	31	79.5	0.772	
Interview with a psychologist/psychiatrist	Yes	34	24.1	20	51.3	10.738	
	No	107	75.9	19	48.7	0.001	
Smoking status	Yes	22	15.6	12	30.8	4.587	
	No	119	84.4	27	69.2	0.032	
Alcohol status**	Yes	7	5.0	4	10.3		
	No	134	95.0	35	89.7		
Physical activity for sport	Yes	49	34.8	11	28.9	0.453	
	No	92	65.2	27	71.1	0.501	
Main meal**	1 and 2	47	33.3	19	48.7		
	3 and over	94	66.7	20	51.3		
Snack*	1	34	24.1	11	28.2		
	2	71	50.4	16	41.0	1.069	
	3 and over	36	25.5	12	30.8	0.586	
Eating speed according to applicant's statement	Fast ǂ	49	69.0	22	31.0		
	Normal ǂ	83	83.8	16	16.2	6.203	
	Slow	9	90.0	1	10.0	0.045	
Eating by emotion change	Yes	95	67.4	31	79.5	2.134	
	No	46	32.6	8	20.5	0.144	
Discomfort from eating in crowded environments	Yes	64	45.4	17	43.6	0.040	
	No	77	54.6	22	56.4	0.841	
Prefering to be alone while eating	Yes	97	69.8	22	56.4	2.458	
	No	42	30.2	17	43.6	0.117	
Applicant's perception of her/his own body*	Underweight/Normal	29	20.6	3	7.7	3.465	
	Overweight/Obese	112	79.4	36	92.3	0.063	
Fear of gaining weight**	Yes	122	86.5	36	92.3		
	No	19	13.5	3	7.7		
Previous weight loss attempt and its result	No	56	39.7	9	23.1		
	Yes, positive	58	41.1	20	51.3	3.695	
	Yes, negative	27	19.1	10	25.6	0.158	

Chi-square test
* Categories were merged to meet the test assumptions.
** The test assumptions were not met.
ǂ indicates the groups where the difference is due.

was 60.4%, in the study by Ozkan et al. (2017) with slightly overweight/obese women, the frequency of food addiction was determined as 38%, in the study by Mengi Celik and Karacil Ermumcu (2022) with people from the community, the frequency of food addiction was 23%, in the study by Tinkir Saatcioglu and Eryilmaz (2021) with obese people, the frequency of food addiction was 34%, in the study by Guler et al. (2022) with patients with Obstructive Sleep Apnoea Syndrome, the frequency of food addiction was 71.4% (16-21), and in the study of Guerrero Perez et al. (2018) with obese patients the frequency of food addiction was determined as 26.8% (22). In a systematic review conducted by Pursey et al. (2014) in which they included 25 studies and 196.211 mostly overweight/obese and female participants, the prevalence of food addiction was found 19.9% (12). In a meta-analysis conducted by Praxedes et al. (2022) the prevalence of food addiction was found to be 20%. In this study, the prevalence of food addiction was higher in clinical samples compared to non-clinical samples (23). In another meta-analysis conducted by de Melo Barros et al. (2023) to evaluate Latin American countries, 38% in clinical samples and 15% in non-clinical samples were calculated, and it was stated that this situation was quite similar to other regions of the worldwide (24). In studies conducted with high school and university students, it was observed that the frequency of food addiction ranged from 9% to 75.7% (25-28). In studies conducted with samples representing the society, the frequency of food addiction was found 7.9% in Germany, 9% in Denmark, and 15.2% in the USA (29-31). The frequencies found both in our study and in the literature are high. Especially in overweight/obese individuals, the frequency of food addiction is significantly higher. In our research, the applicants were mostly people with weight problems who consulted to healthy nutrition counsultancy. This explains the high frequency we obtained. However, in studies conducted with students and the general population, high frequencies are also observed. It is thought that changing nutrition and living habits may be the reason for this situation.

Among the research participants, the mean BMI of those with food addiction was found higher than those without food addiction. Additionally, this difference was significant between the two groups. There are similar findings in the studies by Mengi Celik and Karacil Ermumcu (2022), Kayhan and Unveren (2017), Hauck et al. (2017), Horsager et al. (2020), and Schulte and Gearhardt (2018) (19, 28-30, 32). In the study by Ozkan et al. (2017) and Ozgur and Ucar (2018), no relationship was found between food addiction and BMI (18, 25). Generally, it can be interpreted that food addiction is associated with being overweight/obese and that BMI increases can be found in the etiology of food addiction. Different results in the literature may be due to the differences in the place where the research was conducted and the participant groups' characteristics such as distrubition of age, sex, BMI.

In our research, relationships were found between food addiction and smoking and interviewing a psychologist/psychiatrist. In the study of Ozgur and Ucar (2018), there was a relationship between food addiction and smoking (25). In the studies of Mutlu and Sargın (2021), and Romero-Blanco et al. (2021), unlike our study, no relationship was found between food addiction and smoking (16, 33). Studies have indicated that people with food addiction have symptoms of anxiety and depression (16, 18, 34). It is known that behavioral addictions and substance addictions have common features (35). For this reason, it can be thought that various addictions and mental problems can coexist.

In our research, a significant relationship was found between eating speed according to the applicant's statement and food addiction. In the group with food addiction, the number of applicants who think they eat fast is high. In the studies by Aktaş et al. (2015) and Ulaş et al. (2013), a relationship was found between BMI and eating speed (36, 37). In the study by Koruk and Sahin (2005) in which they investigated the frequency of obesity in women aged 15-49, eating speed was associated with obesity (38). It was thought that participants with a high-eating speed would have more food consumption compared to individuals with a low-eating speed. This may lead to food addiction and obesity with an increase in BMI.

In our research, no relationship was determined between food addiction and other variables such as age, gender, employment status, and physical activity. In the studies of Mutlu and Sargın (2021), and Guerrero Perez et al. (2018) no relationship was found between age, gender and food addiction (16, 22). In the study of Mengi Celik and Karacil Ermumcu (2022), there was no relationship between food addiction, gender and physical activity (19). In the study of Hauck et al. (2017), no relationship was found between gender and food addiction, but also found a relationship between age and food addiction (29). In the literature, there are also studies that found a relationship between food addiction and variables such as gender, age, marital status, and dieting (21, 25, 37, 39). These different results in the literature may be because of the place of the research and differences in the individuals included in the research.

Limitations and Advantages of The Research

The research was limited to people who consulted to Fatih HLC-HNC in Ortahisar district of Trabzon province. Another limitation is that the research data were collected based on the self-reports of individuals. The superior aspect of the study is that it investigates the frequency and factors associated with food addiction in an important issue.

CONCLUSION

As a conclusion of our research, the frequency of food addiction was found 21.7% in people who consulted to healthy nutrition consultancy. Significant relationships were found between food addiction and interview with a psychologist/psychiatrist, smoking status, BMI, and eating speed according to applicant's statement, but no relationship was determined between food addiction and other variables.

Information and awareness studies on food addiction can be considered as a public health priority. To detect food addiction, food addiction screening can be done with the help of scales in healthy nutrition consultancy, diet polyclinics, family health centers and schools. People who are found to have food addiction because of screening should be directed to centers where they will be managed multidisciplinary. Additionally, regular anthropometric measurements in family health centers and directing overweight/obese people to dietitians may be effective in struggling with food addiction.

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KAYNAKLAR

1. WHO. Non-communicable disease fact sheet. Available at https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases Access date: 20.07.2022.
2. WHO. Obesity and overweight fact sheet. Available at https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight Access date: 20.07.2022
3. WHO. Mental disorders fact sheet. Available at https://www.who.int/news-room/fact-sheets/detail/mental-disorders Access date: 20.07.2022
4. Hauck C, Cook B, Ellrott T. Food addiction, eating addiction and eating disorders. Proc Nutr Soc 2020;79(1):103-12.
5. Fletcher PC, Kenny PJ. Food addiction: A valid concept? Neuropsychopharmacology 2018; 43(13): 2506-13.
6. Avena NM, Rada P, Hoebel BG. Sugar and fat bingeing have notable differences in addictive-like behavior. Journal of Nutrition 2009; 139(3): 623-8.
7. Avena NM, Gold MS. Food and addiction-sugars, fats and hedonic overeating. Addiction 2011;106:1214-5.
8. Novelle MG, Diéguez C. Food addiction and binge eating: Lessons learned from animal models. Nutrients 2018;10(1):71.
9. Volkow ND, Wise RA, Baler R. The dopamine motive system: Implications for drug and food addiction. Nat Rev Neurosci 2017;18(12): 741-52.
10. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th edition. 2013. USA.
11. Yekaninejad MS, Badrooj N, Vosoughi F, et al. Prevalence of food addiction in children and adolescents: A systematic review and meta-analysis. Obes Rev 2021; 22(6): e13183.
12. Pursey KM, Stanwell P, Gearhardt AN, et al. The prevalence of food addiction as assessed by the Yale Food Addiction Scale: A systematic review. Nutrients 2014; 6(10): 4552-90.
13. Faul F, Erdfelder E, Buchner A, et al. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods 2009;41:1149-60.
14. Gearhardt AN, Corbin WR, Brownell KD. Preliminary validation of the Yale Food Addiction Scale. Appetite 2009; 52(2): 430-6.
15. Bayraktar F, Erkman F, Kurtulus E. Adaptation study of Yale Food Addiction Scale. Bulletin of Clinical Psychopharmacology (Klinik Psikofarmakol Bülteni) 2012;22:38.
16. Mutlu HH, Sargin M. Food addiction prevalence and related factors among people with obesity: A hospital-based study. Ankara Med J 2021;1:22-34.
17. Atabay FE, Altin D, Altin B. Epidemiological research of food addiction within patients referred to diet policlinic. Cyprus Turkish Journal of Psychiatry and Psychology (Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi) 2019; 1(Special issue 1): 27-9.
18. Ozkan I, Devrim A, Bilgic P. Evaluation of the relationship between food addiction, nutritional status and depression in overweight and obese women. Journal of Nutrition and Dietetics (Bes Diy Derg) 2017;45(3): 242-9.
19. Mengi Celik O, Karacil Ermumcu MS. The evaluation of the changes in the anthropometric measurements and physical activity levels of individuals according to food addiction during the pandemic period. Bes Diy Derg 2022; 50(1):35-44.
20. Tinkir Saatcioglu N, Eryilmaz G. Examination of the relationship between obesity, eating addiction and emotional violence. Current Addiction Research 2021;5(1):5-15.
21. Guler AY, Tinkir Saatcioglu N, Eryilmaz G. Investigation of the relationship between depression, anxiety and eating addiction in patients with obstructive sleep apnea syndrome. Current Addiction Research 2022; 6(1): 5-12.
22. Guerrero Perez F, Sanchez-Gonzalez J, Sanchez I, et al. Food addiction and preoperative weight loss achievement in patients seeking bariatric surgery. Eur Eat Disord Rev 2018;26(6): 645-56.
23. Praxedes DRS, Silva-Júnior AE, Macena ML, et al. Prevalence of food addiction determined by the Yale Food Addiction Scale and associated factors: a systematic review with meta-analysis. Eur Eat Disord Rev 2022;30(2):85-95.
24. de Melo Barros L, da Silva Júnior AE, Praxedes DRS, et al. Prevalence of food addiction determined by the Yale Food Addiction Scale in Latin America: A systematic review with meta-analysis. Int J Eat Disord 2023;56(4): 677-90.
25. Ozgur M, Ucar A. Assessment of food addiction and night eating syndrome in university students living in Ankara. Ankara Journal of Health Sciences (Ankara Sağlık Bilimleri Dergisi) 2018; 7(1): 10-21.
26. Cakir E, Kizilkaya M. Factors affecting eating addiction and anxiety level of high school final students. Medical Sciences 2021;16(3):159-70.
27. Alan H, Gungor S, Gumustag G, et al. Food addiction and affecting factors in nursing undergraduate students. Journal of Turkish Nurses Association (Türk Hemşireler Derneği Dergisi) 2021; 2(1):27-41.
28. Kayhan M, Unveren A. Comparison of physical activity level and food addiction of physical education and sports science college students. Sports Perspective: Journal of Sports and Educational Sciences (Sportif

Bakış: Spor ve Eğitim Bilimleri Dergisi) 2017; SI(1): 98-108.
29. Hauck C, Weiss A, Schulte EM, et al. Prevalence of "food addiction" as measured with the Yale Food Addiction Scale 2.0 in a representative German sample and its association with sex, age and weight categories. Obes Facts 2017;10(1):12-24.
30. Horsager C, Færk E, Lauritsen MB, et al. Validation of the Yale Food Addiction Scale 2.0 and estimation of the population prevalence of food addiction. Clin Nutr 2020;39:2917-28.
31. Carr MM, Schulte EM, Saules KK, et al. Measurement invariance of the modified Yale Food Addiction Scale 2.0 across gender and racial groups. Assessment 2020;27(2):356-64.
32. Schulte EM, Gearhardt AN. Associations of food addiction in a sample recruited to be nationally representative of the United States. Eur Eat Disord Rev 2018;26(2):112-9.
33. Romero-Blanco C, Hernández-Martínez A, Parra-Fernández ML, et al. Food addiction and lifestyle habits among university students. Nutrients 2021;13:1352.
34. Imperatori C, Innamorati M, Lamis DA, et al. Body uneasiness is associated with food addiction symptoms: A cross-sectional study. Eur Eat Disord Rev 2018; 26(6): 638-44.
35. Zubaroglu Yanardag M, Bilge M, Yanardag U. An examination on behavioral addiction and social work practices. Manisa Celal Bayar University Journal of Health Sciences Institute (Manisa Celal Bayar Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi) 2020;7:551-60.
36. Aktas D, Ozturk FN, Kapan Y. Determination of the obesity prevalence and affecting risk factors, of eating habits among adolescents. TAF Preventive Medicine Bulletin 2015;14:406-12.
37. Ulas B, Uncu F, Uner S. Prevalence and affecting factors of potential eating disorders among students of health higher education. İnönü University Journal of Health Sciences (İnönü Üniversitesi Sağlık Bilimleri Dergisi) 2013; 2: 15-22.
38. Koruk I, Sahin TK. Prevalence and risk factors of obesity among 15-49 years-old house-wives in Fazilet Uluışık Health District in Konya. General Medical Journal (Genel Tıp Dergisi) 2005;15:147-55.
39. Pipová H, Kascáková N, Fürstová J, et al. Development of the Modified Yale Food Addiction Scale Version 2.0 summary version in a representative sample of Czech population. J Eat Disord 2020; 8: 16.

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Dil Bozukluğu Tanılı Çocuklarda Emosyon Regülasyonu ve Davranış Özellikleri

Emotion Regulation and Behavioral Characteristics in Children with Language Impairment

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ÖZET

Amaç: Dil bozukluğu sözcük dağarcığının azlığı, cümle yapılarının sınırlı olması ve konuşma bozukluğu ile karakterize nörogelişimsel bir bozukluktur. Emosyon regülasyonu bireyin duygularının ifadesinin gücünü ve zamanlamasını değiştirmek için kullandığı bilişsel ve davranışsal becerileri ifade eder. Sağlıklı bir iletişim kurabilme becerisi duygu düzenleyebilme kapasitesi ile yakından ilişkilidir. Bu çalışmada okul öncesi dönemde dil bozukluğu tanısı alan çocukların emosyon regülasyonu, sorunlu davranışları ve bunların birbirleri ile ilişkisinin araştırılması amaçlanmaktadır.
Yöntem: Ruhsal Bozuklukların Tanısal ve İstatistiksel El Kitabı-5'e göre dil bozukluğu tanısı alan 2-6 yaş arası 46 katılımcı ile hasta grubu ve herhangi bir psikiyatrik tanısı olmayan 2-6 yaş arası 40 sağlıklı katılımcı ile kontrol grubu oluşturulmuştur. Klinisyen tarafından sosyodemografik veri formu, katılımcı ebeveynleri tarafından duygu düzenleme ölçeği ve okul öncesi davranış ölçeği doldurulmuştur.
Bulgular: Gruplar arasında cinsiyet ve yaş dağılımı açısından anlamlı farklılık saptanmadı. Dil bozukluğu grubunda duygu düzenleme ölçeği toplam puanı (p=0.002) kontrol grubuna kıyasla anlamlı olarak düşüktü. Okul öncesi davranış ölçeği toplam puanı dil bozukluğu grubunda kontrol grubuna kıyasla anlamlı olarak daha yüksek saptanmıştır (p=0.01). Ölçek toplam ve alt ölçek puanları arasında herhangi bir korelasyon saptanmamıştır.
Sonuç: Çalışmamızdan elde ettiğimiz sonuçlar yaşıtlarına kıyasla dil bozukluğu tanılı çocukların emosyon regülasyonu becerilerinin daha zayıf ve davranış sorunlarının daha fazla olduğunu göstermektedir. Dil bozukluğu tanısı olan çocukların duygusal ve davranışsal açıdan erken dönemde takibe alınmasının, duygu düzenleme becerilerinin geliştirilmesinin ve davranış sorunlarının önüne geçilmesinin bu çocukların mental sağlığı açısından önemli olabileceğini düşünüyoruz.

Anahtar Kelimeler: Duygu, konuşma, regülasyon

ABSTRACT

Objective: Language impairment is a neurodevelopmental disorder characterized by reduced vocabulary, limited sentence structure and speech impairment. Emotion regulation refers to the cognitive and behavioral processes an individual uses to change the strength and timing of the expression of emotions. Healthy communication is closely related to the capacity to regulate emotions. In this study, it is aimed to investigate emotion regulation, problematic behaviors and their relationship with each other in preschool children diagnosed with language impairment.
Method: A patient group was formed with 46 participants aged 2-6 years with a diagnosis of language disorder according to the Diagnostic and Statistical Manual of Mental Disorders-5 and a control group was formed with 40 healthy participants aged 2-6 years without any psychiatric diagnosis. A sociodemographic data form was completed by the clinician, and the emotion regulation scale and preschool behavior scale were completed by the parents of the participants.
Results: No significant difference was found between the groups in terms of gender and age distribution. Emotion regulation scale total score (p=0.002) and resilience/negativity subscale (p=0.021) were significantly lower in the language disorder group compared to the control group. Preschool behavior scale total score was significantly higher in the language impairment group compared to the control group (p=0.01). No correlation was found between the total and subscale scores.
Conclusion: The results of our study show that children diagnosed with language impairment have weaker emotion regulation skills and more behavioral problems compared to their peers. We think that early emotional and behavioral follow-up of children with language disorder, improvement of emotion regulation skills and prevention of behavioral problems may be important for the mental health of these children.

Key words: Emotion, speech, regulation

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GİRİŞ

Dil bozukluğu (DB) bireyin yaşı ve gelişim düzeyinden beklenen kelimeleri ve cümleleri kullanarak düşüncelerini ifade etmekte güçlük yaşadığı nörogelişimsel bir bozukluktur (1). Bu çocuklar kısıtlı sözcük dağarcığı ile kendilerini ifade etmeye çabalarlar ve çoğunlukla grameri bozuk ve kısa cümleler kurarlar. En sık belirti zayıf bir kelime dağarcığına sahip olmaktır. Konuşmaları genellikle bütünlükten yoksun ve karmaşık yapıdadır (2). Tipik gelişim gösteren akranlarına kıyasla daha az kelime öğrenme becerisi gösterirler. Bu belirtilere ek olarak kelimelerin fonolojik ve anlamsal özelliklerine daha az duyarlı oldukları bilinmektedir (3). Bu nedenlerle dil becerileri yönünden yaşıtlarından daha küçük algılanırlar. Dil edinimi ve dil becerilerinin gelişimi açısından okul öncesi ve okul çağı çocuklarının dil gelişimi sırası ile %7 ile %15 oranında yaşıtlarından farklılık göstermektedir. Bu duruma sebep olan bozukluklardan DB prevalansının ise %2.2 ila %7 arasında değiştiği bildirilmektedir. DB tanısı anaokuluna devam eden çocukların %7'sini etkilemekte ve bu nedenle çocuklarda sık görülen bir nörogelişimsel bozukluk olarak kabul edilmektedir (4). Yapılan bir çalışmada eski ismi ile iletişim bozuklukları 0-6 yaş aralığındaki polikliniğe başvuran çocuklarda saptanan ikinci en sık tanı olmuştur (5). DB'da konuşma gecikmesi diğer nörogelişimsel bozuluklara bağlı değildir. Dolayısı ile zeka düzeyi açısından yaşıtları ile benzer düzeyde oldukları için DB tanısı olan çocuklar kendilerini akranlarıyla kıyaslayarak konuşmalarında ters giden bir şeyler olduğuna dair yüksek farkındalık geliştirmekte ve bu farkındalık yaş ile birlikte artmaktadır. 6-12 yaş arası konuşma bozukluğu olan çocukların motor ve dil becerilerinin yanı sıra sosyal ve duygusal becerilerinin de DB olmayan akranlarından bir takım farklılıklar gösterdiği saptanmıştır (4).

Duygusal becerilerin önemli bir parçası olan emosyon regülasyonu bireyin hedeflerine ulaşmak için duygularını izlemek ve duygularını ifade etme gücünü ve zamanlamasını değiştirmek için kullandığı bilişsel ve davranışsal süreçleri ifade eder (6). Emosyon regülasyonu, duygusal yeterliliğin önemli bir parçasıdır ve kişinin ulaşmak istediği hedeflere göre duyguların kalitesini, yoğunluğunu, süresini ve ifadesini değiştirmesine olanak tanıyan bir yeteneği tanımlamaktadır (7). Emosyon regülasyonu tek bir davranış değil, süreçler ve stratejiler bütünüdür. Duyguları anlama, ifade etme ve düzenleme becerisi anlamına gelen duygusal yeterlilik, okula uyum, sosyal işlevsellik ve başarı için oldukça önemlidir. Bu bağlamda, dil becerilerinin çocuklarda ve ergenlerde sosyal ve duygusal gelişim için temel bir bileşen olduğu öne sürülmüştür (8). Dil becerilerinin duygusal deneyimlerin zihindeki temsilini desteklediği ve bu temsillerin anlamlandırılmasında, detaylandırılmasında ve dolayısı ile duyguların düzenlenmesinde önemli rolü olduğu kabul edilmektedir. Diğer bir ifade ile dil becerileri ile duygusal yeterlilik arasında yakın bir ilişki bulunmaktadır (9).

DB varlığı çocuklar için iletişimde, sosyal etkileşimlerde ve eğitim bağlamlarında stres kaynağı olmaktadır (10). Duyguları düzenlemeyi öğrenmek, iletişimin önemli bir rol oynadığı, diğer insanlarla sosyal etkileşime büyük ölçüde bağlıdır (11). DB olan çocuklar için iletişim sorunları, erken yaşlardan itibaren başkalarıyla etkileşimi sınırlar (10). Bu çocuklar önemli bilgileri kaçırırlar, daha fazla işlem süresine ihtiyaç duyarlar ve genellikle sosyal etkileşimlerde neler olup bittiğini tam olarak anlayacak kelime dağarcığından yoksundurlar. Bu nedenle, duygularını düzenlemekte ve yönetmekte zorlanabilirler (12). Günümüze kadar sınırlı sayıda çalışma emosyon regülasyonu ve DB ilişkisini araştırmış olup bu çalışmalar okul dönemi çocukları, ergenler veya erişkin bireyler ile yapılmıştır (12,13). Bu çalışmada okul öncesi dönemdeki DB tanısı alan çocukların emosyon regülasyonu, sorunlu davranışları ve bunların birbirleri ile ilişkisinin araştırılması amaçlanmıştır.

YÖNTEM

Katılımcılar

Hasta grubuna dahil edilmek üzere Ruhsal Bozuklukların Tanısal ve İstatistiksel El Kitabı (DSM)-5 tanı kriterleri baz alınarak hasta değerlendirmeleri yapılmış 54 hastaya DB tanısı konulmuştur. DB tanısı alan 54 katılımcıdan 5'i çalışmaya katılmayı reddetmiş, 3'ü de formları doldurmamıştır ve böylelikle göre DB tanısı alan 2-6 yaş arası 46 katılımcı ile hasta grubu oluşturulmuştur. Hasta grubuna herhangi bir nörolojik tanısı olan, DB'na ek olarak herhangi bir psikiyatrik tanısı olan ve geçmişte psikiyatrik ilaç kullanımı olan katılımcılar dahil edilmemiştir. Kontrol grubu herhangi bir psikiyatrik ve organik bozukluk (nörolojik bozukluklar, diyabet, astım vb.) tanısı olmayan, pediatri polikliniğine rutin kontrol takipleri için gelen 2-6 yaş arası 40 sağlıklı katılımcı ile oluşturulmuştur. Pediatri polikliğine başvurup kontrol grubuna katılma kriterlerini sağlayan katılımcıların çocuk ve ergen ruh sağlığı ve hastalıkları polikliniğine yönlendirilmiş ve psikiyatrik muayenesi yapılarak çalışmaya dahil edilmiştir. Hasta ve kontrol gruplarına dahil edilen katılımcıların ebeveynlerinden yazılı ve sözlü onam alınmıştır.

Veri toplama araçları

Psikiyatrik muayeneyi takiben kliniyen tarafından sosyodemografik veri formu doldurulmuştur. Ardından katılımcıların ebeveynlerin tarafından duygu düzenleme ölçeği (DDÖ) ve okul öncesi davranış ölçeği (OÖDÖ) doldurulmuştur. Her iki ölçeğin de Türkçe geçerlilik ve güvenilirlik çalışmaları yapılmıştır (14,15).

İstatistiksel analiz

İstatistiksel analizler Statistical Package for the Social Sciences 25. Versiyonu (SPSS Inc., Chicago, IL) kullanılarak

değerlendirilmiştir. Veriler, sayısal değişkenler için ortalama (standart sapma [SD]) olarak sunulmuştur. Değişkenlerin normal dağılıp dağılmadığını belirlemek için Kolmogorov-Smirnov normallik testi kullanılmıştır. Korelasyon analizlerinde Spearman testi kullanılmıştır. Analizlerde anlamlılık değeri $p<0.05$ olarak kabul edilmiştir.

BULGULAR

Yaş ortalaması 51.20 ±11.71 (ay) olan 46 olgu ile hasta grubu, yaş ortalaması 49.73 ±11.35 (ay) olan 40 katılımcı ile kontrol grubu oluşturuldu. Gruplar arasında cinsiyet ve yaş dağılımı açısından anlamlı farklılık saptanmadı. Katılımcıların sosyodemografik özellikleri Tablo 1'de verilmiştir. DB grubunda DDÖ toplam puanı ($p=0.002$) kontrol grubuna kıyasla istatistiksel olarak anlamlı düzeyde düşük bulundu. DDÖ alt ölçeklerinden dayanıklılık/olumsuzluk ($p=0.021$) alt ölçeği kontrol grubuna kıyasla DB grubunda anlamlı olarak düşük saptandı. OÖDÖ toplam puanı DB grubunda kontrol grubuna kıyasla anlamlı olarak daha yüksek saptanmıştır ($p=0.01$). Ölçek toplam ve alt ölçek puanları arasında herhangi bir korelasyon saptanmamıştır. Katılımcılara ait ölçek puanları Tablo 2'de verilmiştir.

Tablo 1. Katılımcıların sosyodemografik verileri

		Hasta Grubu	Kontrol Grubu	Toplam
Cinsiyet	Kız	19	16	35
	Erkek	27	24	41
		Ort+SD	**Ort+SD**	**p**
Yaş (ay)		51.20+-11.71	49.73+-11.35	0.557
Anne yaş (yıl)		31.65+-0.79	31.70+-5.37	0.96
Baba yaş (yıl)		34.61+-6.40	33.98+-3.66	0.58

Ort: ortalama; SD: standart sapma

Tablo 2. Hasta ve kontrol grubu ölçek puanları

	Hasta Grubu	Kontrol Grubu	p
Duygurum Düzenleme Ölçeği-Toplam	71.57 ± 7.96	76.11 ± 5.05	0.002
Duygurum Düzenleme Ölçeği-Dayanıksızlık/Olumsuzluk	45.87 ± 6.49	48.74 ± 4.46	0.021
Duygurum Düzenleme Ölçeği-Duygu Düzenleme	23.37 ± 3.54	24.67 ± 3.43	0.089
Okul Öncesi Davranış Ölçeği	17.23 ± 6.95	13.83 ± 4.87	0.01

TARTIŞMA

Son yıllarda konuşma bozukları ile duygu düzenleme arasındaki ilişki artan bir ilgi ile araştırılmaktadır. İletişim ve konuşma bozuklukları çocuk psikiyatri polikliniklerine yapılan başvuruların sık nedenleri arasında yer almaktadır (16). Çalışmamızdan elde ettiğimiz sonuçlar yaşıtlarına kıyasla DB tanılı çocukların emosyon regülasyonu becerilerinin daha zayıf ve davranış sorunlarının daha fazla olduğunu göstermektedir. Konuşma bozuklukları ve emosyon regülasyonu ilişkisini araştıran bir çalışmada kekemelik tanısı olan ilkokul çağı çocuklarında duygu düzenlenleme becerilerinin akranlarına kıyasla daha düşük olduğu saptanmıştır (17). Aynı çalışmada kekemeliği olan çocukların duygu düzemleme stratejilerini etkin bir şekilde ve yeteri kadar kullanamamalarından dolayı emosyon regülasyonunda daha zayıf oldukları belirtilmiştir. Diğer bireyler ile düzgün bir şekilde iletişim kurmak için, sözel ve sözel olmayan bilgileri ve duygu aktarım araçlarıyla ilgili olan konuşma ve dil gibi yetenekleri kullanmak çok önemlidir (18). DB olan çocukların da duygu düzenlemenin önemli bir parçası olan iletişim kurma noktasında önemli sorun yaşadıkları için duygularını düzenlemekte sağlıklı akranlarına kıyasla zorluk çektiğini düşünüyoruz. Yapılan araştırmalar, DB tanılı çocukların, olayların sonuçlarını daha az dikkate aldığı ve diğer kişiler tarafından ifade edilen duyguların düzeyiyle daha az uyumlu olarak, daha uygunsuz duygu ifadeleri sergilediği bildirmektedir ki bunlarda emosyon regülasyon sorunlarına işaret etmektedir (12,19). Duyguları anlama, eşduyum ve temkinlilik gibi uyum kapasitesini artırıcı alanlarda güçlük çekmeleri nedeni ile DB tanılı çocukların duygusal esnekliklerinin yetersiz olabileceği düşünülmektedir (19).

Duyguların üç seviyede düzenlenebileceği belirtilmiştir: girdi düzenlemesi, merkezi düzenleme ve çıktı düzenlemesi (20). Gelişimsel açıdan bakıldığında, çocuklar dışsal destekler aracılığı ile duygularını düzenleme becerisi geliştirirler. Bakımverenler çocukların duygularını yorumlamalarına ve

anlamalarına yardımcı olmak için yalnızca dışsal düzenleme değil, aynı zamanda içsel düzenleme için de önerilerde bulunurlar ve çocuğun yaşı ilerledikçe başkalarının yardımı olmadan kendi duygularını düzenlemede daha iyi hale gelirler (13). Çocuğun bağımsız olarak duygu düzenleme becerisi kazandığı bu yolda dil gelişimi önemli bir yer tutmaktadır. Bakımverenin dışsal olarak verdiği telkinleri alması yani girdi düzenlemesi kullanılan dili anlamasına bağlıdır. Benzer şekilde duygusal deneyimlerini paylaşabilmesi de duygusal yeterliliğin önemli bir parçasıdır ve duygu regülasyonunda çıktı düzenlemesi aşamasında dili kullanabilmesine bağlıdır (21). Çalışmalar çocukluk, ergenlik ve hatta yetişkinlik dönemlerinde tipik gelişim gösteren akranlarına kıyasla DB tanılı bireylerin daha yüksek düzeyde duygusal zorluklar yaşadığını göstermiştir (22,23). Diğer yaş gruplarındaki bu bilgiler ile uyumlu olarak DB tanısı olan okul öncesi çocukların da duygu düzenleme becerilerinin daha zayıf olduğu öne sürüyoruz.

Dil becerisinin duygu düzenleme gelişimi için önemli olduğu açıktır. Bununla birlikte, duygu düzenlemenin de dil gelişimini etkileyebileceği bir gerçektir. Bir çocuğun duygularını düzenleme becerisi, çocuğun dil öğrenimi için önemli olan bağlamlara katılımını etkileyebilir. Örneğin, duygu düzenlemesi zayıf olan bir çocuğun bakımvereni ile sağlıklı ve sürekli olarak sözel etkileşimlerde bulunması zor olabilir (13). Bu durum karşılıklı etkileşimi azaltacak ve çocuğun dil gelişimine negatif yönde etki edecek ve kısır bir döngü oluşacaktır.

Çalışmamızda DB olan çocukların sağlıklı akranlarına kıyasla daha fazla sorunlu davranış sergilediğini tespit ettik. Olumsuz duygulanımların mevcudiyeti kadar bu duyguların ayarlanması ve uyum sağlayıcı mekanizmaların sağlıklı bir şekilde kullanılması da bireyin işlevselliği açısından büyük önem taşımaktadır. Bu sayede çocuklar olumsuz duygulanımlarını düzenleyerek hızlı bir biçimde kendilerini sakinleştirebilirler böylelikle davranışlarını ortama ve duruma uygun bir şekilde yönlendirebilirler (12). Yapılan çalışmalar hem emosyon regülasyon kapasitesinin hem de dil yeteneklerinin sosyal davranış becerileri üzerinde güçlü bir etkisi olduğunu göstermiştir (12). Dolayısı ile duygularını düzenlemekte zorlanan çocukların davranışlarını kontrol edememesi olası bir sonuçtur ve çalışmamızın sonuçları da bu bilgileri desteklemektedir. Ayrıca elde ettiğimiz sonuçlar önceki araştırmalarda iletişim sorunu olan okul çağı çocuklarında gözlemlenen olumlu ve olumsuz duyguları düzenlemekte ve kendini sakinleştirebilmekte görülen güçlüklerin okul öncesi çocuklar için de geçerli olduğunu ortaya koymaktadır (11).

DB tanısı olan çocuklar uygun eğitimler alırlarsa tipik gelişen akranlarının seviyesinde dil gelişimine ulaşabilmektedirler (24). Diğer yandan DB nedeni ile akran zorbalığına maruz kalma ve kendini akranlarından farklı hissetme gibi durumlar çocukta travmaya yol açabilmekte ve bu çocukluk travmaları sonraki yaşam dönemlerinde bireyin mutluluk düzeylerini negatif olarak yordamaktadır (25). Ayrıca çocukların kelime dağarcıkları ile duygusal yetkinlikleri arasında pozitif bir ilişki olduğu bildirilmiştir (18). Bireylerin ruhsal sağlığı, sosyal ve aile içi ilişkileri yaşam kalitesini etkilemektedir ve DB'nun erken dönemde tedavi edilmesi çocukların ve ailelerin ruhsal sağlığı açısından önemli olacaktır (26,27). Bu bilgilere dayanarak DB tanılı çocukların erken dönemde saptanarak erken müdahele edilmesinin çocukların yalnızca pozitif dil gelişmi yönünden değil emosyon regülasyonu kapasitesi ve davranışları düzenleme becerileri üzerine olumlu katkıları olacağını düşünüyoruz.

Çalışmamız DB tanılı çocuklarda emosyon regülasyonu ve davranış sorunları hakkında önemli bilgiler vermekle birlikte bazı kısıtlılıkları bulunmaktadır. İlk olarak araştırmamızın kesitsel dizaynda olmasından dolayı neden-sonuç ilişkisi ortaya koyamamaktadır ve dil bozukluğunun kendisinin mi duygu düzenlemeyi güçleştirdiğini, yoksa duygu düzenleme becerilerindeki zayıflığın mı dil bozukluğu üzerinde etkisi olduğuna dair net bilgi sunamamaktadır. Çalışmamızın bir diğer sınırlılığı nispeten küçük bir örneklem grubu ile yapılmış olmasıdır. Son olarak katılımcılar tek bir ilden toplanmış olması da çalışmamızın kısıtlılıklarındandır. Daha geniş örneklemde yapılacak takip çalışmaları alana katkı sağlayacaktır.

SONUÇ

DB tanısı çocuk psikiyatri polikliniklerine başvurunun sık nedenlerindendir. Çalışmamız DB tanısı olan çocuklarda emosyon regülasyonu becerilerinin zayıf, davranış sorunlarının daha fazla olduğunu göstermiştir. Her iki durum da bireyin ileri yaşamındaki ruhsal bozukluklar ile ilişkilidir. DB tanısı olan çocukları erken dönemde tespit edip müdahalede bulunmak bireyin yaşamına ve ruhsal durumuna önemli faydalar sağlayacaktır.

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KAYNAKLAR

1. Włodarczyk E, Szkiełkowska A, Pilka A, et al. Assessment of cortical auditory evoked potentials in children with specific language impairment. Polish J Otolaryngol. 2018;72(1):16–22.
2. Bishop DVM. The Underlying Nature of Specific Language Impairment. J Child Psychol Psychiatry. 1992;33(1):3–66.
3. Alt M, Plante E. Factors That Influence Lexical and Semantic Fast Mapping of Young Children With Specific Language Impairment. J Speech, Lang Hear Res 2006;49(5):941–54.
4. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). 2014: 22-24
5. Türkoğlu S. Çocuk ve Ergen Psikiyatrisi Polikliniğine Başvuran Hastalarda Tanı Dağılımları. Selcuk Med J. 2014;30(3):118–22.
6. Gross JJ. The emerging field of emotion regulation: An integrative review. Rev Gen Psychol. 1998;2(3):271–99.
7. Gross JJ. Emotion regulation: current status and future prospects. Psychol Inq. 2015;26(1):1–26.
8. Eisenberg N, Sadovsky A, Spinrad TL. Associations of emotion-related regulation with language skills, emotion knowledge, and academic outcomes. New Dir Child Adolesc Dev. 2005;(109):109–18.
9. Beck L, Kumschick IR, Eid M, et al. Relationship between language competence and emotional competence in middle childhood. Emotion. 2012;12(3):503–14.
10. Andrés-Roqueta C, Adrian JE, Clemente RA, et al. Social cognition makes an independent contribution to peer relations in children with Specific Language Impairment. Res Dev Disabil. 2016;49(50):277–90.
11. Slaughter V, De Rosnay M, editor. Theory of mind development in context. New York: Psychology Press.; 2016.
12. Fujiki M, Spackman MP, Brinton B, et al. The Relationship of Language and Emotion Regulation Skills to Reticence in Children With Specific Language Impairment. J Speech, Lang Hear Res. 2004;47(3):637–46.
13. Fujiki M, Brinton B, Clarke D. Emotion regulation in children with specific language impairment. Lang Speech Hear Serv Schl. 2022;33:102–11.
14. Altan Ö. The effects of maternal socialization and temperament on children's emotion regulation (Unpuplished Master's Thesis), İstanbul. Koç University; 2006.
15. Kapci EG. The Reliability and Validity of the Preschool Behaviour Checklist to Turkish Nursery Children. Early Child Dev Care. 1999;150(1):43–51.
16. Şahingöz M, Kaya N. Bir Üniversite Hastanesi Çocuk Ergen Psikiyatrisi Polikliniğine Başvuran Hastaların Analizi. Selçuk Tıp Derg. 2011;27(3).
17. Aktürk ŞK, Ünsal EM. Okul Çağı Döneminde Kekemeliği Olan ve Olmayan Çocukların Duygu Düzenleme Becerilerinin Karşılaştırılması: Ön Bulgular. Dil Konuşma ve Yutma Araştırmaları Derg. 2019;2(2):104–20.
18. Aguilera M, Ahufinger N, Esteve-Gibert N, et al. Vocabulary Abilities and Parents' Emotional Regulation Predict Emotional Regulation in School-Age Children but Not Adolescents With and Without Developmental Language Disorder. Front Psychol. 2021;9:12.
19. Brinton B, Fujiki M, Hurst NQ, et al. The Ability of Children With Language Impairment to Dissemble Emotions in Hypothetical Scenarios and Natural Situations. Lang Speech Hear Serv Sch. 2015;46(4):325–36.
20. Campos JJ, Mumme DL, Kermoian R, et al. A functionalist perspective on the nature of emotion. Monogr Soc Res Child Dev. 1994;59(2–3):284–303.
21. Saarni C. Emotional competence and self-regulation in childhood. In: Sluyter PS& DJ, editor. Emotional development and emotional intelligence: Educational implications. New York; 1997:(36–66).
22. Durkin K, Conti-Ramsden G. Young people with specific language impairment: A review of social and emotional functioning in adolescence. Child Lang Teach Ther. 20109;26(2):105–21.
23. Conti-Ramsden G, Mok PLH, Pickles A, et al. Adolescents with a history of specific language impairment (SLI): Strengths and difficulties in social, emotional and behavioral functioning. Res Dev Disabil. 2013;34(11):4161–9.
24. Nelson KE, Camarata SM, Welsh J, et al. Effects of Imitative and Conversational Recasting Treatment on the Acquisition of Grammar in Children With Specific Language Impairment and Younger Language-Normal Children. J Speech, Lang Hear Res. 1996;39(4):850–9.
25. Acat Ö, Hisar K. Childhood Traumas, Ego Defense Mechanisms And Happiness Levels in Students Of A Medical School. Genel Sağlık Bilim Derg. 2023;5(1):34–6.
26. Abuhandan M, Kandemir H, Kaya C, et al. Fonksiyonel Karın Ağrısı Olan Çocukların Yaşam Kaliteleri ve Psikiyatrik Özellikleri. Selcuk Med J. 2014;30(1):15–8.
27. Ekuklu G, Özgür EA. Okul Öncesi Çocuk Sağlığının Geliştirilmesine Yönelik Bir Eğitim Uygulaması. Selcuk Tip Derg. 2018;34(2):60–64.

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A Retrospective Evaluation of the Sociodemographic and Clinical Characteristics of Placenta Previa and Placenta Accreta Spectrum Cases Between 2021 and 2023

2021-2023 Yılları Arasındaki Plasenta Previa ve Plasenta Accreta Spectrum Olgularının Sosyodemografik ve Klinik Özelliklerinin Retrospektif Değerlendirilmesi

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ÖZET

Amaç: Bu çalışmada kliniğimizde görülen plasenta previa ve PAS olgularının demografik özellikleri ile anne ve perinatal sonuçlarını üç dönem boyunca değerlendirmeyi amaçladık.
Yöntemler: Çalışmaya dahil edilen 94 katılımcının (kontrol = grup 1; n=30, plasenta previa = grup 2; n=44 ve PAS = grup 3; n=20) sosyodemografik özellikleri ile laboratuvar sonuçları veri tabanına kayıt edildi ve gruplar arasında karşılaştırıldı.
Bulgular: Gebelik, parite, önceki sezaryen doğum sayıları, başvurudaki semptomlar, ultrasonografide invazyon belirtileri, doğumdaki gebelik yaşı, doğum ağırlığı, yenidoğan yoğun bakım ünitesine kabul oranı, histerektomi oranı, hastanede kalış süresi, kan transfüzyonu ve atoni açısından gruplar arasında anlamlı farklılık saptandı ($p<0.05$). Ameliyat sonrası Hb (grup 1 vs 2, 10.96+1.78 vs 9.66+) 1.22; $p<0.001$ ve grup 1 vs 3, 10.96+1.78 vs 9.37+1.20; $p<0.001$) ve Htc (grup 1 vs 2, 32.23±2.84 vs 28.83±3.97; $p=0.001$ ve grup 1 vs 3, 32.23±) 2.84 vs 28.36±3.49; $p<0.001$) düzeyleri arasında farklılık vardı.
Sonuçlar: Plasenta previa ve PAS olgularında ultrasonografi ile invazyon durumu ve doğum zamanlaması belirlenmelidir. Üçüncü basamak merkezlerdeki PAS'lı gebe kadınlara multidisipliner yaklaşım ve deneyimli bir ekibin katılımı, anne morbidite ve mortalite oranlarının azaltılmasında çok önemlidir..

Anahtar Kelimeler: Peripartum histerektomi,plasenta akreta spektrumu,plasenta previa,gebelik

ABSTRACT

Aim: In this study, we aimed to evaluate the demographic characteristics and maternal and perinatal outcomes of placenta previa and PAS cases in our clinic over a three period.
Methods: The sociodemographic characteristics and laboratory results of 94 participants (control = group 1; n=30, placenta previa = group 2; n=44, and PAS = group 3; n=20) were documented and compared between the groups.
Results: Gravity, parity, previous cesarean sections, symptoms on admission, signs of invasion at ultrasonography, gestational age at delivery, birthweight, neonatal intensive care unit admission rate, hysterectomy rate, length of hospital stay, blood transfusion, and atony differed significantly between the groups ($p<0.05$). Additionally, postoperative hemoglobin (groups 1 vs 2, 10.96+1.78 vs 9.66+1.22; $p<0.001$ and groups 1 vs 3, 10.96+1.78 vs 9.37+1.20; $p<0.001$) and Htc (groups 1 vs 2, 32.23±2.84 vs 28.83±3.97; $p=0.001$ and groups 1 vs 3, 32.23±2.84 vs 28.36±3.49; $p<0.001$) levels differed between them.
Conclusions: Invasion status and timing of delivery should be determined by means of ultrasonography in cases of placenta previa and PAS. A multidisciplinary approach to pregnant women with PAS in tertiary centers and involving an experienced team is very important in reducing maternal morbidity and mortality rates.

Key words: Peripartum hysterectomy, placenta accreta spectrum, placenta previa, pregnancy

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INTRODUCTION

Postpartum hemorrhage (PPH) is still one of the most important causes of maternal mortality despite advances in technology, improvements in medical care, the use of effective and powerful uterotonic agents, improved blood transfusion facilities, modernization of intensive care units, enhanced radiological intervention techniques, and surgical procedure innovations (1). It is very difficult to protect pregnant women with PPH from peripartum cesarean (C/S) hysterectomy, especially at young ages (2). Although the role of the uterus in sexual life is not fully understood, it is thought to be possibly involved in the control and regulation of sexual functions and the maintenance of youth and attraction (3).

The most important risk factor for PPH is a previous history of uterine surgery, and the most common cause is C/S deliveries (4). The risk of placenta previa and placenta accreta spectrum (PAS) increases with each C/S delivery, and the risk of peripartum C/S hysterectomy therefore also rises. There is no doubt that when truly indicated, C/S protects the life of both the baby and the mother, and also reduces pelvic organ prolapse and lower urinary tract symptoms (5).

Placenta previa is defined as the the placenta lying on or within 2 cm of the internal cervical os. Placenta accreata is defined as superficial invasion of placental villi into the myometrium without invading the myometrium, placenta increta as penetration of placental villi into the myometrium, and placenta percreta as penetration of placental villi up to the uterine serosa. The most important theory in the physiopathology of PAS involves the absence of normal decidualization due to the defect at the endometrial junction resulting from uterine scarring (6, 7).

The frequency of PAS and placenta previa has increased in recent years. Although the prevalence of placenta previa varies worldwide, it is generally 4 per 1000 births, while the frequency of PAS is 0.17% (8). While the presence of placenta previa alone in the first pregnancy constitutes a 3% risk for PAS, the risk rises to 11% in the presence of one previous C/S, 40% in the presence of two, 61% in the presence of three, and 67% in the presence of four C/S (9). Identified risk factors for placenta previa include advanced maternal age, increased parity and C/S numbers, multiple pregnancies, history of placenta previa in a previous pregnancy, previous curettage, smoking, cocaine use, having a male fetus, and infertility treatment. Similarly, advanced maternal age, increased number of gravida and parity, history of previous C/S, and curettage have been icentified as risk factors for PAS (5,7). The most commonly employed diagnostic method in the antenatal treatment of PAS is ultrasound (USG), and normal placental findings do not exclude PAS. The hypoechoic zone, observed between the myometrium and placental tissue in normal placental location at USG, disappears in cases of PAS. The presence of placental tissues and lacunae extending to the bladder in the anterior placental location and the presence of turbulent lacunar flow at Doppler USG are strong findings in favor of diagnosis of PAS (10).

While the management of placenta previa and PAS depends on the diagnosis of the case (whether adjacent organ invasion, such as accreta, increta, or percreta is present or not), the experience of the surgery and anesthesia team, the facilities available in the hospital (blood transfusion facility, the possibility of interventional procedures, etc.), and the individual's desire for fertility, PAS has been identified as an important risk factor that may require emergency peripartum hysterectomy (11).

Focal resection and leaving the placenta in the uterus are alternative approaches for PAS, which is usually managed by means of peripartum cesarean hysterectomy, and management of PAS with a multidisciplinary team in tertiary centers can reduce morbidity and mortality (1,11). The purpose of the present study was to evaluate the demographic characteristics and maternal and perinatal outcomes of case of placenta previa and PAS in our clinic over a three-year period.

MATERIALS AND METHODS

Following receipt of approval from the ethical board (2023-161), 10.542 patients who had given live or still births via C/S at 20 weeks of gestation and/or with birth weights 500 g or higher between January 1st, 2021 and December 31st, 2023 in our clinic were included in the study after retrospective investigation of the digital record system and delivery records from the hospital archives. The study was conducted in accordance with the ethical guidelines set out in the 1964 Declaration of Helsinki. The inclusion criterion for the study were 18-42 years, body mass index (BMI) 18-35 kg/m2, singleton pregnancy, diagnosis with placenta previa, and PAS by preoperative USG and/or magnetic resonance imaging (MRI). Exclusion criteria were BMI >35 kg/m2, a history of hysterectomy for non-PAS indications, and missing file information. The absence of the hypoechoic zone in the examination with USG, the presence of enlarged lacunae in the placenta, and the presence of turbulent lacunar flow at Doppler USG were evaluated in favor of PAS. MRI examination was not performed in patients diagnosed with PAS. Data from 64 C/S cases due to placenta previa and PAS, including maternal age, BMI, gravity and parity numbers, miscarriage, previous C/S, symptoms on admission, gestational age at delivery, birth weight, NICU admission rate, blood transfusion requirement, peripartum hysterectomy, and peri- and postoperative complications were recorded annually and compared. International Federation of Gynecology and Obstetrics (FIGO) surgical classification which stratifies the severity of the invasion also has been performed (6).

Table 1. PAS subcategories in the FIGO system are based on the degree of invasion and local tissue damage.

Stage of Disorder		Findings
1	Noninvasive	Grossly adherent placenta identified through manual examination. Homogeneous myometrial thickness without thinning in myometrial cross-sections
2	Superficial invasion	Cross-sections reveal an irregular placenta without involvement of the outer myometrium (More than 25% of the myometrial thickness is preserved)
3	Deep invasion	Cross-sections show irregular placenta involving the outer myometrium (Less than 25% of myometrial thickness is preserved). Serosa is intact
4	Deep invasion with serosal disruption	Placenta deeply invades with disruption of the uterine serosal surface
5	Deep invasion with adherence to extrauterine structures	Placental invasion into adjacent organs (usually the bladder) or extrauterine fibroadipose tissue, confirmed by microscopy

Statistical analysis

Statistical Package for Social Sciences (SPSS) (version 15.0, SPSS, Inc, Chicago, IL, USA) software was used for the statistical analysis. Shapiro-Wilk analysis was performed to evaluate the normality of distribution of continuous variables. The paired t-test and One-Way ANOVA were applied for the analysis of data exhibiting normal distribution. The Kruskal-Wallis test was applied to non-normally distributed data. The chi-square and the Fisher exact tests were used to compare categorical parameters. Continuous variables were expressed as mean + standard deviation (SD) and categorical variables as numbers of cases and percentage values. A p-value of <0.05 was regarded as statistically significant.

RESULTS

Of 102 participants initially included, 8 (7.84%) dropped

Table 2. Sociodemographic characteristics of the participants.

	Control (Group 1) (n=30)	Placenta previa (Group 2) (n=44)	Placenta accreta spectrum (Group 3) (n=20)	1 vs 2	1 vs 3	2 vs 3
Age (years)	30.83±3.63	33.25±5.80	33.25±5.16		0.189	
BMI (kg/m^2)	28.82±4.22	30.58±4.31	30.46±5.48		0.289	
Gravity	4.50±1.51	3.48±2.23	5.55±2.72	0.001*	<0.001	0.006*
Parity	0 (0-1.0)	2.0 (1.0-2.0)	4.0 (2.0-5.0)	0.001*	<0.001*	0.005*
Miscarriage	0 (0-0)	0 (0-1.0)	0 (0-0)		0.660	
Number of previous cesarean sections	0 (0-1.0)	1.0 (0-2.0)	2.0 (2.0-4.0)	0.010*	0.001*	0.010*
Educational level n (%)						
Illiterate	1 (20.0%)	7 (15.9%)	5 (25.0%)			
Elementary	15 (50.0%)	19 (43.2%)	12 (60.0%)		0.449	
High school	6 (20.0%)	15 (34.1%)	2 (10.0%)			
University	3 (10.0%)	3 (6.6%)	1 (5.0%)			
Economic status n (%)						
Low level	21 (70.0%)	29 (65.9%)	15 (75.0%)			
Intermediate level	9 (30.0%)	15 (34.1%)	5 (25.0%)		0.757	
High level	-	-	-			
Place of resience n (%)						
Village	8 (26.7%)	9 (20.5%)	4 (20.0%)			
Town	15 (50.0%)	27 (61.4%)	8 (40.0%)		0.391	
City	7 (23.3%)	8 (18.1%)	8 (40.0%)			
Complaint at admission						
Pain	6 (20.0%)	6 (13.6%)	2 (10.0%)			
Fetal Distress	12 (40.0%)	0 (0)	2 (10.0%)			
Bleeding	2 (6.7%)	22 (50.0%)	8 (40.0%)	<0.001*	0.012	0.484
Pain + Bleeding	1 (3.3%)	12 (27.3%)	2 (10.0%)			
Elective	9 (30.0%)	4 (9.1%)	6 (30.0%)			

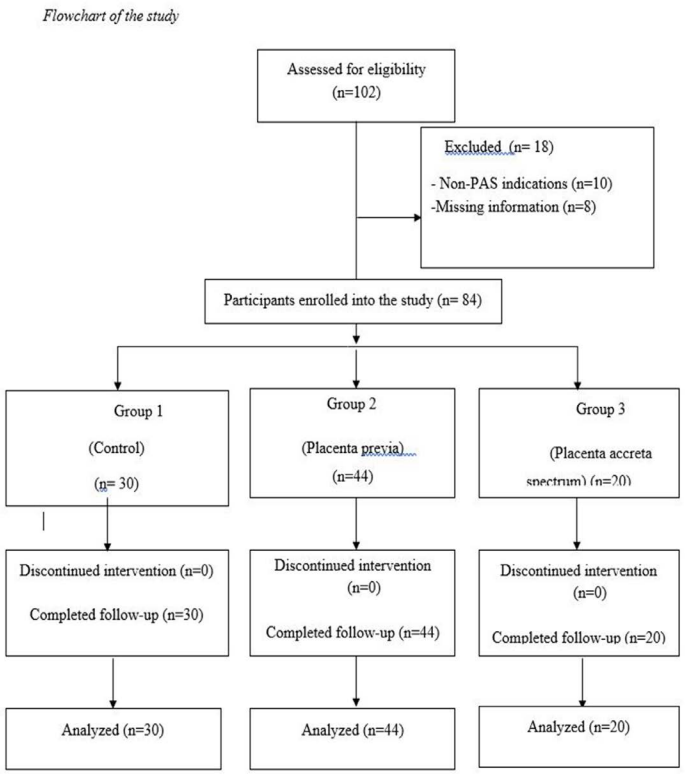

Figure 1. Enrollment and follow-up of the study subjects

out; thus, 94 participants were included in the study: 30 with control (Group 1), 44 with placenta previa (Group 2) and 20 PAS (Group 3) (Fig 1).

Tables 2 and 3 show the participants' sociodemographic characteristics and clinical features. No difference was determined between the groups in terms of age, BMI, numbers of miscarriages, education levels, economic status, area of resdence, re-laparotomy, and thromboembolism rates (p>0.05). However, gravity and parity numbers, previous C/S, symptoms on admission, signs of invasion at ultrasonography, gestational age at delivery, birthweight, first and fifth Apgar scores, NICU admission rates, hysterectomy rates, hospital stays, blood transfusion, and atony differed between the groups (p<0.05).

The participants' laboratory outcomes are summarized in Table 4. Although the levels of preoperative Hb, Htc, and leukocyte count, and postoperative leukocyte count were comparable between the groups (p>0.05), postoperative hemoglobin (groups 1 vs 2, 10.96+1.78 vs 9.66+1.22; p<0.001 and groups 1 vs 3, 10.96+1.78 vs 9.37+1.20; p<0.001) and Htc (groups 1 vs 2, 32.23±2.84 vs 28.83±3.97; p=0.001 and groups 1 vs 3, 32.23±2.84 vs 28.36±3.49; p<0.001) levels differed between them.

Table 3. Clinical features of the participants.

		Control (Group 1) (n=30)	Placenta previa (Group 2) (n=44)	Placenta accreta spectrum (Group 3) (n=20)	1 vs 2	1 vs 3	2 vs 3
Sign of invasion at ultrasonography		0 (0)	0 (0)	10 (50.0%)	-	<0.001*	<0.001*
FIGO Surgical Classification	3	0 (0)	0 (0)	6 (30.0%)			
	4	0 (0)	0 (0)	6 (30.0%)		<0.001*	
	5	0 (0)	0 (0)	8 (40.0%)			
Gestational age at delivery (weeks)		38.1±0.6	36.6±0.5	36.4±1.5	<0.001*	<0.001*	0.283
Birthweight (g)		3232.05±267.56	2752.39±665.5	2724.50±510.42	0.001*	0.004*	0.780
Apgar	1st Min	8.1±0.6	6.5±0.7	6.65±0.74	<0.001*	<0.001*	0.861
	5th Min	9.1±0.5	8.1±0.6	7.95±0.60	<0.001*	<0.001*	0.576
NICU admission rate n (%)		0 (0%)	10 (22.7%)	11 (55.01)	0.004*	<0.001*	0.020*
Hysterectomy n (%)		0 (0)	1 (2.3%)	12 (60.0%)	0.916	<0.001*	<0.001*
Re-laparatomy		0 (0)	1 (2.3%)	1.0 (5.0%)		0.531	
Hospital stay (days)		1.4±0.7	2.7±1.2	4.1±2.3	0.001*	<0.001*	0.002*
Blood transfusion		0	4.9±2.1	9.8±3.2	<0.001*	<0.001*	<0.001*
Thromboembolism n (%)		0 (0)	0 (0)	1 (5.0%)		0.209	
Infection n (%)		0 (0)	4 (9.1%)	4 (20.0%)	0.038*	0.005*	0.104
Atony n (%)		0 (0)	1 (2.3%)	6 (30.0%)	0.916	<0.001*	0.005*

BMI: body mass index, FIGO: International Federation of Gynecology and Obstetrics, NICU: neonatal intensive care unit
*Statistically significant

Table 4. Laboratory outcomes of the participants.

	Control (Group 1) (n=30)	Placenta previa (Group 2) (n=44)	Placenta accreta spectrum (Group 3) (n=20)	1 vs 2	1 vs 3	2 vs 3
Preoperative Hb level (g/dl)	11.23±1.47	10.50±2.18	10.33±1.94		0.133	
Postperative Hb level (g/dl)	10.96±1.78	9.66±1.22	9.37±1.20	<0.001*	<0.001*	0.543
P	0.076	0.010*	0.034*			
Preoperative Htc level (%)	33.01±4.57	31.39±5.75	31.57±6.10		0.560	
Postoperative Htc level (%)	32.23±2.84	28.84±3.97	28.36±3.49	<0.001*	<0.001*	0.476
P	0.071	0.006*	0.028*			
Preoperative leukocyte count (103) (mcl)	11.11±2.54	12.11±5.01	12.62±4.61		0.451	
Postoperative leukocyte count (103) (mcl)	12.15±2.33	13.34±4.30	13.54±3.96		0.263	
P	<0.001*	<0.001*	<0.001*			

Hb: hemoglobin, Htc: hemotocrit, ALT: alanine aminotransferase, AST: aspartate aminotransferase
*Statistically significant

DISCUSSION

In this study, intended to evaluate the sociodemographic characteristics and maternal and perinatal outcomes of placenta previa and PAS cases in our clinic over a three-year period, the number of previous cesareans was higher, the week of delivery was lower, and hysterectomy and blood transfusion rates were higher in the group with PAS.

The first step to be taken in PPH is to increase the dose and rate of IV oxytocin infusion. If the bleeding persists, IM methyl ergonovine administration, tranexamic acid, medical use of recombinant F-7 alpha, and massive blood transfusion protocols are applied. If the bleeding still continues despite these medical procedures, invasive radiological interventions, uterine balloon tamponade, uterine compression sutures, and vascular ligation can be performed. However, despite all these uterus-preserving treatments and interventions, peripartum C/S hysterectomy unfortunately still maintains its importance as a life-saving technique (12).

Placental anomalies (placenta previa and PAS) and bleeding due to placental retention account for 36% of deaths due to PPH (13). Placenta previa is the most common cause of bleeding in the second and third trimesters of pregnancy, and the incidence of placenta previa has been reported as 1 in 200 births worldwide (14). Previous studies have reported a prevalence of placenta previa of approximately 0.40% and a prevalence of PAS of approximately 0.17%. The equivalent figures in the present study were 0.42% for placenta previa 0.28% for PAS, slightly higher than in the previous literature. This may be due to primary C/S rates in Turkey being much higher than those regarded as normal by the World Health Organization (4).

As postpartum hemorrhage is closely associated with PAS, clinical prenatal diagnosis and a multidisciplinary approach are essential in order to optimize maternal and infant care and management at birth (15). Unfortunately, a meta-analysis reported that only 56% of cases of posterior PAS can be diagnosed by means of USG and 74% by means of MRI (16). MRI can be diagnostic for PAS, especially in the presence of suspicious USG findings (10). Nonetheless, primary MRI should not represent the first choice for the diagnosis of PAS (17). It should also be noted that findings observed in anterior PAS at USG may not be observed in posterior PAS (18). MRI is not routinely used to evaluate placental invasion anomaly in our clinic, and none of the cases were evaluated using MRI in the present study.

Therapeutic options in PAS include termination of pregnancy before expected date of delivery, leaving the placenta for reabsorption without delivery or delaying hysterectomy, manual removal of the placenta after normal delivery or C/S, focal excision of the affected uterine region, and peripartum hysterectomy (19). PAS is the most common cause of peripartum C/S hysterectomy and is considered an important cause of maternal mortality (14,17,20,21). Peripartum C/S hysterectomy was applied to 60% of the pregnant women with PAS during the period of the study.

Following delivery via fundal uterine incision, the umbilical cord can be tied and the placenta can be left in the uterus, either allowing spontaneous reabsorption or enabling delayed hysterectomy to be performed. A double J catheter can be inserted into the bilateral ureters before the operation. If no cervical invasion is determined, supracervical hysterectomy should be performed, but total hysterectomy should be performed in the presence of cervical invasion (22). Following delivery of the fetus after transverse uterine incision, the uterus can be closed primarily after local excision of the part exhibiting abnormal placental invasion. If the myometrium tissue in the area with abnormal placental invasion is sufficiently thick (2 mm), the placenta can be

manually extirpated after delivery via the vaginal route or C/S, and a conservative approach can be adopted for bleeding in the placental bed (19).

Due to the increase in C/S rates in the last 10 years, a significant increase has also occurred in the number of pregnant women with placenta previa and PAS, and this also unfortunately increases C/S hysterectomy rates. High cesarean hysterectomy rates are associated with a history of previous C/S, placental invasion anomaly, placenta previa, and previous uterine scarring (23).

We observed varying degrees of placental adhesion anomalies in 20 patients in the study group. Twelve patients were evaluated as placenta percreata and all of them underwent a cesarean hysterectomy. This was an appropriate approach according to the ACOG 2018 guideline (24). All of the patients who underwent hysterectomy also had placenta previa totalis. The pregnancy history of these patients included at least one cesarean delivery, or uterine instrumentation such as curretage due to abortion, operative hysteroscopy or myomectomy. It is known that patients with placenta percreata have less blood loss and different morbidities with cesarean hysterectomy compared to the organ-preserving approach (25). Patients with placenta previa as well as any previous uterine surgery were considered to be risky in terms of placenta attachment anomaly (26). Patients were informed about the need for hysterectomy, blood transfusion, and damage to surrounding organs such as the bladder and ureter. Accordingly, their consent was obtained. The preoperative bilateral ureteral catheter was placed in all patients with suspected invasion by the urology department. We believe that there is a decrease in urological complications and operation time when a hysterectomy is performed with manual palpation of the ureters (27). In all patients with placenta previa totalis and for whom we predicted that there would be placental adhesion anomaly, babies were delivered by making a vertical midline skin incision and a fundal uterine incision at least 2 cm away from the placenta (28).

PAS is an important clinical entity in terms of antenatal complications, as it can increase morbidity and mortality in newborns due to preterm birth. Placental localization and morphology should be routinely evaluated during fetal anatomical screening in all pregnancies. Pregnant women with suspected placenta previa or PAS should be referred to a tertiary center with experienced specialists for follow-up and treatment. It should be remembered that the most important factor affecting prognosis in placental invasion anomalies is diagnosis in the antepartum period (29).

Placenta previa and PAS, the most important causes of postpartum hemorrhages and maternal morbidity and mortality, should be diagosed without delay. All cases diagnosed with or suspected to be PAS should be referred to a tertiary center with an experienced surgical and anesthesia team, and the requisite intervention should be performed at the most appropriate time. This is highly important in terms of reducing both maternal and fetal mortality and morbidity.

The strength of this review lies in its prototypical sample from central Turkey, the results being capable of generalization to most of the country's population. However, the study is limited by being conducted in a single tertiary care institution and its retrospective design.

CONCLUSION

Advances in technology and improved ultrasound quality have made the diagnosis of placenta previa and PAS easier and more reliable. Examination of invasion status using USG is very important in determining the mode and timing of delivery in these cases. In particular, childbirth among women with PAS should be well planned with a multidisciplinary approach by an experienced team in tertiary centers.

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KAYNAKLAR

1. Horng HC, Lai MJ, Chang WH, et al. Placenta accreta spectrum (PAS) and peripartum hysterectomy. Taiwan J Obstet Gynecol 2021;60:395-6.
2. Tsui KH, Wang PH. Blockage of uterine-feeding vessels: A real choice to maintain the uterus? J Chin Med Assoc 2011;74:285-6.
3. Inal ZO, Inal HA, Gorkem U. Sexual function and depressive symptoms in primary infertile women with vitamin D deficiency undergoing IVF treatment. Taiwan J Obstet Gynecol 2020;59:91-8.
4. Inal ZO, Inal HA, Kucukkendirci H, et al. Investigation of Cesarean Sections at Konya Training and Research Hospital Obstetrics and Gynecology Department between 2010 and 2015. Ginekologia Polska 2017;88:185-90.
5. Inal ZO, Gorkem U, Inal HA. Effects of Preoperative Anxiety on Postcesarean Delivery Pain and Analgesic Consumption: General versus Spinal Anesthesia. J Matern Fetal Neonatal Med 2020;33:191-7.
6. Jauniaux E, Chantraine F, Silver RM, et al. FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO consensus guidelines on placenta accreta spectrum disorders: Epidemiology. Int J Gynaecol Obstet 2018;140:265-73.
7. Balayla J, Bondarenko HD. PAS disorders and the risk of adverse maternal and neonatal outcomes. J Perinat Med 2013;41:141-9.
8. Cresswell JA, Ronsmans C, Calvert C, et al. Prevalence of placenta praevia by world region: A systematic review and meta-analysis. Trop Med Int Health 2013;18:712-24.

9. Teixidor Viñas M, Belli AM, Arulkumaran S, et al. Prevention of postpartum hemorrhage and hysterectomy in patients with morbidly adherent placenta: A cohort study comparing outcomes before and after introduction of the triple-P procedure. Ultrasound Obstet Gynecol 2015;46:350-5.
10. Sentilhes L, Goffinet F, Kayem G. Management of PAS disorders. Acta Obstet Gynecol Scand 2013;92:1125-34.
11. Wenham J, Matijevic R. Post-partum hysterectomies: Revisited. J Perinat Med 2001;29:260-5.
12. Hawkins JL. Obstetric Hemorrhage. Anesthesiol Clin 2020;38:839-58.
13. Creanga AA, Syverson C, Seed K, et al. Pregnancy-Related Mortality in the United States, 2011-2013. Obstet Gynecol 2017;130:366-73.
14. Silver RM. Abnormal Placentation: Placenta Previa, Vasa Previa, and Placenta Accreta. Obstet Gynecol 2015;126:654-68.
15. Soyer P, Morel O, Tsatsaris V, et al. Placenta Accreta Spectrum: A Continuously Evolving Challenge for Radiologists. Can Assoc Radiol J. 2021;72:597-8.
16. Tinari S, Buca D, Cali G, et al. Risk factors, histopathology and diagnostic accuracy in posterior placenta accreta spectrum disorders: Systematic review and meta-analysis. Ultrasound Obstet Gynecol 2021;57:903-9.
17. Eller AG, Bennett MA, Sharshiner M, et al. Maternal morbidity in cases of PAS disorders managed by a multidisciplinary care team compared with standard obstetric care. Obstet Gynecol 2011;117:331–7.
18. Alanwar A, Al-Sayed HM, Ibrahim AM, et al. Urinary tract injuries during cesarean section in patients with morbid placental adherence: Retrospective cohort study. J Maternal Fetal Neonat Med 2018;32:1461-7.
19. van Beekhuizen HJ, Stefanovic V, Schwickert A, et al. International Society of Placenta Accreta Spectrum (IS-PAS) group. A multicenter observational survey of management strategies in 442 pregnancies with suspected placenta accreta spectrum. Acta Obstet Gynecol Scand 2021;100 Suppl 1(Suppl 1):12-20.
20. Shamshirsaz AA, Fox KA, Salmanian B, et al. Maternal morbidity in patients with morbidly adherent placenta treated with and without a standardized multidisciplinary approach. Am J Obstet Gynecol 2015;212:218.e1-9.
21. Jauniaux E, Hussein AM, Fox KA, et al. New evidence-based diagnostic and management strategies for placenta accreta spectrum disorders. Best Pract Res Clin Obstet Gynaecol 2019;61:75-88.
22. Henrich W, Surbek D, Kainer F, et al. Diagnosis and treatment of peripartum bleeding. J Perinat Med 2008;36:467-78.
23. Demirci O, Tuğrul AS, Yilmaz E, et al. Emergency peripartum hysterectomy in a tertiary obstetric center: Nine years evaluation. J Obstet Gynaecol Res 2011;37:1054-60.
24. American College of Obstetricians and Gynecologists, Society for Maternal - Fetal Medicine. Obstetric Care Consensus No. 7: Placenta Accreta Spectrum. Obstet Gynecol 2018;132:e259.
25. Eller AG, Porter TF, Soisson P, et al. Optimal management strategies for placenta accreta. BJOG 2009; 116:648.
26. Shamshirsaz AA, Fox KA, Salmanian B, et al. Maternal morbidity in patients with morbidly adherent placenta treated with and without a standardized multidisciplinary approach. Am J Obstet Gynecol 2015; 212:218.e1.
27. Scaglione MA, Allshouse AA, Canfield DR, et al. Prophylactic Ureteral Stent Placement and Urinary Injury During Hysterectomy for Placenta Accreta Spectrum. Obstet Gynecol 2022;140:806-11.
28. Collins SL, Alemdar B, van Beekhuizen HJ, et al. Evidence-based guidelines for the management of abnormally invasive placenta: Recommendations from the International Society for Abnormally Invasive Placenta. Am J Obstet Gynecol 2019;220:511-26.
29. Tikkanen M, Paavonen J, Loukovaara M, et al. Antenatal diagnosis of placenta accreta leads to reduced blood loss. Acta Obstet Gynecol Scand 2011;90(10):1140-6.

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Does Pregabalin Affect Renal Functions and Plasma Electrolytes?

Pregabalin Böbrek Fonksiyonlarını ve Plazma Elektrolitlerini Etkiler mi?

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ÖZET

Amaç: Pregabalin, nöropatik ağrı tedavisinde, parsiyel başlangıçlı epilepsisi olan yetişkinlerde antiepileptik olarak kullanılmaktadır. Pregabalinin yarı ömrünün yaşla ilişkili olarak uzadığı, bu durumun yaşla birlikte böbrek fonksiyonlarındaki zayıflık ile ilgili olabileceği düşünülmektedir. Bu çalışmada pregabalinin neden olabileceği renal toksisitenin araştırılması amaçlanmıştır.
Gereç ve Yöntemler: 2019-2020 yılları arasında Nöroloji Anabilim Dalı'nda izlenen 100 hasta çalışmaya dahil edildi. Pregabalin kullanan erişkin hasta grubunun retrospektif olarak hastane dosyalarının taranması planlandı. Hastaların periferik kan üre, ürik asit, kreatinin, serum elektrolit düzeyleri belirlendi ve böbrek fonksiyonlarındaki olası değişiklikler için altı ayda bir, iki kez glomerüler filtrasyon oranı değerlendirildi.
Bulgular: Altı aylık dilimde iki kez ölçüm yapılan hastalarda aritmetik ortalama değerleri ve değişimleri incelendi. Pregabalin kullanımının, renal fonksiyon belirteçleri olan üre ve ürik asit değerleri üzerine etkisi istatistiksel olarak anlamlı bulundu ($p<0.05$). GFR, kreatinin, Na^{+}, Cl^{-}, K^{+}, Ca^{+2}, Mg^{+2} ve P^{+3} parametreleri üzerinde ise istatistiksel olarak anlamlı bir etkisi görülmedi ($p>0.05$).
Sonuç: Pregabalinin GFR, kreatinin ve kan elektrolitlerini anlamlı düzeyde değiştirecek bir etkisinin olmadığı gözlenmedi. Üre ve ürik asit değerlerinde oluşan anlamlı farkın verinin normal dağılım göstermemesinden kaynaklandığı düşünüldü. Bu çalışma pregabalinin diğer organlar üzerindeki etkilerinin retrospektif olarak değerlendirilerek araştırılması için ışık tutacak niteliktedir. Böylece disiplinler arası yaklaşımlarla birlikte ilaç güvenilirliğinin artırılmasına katkı sağlanabilir.

Anahtar Kelimeler: Pregabalin, kreatinin, renal toksisite, böbrek fonksiyonu

ABSTRACT

Aim: It is known that the half-life of pregabalin increases with age. This may be related to the decline in kidney function with age. In this study, it was aimed to investigate the neurotoxicity and renal toxicity that pregabalin may cause.
Materials and Methods: 100 patients followed up in the Department of Neurology between 2019-2020 were included for the study.It was planned to scan the hospital files of the adult patient group using pregabalin. The data obtained as a result of possible changes in serum electrolyte levels and kidney functions of patients with pregabalin indication were evaluated. Peripheral blood urea, uric acid, creatinine, serum electrolyte levels of the patients were determined and glomerular filtration rate (GFR) was analyzed twice, in six months for possible changes in kidney functions.
Results: Arithmetic mean values and changes were examined in patients who were measured twice in a six-month period. The effect of pregabalin use on urea and uric acid values, which are markers of renal function, was found to be statistically significant ($p<0.05$). There was no statistically significant effect on GFR, creatinine, Na^{+}, Cl^{-}, K^{+}, Ca^{+2}, Mg^{+2} and P^{+3} parameters ($p>0.05$).
Conclusion: This study may be useful to investigate the effects of pregabalin on other organs. The data obtained may contribute to the provision of information that may be useful to drug research and development institutions and to increase drug safety.

Key words: Pregabalin, creatinine, renal toxicity, renal function

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INTRODUCTION

Pregabalin was discovered by Richard B. Silverman in the 1980s. It is a compound synthesized as a lipophilic analogue by adding an aliphatic side chain to the γ-aminobutyric acid (GABA) structure so that it can cross the blood-brain barrier (1).

Pregabalin is from the gabapentinoid class and is pharmacodynamically similar to gabapentin. It is designed as a lipophilic GABA analogue to replace GABA at position 3 to facilitate diffusion across blood-brain barrier. Pregabalin exists as one of the isomeric forms of 3-isobutyl-GABA. It is the pharmacologically active enantiomer. Although pregabalin is structurally related to GABA, it is inactive at GABA receptors. It appears to physiologically mimic GABA. Also, pregabalin shows no affinity for the receptor sites. Pregabalin does not alter the responses associated with the action of many common drugs used to treat seizure and pain. Like gabapentin, the pharmacological effects of pregabalin are thought to be due to its ability to act as a ligand at alpha-2-delta binding site associated with calcium channels in central nervous system. In many animal experiments, it was observed that pregabalin exhibited strong anticonvulsant, anxiolytic and analgesic activity (2).

Pregabalin is used in treatment of pain caused by nerve damage caused by various pathologies. Pregabalin is also an antiepileptic. Although it is one of the drugs used in the treatment of epilepsy, due to the new generation antiepileptic drugs produced in recent years, it is preferred more in neuropathic pain treatment than antiepileptic treatment today. The type of pain that responds best to pregabalin treatment is neuropathic pain caused by nerve damage. These pains are regional pains that previously occurred due to shingles; includes post-herpetic neuralgia, trigeminal neuralgia, diabetes-related painful neuropathy, and fibromyalgia. According to studies conducted in the literature, while most of the patients with this type of pain benefited moderately from the treatment, it was observed that the symptoms were almost completely regressed in a small group of patients (3). Pregabalin is primarily approved for treatment of peripheral neuropathic pain and as adjunctive therapy for partial seizures in epilepsy patients. Later, it was approved by the Food and Drug Administration (FDA) and started to be used for treatment of neuropathic pain associated with post-herpetic neuralgia and diabetic peripheral neuropathy (4). The pregabalin binds strongly and selectively to alpha-2-delta subunit of stimulated voltage-gated calcium channels. Binding of pregabalin to calcium channels reduces the flow of calcium in the boundary terminals by changing the three- dimensional comfort of the channels. Pregabalin modulates the release of excitatory neurotransmitters in overexcited neurons, allowing them to return to the normal physiological state. In addition to the neuropathic pain treatment of the pregabalin with this action mechanism, anxiolytic, analgesic and anticonvulsant effects were thought to have occurred (5). In case of peripheral neuropathic pain, in addition to treatment for adults with parsiyel onset epilepsy, it is also used in the case of central neuropathic pain and widespread anxiety disorder. Although it is a relatively new drug, it is common to prescribe. It is in the group of antiepileptics, in pharmacotherapeutic. Daily dose received through mouth at specified indications is 150-600 mg in adults. The absorption is mainly performed in the proximal colon and the dose is dependent. The blood-brain barrier and cell membrane are passed by the special L-amino acid transport system. It reaches maximum concentration in about an hour and a half. The average half-life is between 2.5 and 7 hours. It has been reported that 98% of pregabalin is excreted unchanged, 0.9% as an N-methylated derivative in the urine, and less than 0.1% in the faeces in humans (6). Pregabalin is rapidly-extensively absorbed after oral administration in the fasting state, reaching maximum plasma concentration approximately 1 hour after single/multiple doses. After repeated applications, it reaches a stable concentration in plasma within 24-48 hours (7). Pregabalin does not enter hepatic metabolism and does not connect to plasma proteins. It is excreted renally and almost all of the absorbed dose is excreted unchanged in urine. Pregabalin elimination is proportional to creatinine clearance, so pregabalin clearance decreases for patients with kidney dysfunction. In addition, no pharmacokinetic drug-drug interaction has been defined in the drug interaction studies (8). Many therapeutic agents can produce nephrotoxic effects, especially when their half-life is prolonged in serum or when their blood level is elevated due to reduced renal excretion. The nephrotoxicity that occurs as the GFR decreases continues to increase. In this process, even though creatinine levels are initially within the normal range, the current creatinine concentrations can pose serious problems for elderly patients (9). Researchers stated that since pregabalin is excreted from the kidneys with almost no metabolism, dose adjustment should be made when using it in patients with renal failure or low creatinine clearance. They argued that after hemodialysis, an additional dose of 25-100 mg should be administered because approximately 50-60% of the drug is removed from the blood circulation (10).

Early detection of renal failure is very important as it facilitates the use of methods that can prevent and delay the progression of the disease and reduce the risk of adverse outcomes (11). GFR is considered the best indicator of renal function in healthy or diseased individuals (12). In this study, it was planned to scan the hospital files and patient epicrisis of the adult patient group using pregabalin. It was aimed to evaluate the data obtained as a result of possible changes in serum electrolyte levels and renal functions (GFR) of patients

with pregabalin indication.

MATERIALS AND METHODS

Approval for the study was granted by the Ethics Committee for Pharmaceutical and Non-Medical Device Research, under decision number 2019/1747, and all procedures in the study were conducted in accordance with the ethics committee protocol.

In the study, the data of 100 patients followed in the Neurology Department between 2019-2020 were analyzed retrospectively. Patients who applied to the clinic due to long-term pain caused by damage to peripheral nerves such as neuropathic pain, fibromyalgia, postherpetic pain and trigeminal neuralgia, which are known as diffuse pain mainly affecting the muscles and the areas where the muscles attach to the bone, were evaluated. Various doses of pregabalin were prescribed to these patients. The criteria for inclusion in the study were to have an indication to use pregabalin and to be at an adult age. Exclusion criteria from the study were defined as having chronic renal failure, having a serious condition that may affect kidney functions, and not being at an adult age. Past hospital epicrisis and patient cards of these patients with pregabalin indications were scanned. The mean values of serum electrolytes, urea, uric acid, creatinine and GFR measured twice in a six-month period, on the first day of pregabalin use and at the 6th month after treatment, were compared. GFR, which is a marker of renal function values; was measured twice a month to detect possible changes in kidney functions. Arithmetic mean GFR values and changes in patients measured twice within a six-month period were examined. The average of each parameter was evaluated quantitatively, taking into account the error rate and standard deviation.

In this study, the SGLT-2 method was used for drug use that may affect kidney function tests. In this study, epicrisis and patient cards of adult patients using pregabalin were scanned and questioned and included in the research. During the study, patients did not use any medication that would affect electrolyte levels. In addition, conditions such as diet were not observed and the patients were not standardized. As a result of the data obtained from adult patients (30-70 age group) during the study; It was observed that the patients did not have any additional disease that could affect their kidney functions.

Statistical analyzes

Serum electrolyte, urea, uric acid, creatinine and GFR values measured twice in a six-month period, on the first day of pregabalin use and in the 6th month after treatment. These values were first evaluated quantitatively by comparing their average values. The average of each parameter was evaluated quantitatively, taking into account the error rate and standard deviation. Statistical analyzes were performed for each parameter by selecting analyzes appropriate to the distribution of the data in the SPSS 21 program. In addition, comparative analyzes were made.

RESULTS

The average changes in serum GFR, urea, uric acid, creatinine values and serum electrolyte levels, determined from peripheral blood of the cases with the use of pregabalin, are shown in graphs.

GFR Values

The GFR values and changes which have been measured twice in a six-month period have been examined. The average GFR value was 99.01 mL/min/1.73 m^2 in the first measurement, and this value was averaged 97.59 mL/min/1.73 m^2 in the sixth month. The minimum values between patients during the six-month period were measured between 41,00 mL/min/1.73 m^2 and 47.00 mL/min/1.73 m^2 respectively. The maximum values for GFR over the six-month period were measured 187.00 mL/min/1.73 m^2 and 134.00 mL/min/ respectively. The standard error rate was calculated separately for both measurements and was observed very low (Figure 1, Table 1).

Urea Values

In patients the urea values and changes which have been measured twice in a six-month period have been examined. The average urea value was 31.64 mg/dL in the first measurement, and this value was averaged to 34.00 mg/dL in the sixth month. In the six-month period, the minimum values were 14.00 mg/dL - 14.00 mg/dL, and the maximum urea values were 67.80 mg/dL - 60.6 mg/dL respectively in the first and sixth month. The standard error rate was also

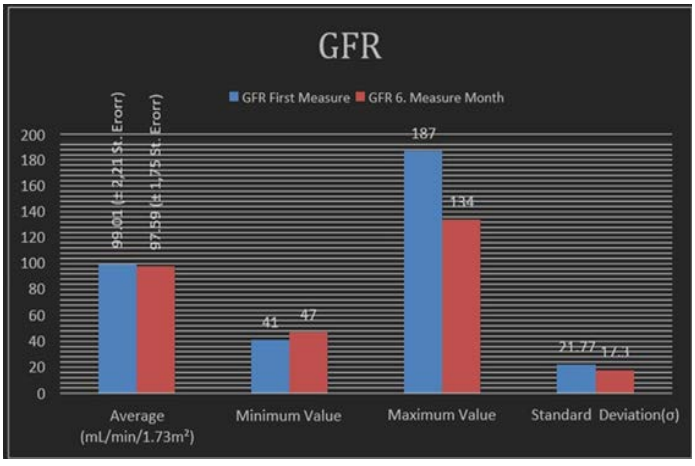

Figure 1. GFR changes based on two measurements in the six month period

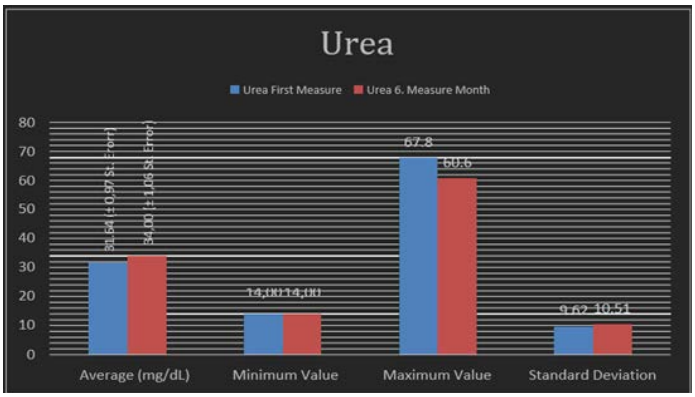

Figure 2. Urging changes based on two measurements in the six month period

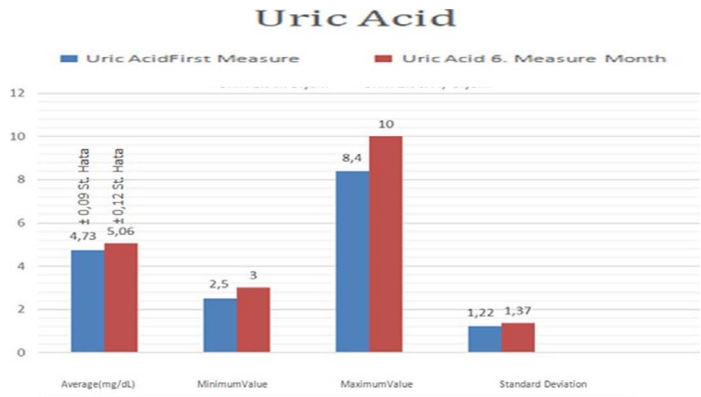

Figure 3. Uric acid changes based on two measurements in the six month period

calculated and observed very low for measurements at both different times (Figure 2, Table 1).

Uric Acid Values

The uric acid values and variations which have been measured twice in the six-month period were examined. The average uric acid value was 4.73 mg/dL in the first measurement taken when patients started using pregabalin, and this value was averaged to 5.06 mg/dL in the sixth month. The minimum values measured in the six-month period were 2.50 mg/dL - 3.00 mg/dL respectively and the maximum values measured for uric acid were 8.40 mg/dL - 10.00 mg/dL respectively. The standard error rate was also calculated and observed very low for measurements at both different times (Figure 3, Table 1).

Creatinine Values

The creatinine values and changes which were measured twice and averaged, were analyzed. The average creatinine value was 0.75 mg/dL at the first measurement when patients started using pregabalin, and this value was averaged to 0.76 mg/dL by the sixth month. During the six-month period, the minimum values between patients were 0.44 mg/dL - 0.43 mg/dL respectively, and the maximum creatinine values were 1.69 mg/dL - 1.50 mg/dL respectively. The standard error rate was calculated and observed very low for measurements at both different times (Figure 4, Table 1).

Na^+ and Cl^- Values

The mean values of Na^+ and Cl^- measured twice in a six-month period have been analyzed. The average Na^+ and Cl^- values were calculated at 139.71 mEq/L and 103.08 mEq/L in the first measurement, when patients started using pregabalin, for average Na^+ and Cl^- in the sixth month, respectively at 140.08 mEq/L - 102.72 mEq/L. In the six-month period, the minimum values between patients were 126.00 mEq/L - 95.00 mEq/L respectively for Na^+ and Cl^- in the first measurement, and the first maximum values were 148.00 mEq/L - 112.00 mEq/L respectively for the two electrolytes. For the sixth month measurement, the minimum values for Na+ and Cl– were 132.00 mEq/L - 97.00 mEq/L respectively, while the maximum values were 148.00 mEq/L - 108.00 mEq/L respectively. The standard error rate was calculated and

Table 1. Standard deviation and P values

	Standard Deviation 1th Month	Standard Deviation 6th Month	P values	p<0.05	p>0.05
GFR	21.77	17.30	0.322	-	+
Urea	9.62	10.51	0.006	+	-
Uric acid	1.22	1.37	0.002	+	-
Creatinine	0.22	0.20	0.435	-	+
Na^+	2.82	2.70	0.258	-	+
Cl^-	3.08	2.64	0.311	-	+
K^+	0.42	0.37	0.866	-	+
Ca^{+2}	0.47	0.58	0.989	-	+
Mg^{+2}	0.23	0.33	0.627	-	+
P^{+3}	0.66	0.62	0.099	-	+

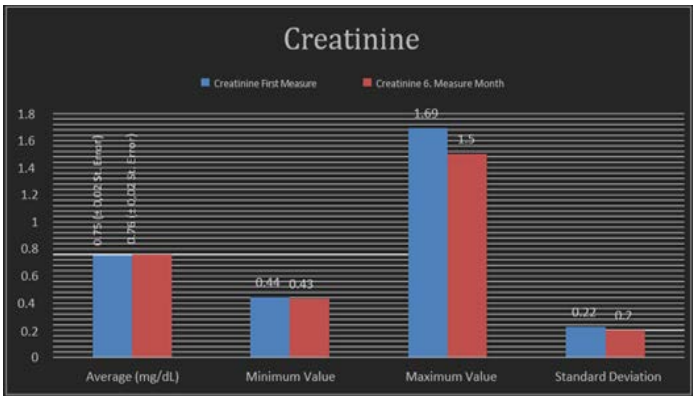

Figure 4. Creatinine changes based on two measurements in six months period

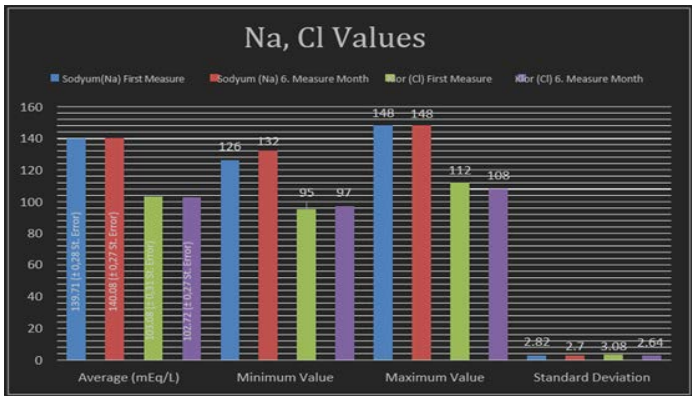

Figure 5. Na^{+} and Cl^{-} variations based on two measurements in six months period

observed very low for measurements at both different times (Figure 5, Table 1).

K^{+} and Ca^{+2} Values

The mean values of K^{+} and Ca^{+2} measured twice in a six-month period have been analyzed. The average K+ and Ca+2 values were 4.45 mEq/L - 9.13 mg/dL on average in the first measurement taken with patients using pregabalin, this value was not changed for K+ in the sixth month and was as 9.35 mg/dL for Ca^{+2}. In the six-month period, the minimum values between patients were 2.70 mEq/L - 8.00 mg/DL respectively for K^{+} and Ca^{+2} for the first measurement, and the first maximum values for the two electrolytes were 5.80 mEq/L - 10.30 mg/dL respectively. In the sixth month measurement, the minimum values for K^{+} and Ca^{+2} were 3.20 mEq/L - 7.10 mg/dL respectively, while the maximum values were 5.70 mEq/L - 12.80 mg/dL respectively. The standard error rate was also calculated and observed very low for measurements at both different times (Figure 6, Table 1).

Mg^{+2} and P^{+3} Values

The values, the arithmetic average and the concentration changes of Mg^{+2} and P^{+3} which were measured twice in the six-month period have been examined. Average Mg^{+2} and P^{+3} values were average 2.09 mg/dL - 3.38 mg/dL on the first measurement taken with patients using pregabalin, and this value was calculated at 2.1 mg/dL - 3.26 mg/dL respectively in the sixth month. In the six-month period, the minimum values between patients were 1.36 mg/dL - 1.10 mg/dL respectively for Mg^{+2} and P^{+3} for the first measurement, and the first maximum values for the two electrolytes were 3.9 mg/dL - 5.30 mg/dL respectively. In the sixth month measurement, the minimum values for Mg^{+2} and P^{+3} were 1.20 mg/dL - 2.20 mg/dL respectively, and the maximum values were 3.60 mg/dL - 5.80 mg/dL respectively. The standard error rate was also calculated and observed very low for measurements at both

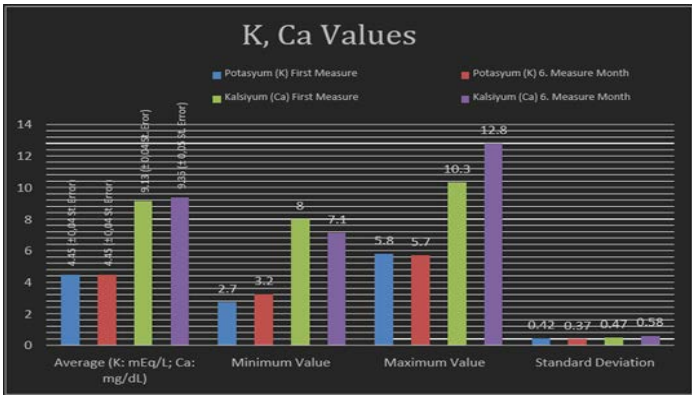

Figure 6. K^{+} and Ca^{+2} variations based on two measurements in six months period

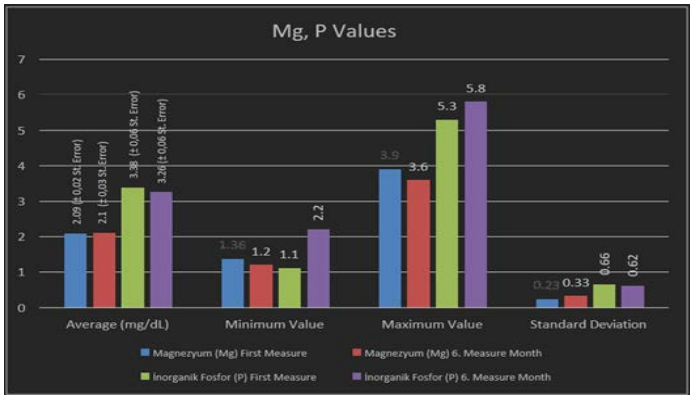

Figure 7. Mg^{+2} and P^{+3} variations based on two measurements in the six months period

different times (Figure 7, Table 1).

DISCUSSION

The general reference range of the GFR is 90 mL/min/1.73 m^2 for men and women starting from the age range of 20. In the age of 80, this average value is 68 mL/min/1.73 m^2 for men and 49 mL/min/1.73m^2 for women. The average normal GFR value is typically 60- 120 mL/min/1.73 m^2 (13). Considering the average age of patients in the study, it was not observed that the use of pregabalin had both quantitative and statistically significant effects on GFR.

Urea is mainly in the liver, but also expressed at low levels in other tissues. Urea is produced by urea cycle enzymes and its metabolic process may effect by diseases, hormones, and diets. Urea is eliminated through urine especially. Blood urea nitrogen (BUN) use to estimate renal function (14). High concentrations of substances excreted by the kidney, such as urea, creatinine, and uric acid, cause uremia as a result of renal failure (15). In order for substances such as creatinine and urea to be eliminated from the body in a controlled manner, GFR must occur without any problems (16). Although the reference range of each laboratory is different, the normal urea value is accepted between 10-40 mg/dL in laboratory tests. In our study, the averages of urea values obtained from the patients were observed within this range. Therefore, we can argue that pregabalin does not have a significant effect on urea, therefore, it does not make a significant difference in the urea marker in terms of renal functions.

Uric acid is the end product of purine metabolism by action of xanthine oxidase or xanthine dehydrogenase. It is found in the blood and excreted in the urine. Normal blood uric acid levels range between 2.4-6.0 mg/dL in adult women and 3.4-7.0 mg/dL in adult men. Studies since the 1950s have found that high serum uric acid levels are associated with various diseases such as hypertension, atherosclerosis, vascular pathologies, hyperinsulinemia and renal failure. It has been proven that uric acid plays an important role in evaluation of renal functions (17).

Pregabalin has a bioavailability of more than 90%. It is well absorbed orally and completely excreted in urine without hepatic metabolism. Pregabalin toxicity has been reported in very few patients with chronic kidney disease (CKD) or without CKD. Although rare, neurotoxicity has been reported, especially in patients undergoing hemodialysis. It has been observed that this situation can be prevented by adjusting the drug dose. Therefore, caution should be exercised when using this drug in patients with CRF and its dose should be adjusted according to renal function (18). Considering the mean values calculated over a 6-month period, our retrospective study results are within the range of values presented by the literature. This indicates that the use of pregabalin has no effect on uric acid, one of the markers of renal function, in patients unaffected by CKD.

Plasma creatinine may be within the normal range even in the presence of significant nephropathy. Therefore, plasma creatinine alone is not a reliable measure of renal function. Creatinine is an ideal endogenous substance for measuring GFR. Plasma creatinine is a product of the metabolism of creatinine and phosphocreatine in skeletal muscle. Serum creatinine levels are usually stable in people with stable renal function. Creatinine is freely filtered in the glomerulus and reabsorption does not occur. In advanced renal failure, an increase in serum creatinine levels is expected. The general reference range for plasma creatinine level is 0.6 mg/dL and 1.3 mg/dL (19). The results of the mean creatinine values calculated in the study are within the normal value ranges. This shows that use of pregabalin does not make a significant difference when looking at the measured values over a 6-month period. The maximum creatinine values are thought to be associated with diet.

The kidneys help maintain electrolyte concentrations by filtering water-electrolytes from blood and excreting the excess in urine. Thus, it provides the balance of electrolyte-water excretion. Serum electrolytes alone are not sufficient to assess renal function, but become significant when compared with other markers of renal function (20). No significant difference was found when compared to the average values of the current study with reference ranges given in the literature for serum electrolytes Na^{+}, Ca^{+2}, Cl^{-}, K^{+}, P^{+3} and Mg^{+2}.

In oral bioavailability adjustments, plasma clearance of pregabalin is essentially equivalent to renal clearance. This indicates that pregabalin undergoes almost zero nonrenal elimination. Since pregabalin is eliminated renally, it affects renal function pharmacokinetics (21). Based on this information, we retrospectively examined the patients with different diagnoses using various doses of pregabalin, as a result of the evaluation of their 6-month measurements, we see that they preserved their normal kidney functions. The data obtained are consistent with the knowledge that almost all elimination of pregabalin is renal. Renal insufficiency occurring at any time will affect the efficacy, elimination and excretion of this drug during use. Therefore, we can say that the use of pregabalin in our study did not have an adverse effect on kidney functions as a result of measuring the clearances and serum values of the substances.

Limitations

During our study, the very low GFR of 3 patients detected while scanning the patient's epicrisis was not included in the statistical evaluations, considering that these patients might have developed a possible CKD. There was no difference in the mean values.

CONCLUSION

In the study, the mean of GFR, creatinine, urea, uric acid and serum electrolytes Na^{+}, Ca^{+2}, Cl^{-}, K^{+}, P^{+3} and Mg^{+2} concentrations, which are markers of renal function values, were examined retrospectively in the adult patient group using pregabalin. As seen in the literature, the renal function values we obtained show a normal distribution between certain reference intervals. In addition, this study may lead to the investigation of the effects of pregabalin on other organs. Since the included patient group was heterogeneous and the number of patients was sufficient for general organ function evaluation, it was observed that pregabalin did not have an effect that would significantly alter renal function. It can be thought that this study forms the basis for new studies to be planned prospectively. It may be useful to observe the renal effects of all drugs with retrospective scans in terms of toxicity and adverse effects, not only for pregabalin. Thus, drug safety can be increased with interdisciplinary approaches by providing information that may be beneficial to drug research and development institutions.

Etik Kurul: Approval for the study was granted by the Ethics Committee for Pharmaceutical and Non-Medical Device Research, under decision number 2019/1747, and all procedures in the study were conducted in accordance with the ethics committee protocol.

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REFERENCES

1. Yamanoglu T. Chronopharmacology of the Interaction Between Pregabalin and Morphine (PhD Thesis), Gazi University, Ankara, 2015.
2. Ben-Menachem E. Pregabalin pharmacology and its relevance to clinical practice. Epilepsia 2004;45 Suppl 6:13-8.
3. Moore RA, Straube S, Wiffen PJ, et al. Pregabalin for acute and chronic pain in adults. Cochrane Database Syst Rev 2009; 8;(3):CD007076.
4. Dworkin RH, Kirkpatrick P. Pregabalin. Nat Rev Drug Discov 2005;4(6):455-6.
5. Kavoussi R. Pregabalin: From molecule to medicine. Eur Neuropsychopharmacol 2006;16 Suppl 2:S128-33.
6. Taylor DM, Barnes TR, Young AH. The Maudsley Prescribing Guidelines in Psychiatry. 13th edition. Hoboken, NJ: Wiley, 2019.
7. Sinha N. Pregabalin. The Essence of Analgesia and Analgesics. Anticonvulsant-Type Analgesics. Sinatra RS, Jahr JS, Watkins-Pitchford JM ed. 2010; 72 (6).
8. Perucca E. Clinically relevant drug interactions with antiepileptic drugs. Br J Clin Pharmacol 2006;61(3):246-55.
9. Naidoo S, Meyers AM. Drugs and the kidney. S Afr Med J 2015;105(4):2683.
10. Jung YJ, Lee DY, Kim HW, et al. A Case Report of Syndrome of Inappropriate Antidiuretic Hormone Induced by Pregabalin. Electrolyte Blood Press 2016;14(2):31-4.
11. Johnson DW. Evidence-based guide to slowing the progression of early renal insufficiency. Intern Med J 2004;34(1-2):50-7.
12. Stevens LA, Coresh J, Greene T, et al. Assessing kidney function--measured and estimated glomerular filtration rate. N Engl J Med 2006;354(23):2473-83.
13. Fenton A, Montgomery E, Nightingale P, et al. Glomerular filtration rate: new age- and gender- specific reference ranges and thresholds for living kidney donation. BMC Nephrol 2018;19(1):336.
14. Wang H, Ran J, Jiang T. Urea. Subcell Biochem 2014;73:7-29.
15. Matovinović MS. 1. Pathophysiology and Classification of Kidney Diseases. EJIFCC 2009;20(1):2-11.
16. Yang HC, Zuo Y, Fogo AB. Models of chronic kidney disease. Drug Discov Today Dis Models 2010;7(1-2):13-9.
17. Iseki K, Oshiro S, Tozawa M, et al. Significance of hyperuricemia on the early detection of renal failure in a cohort of screened subjects. Hypertens Res 2001;24(6):691-7.
18. Lee DW, Lee HJ, Kim HJ, et al. Two cases of pregabalin neurotoxicity in chronic kidney disease patients. NDT Plus 2011;4(2):138.
19. Traynor J, Mactier R, Geddes CC, et al. How to measure renal function in clinical practice. BMJ 2006;333(7571):733-7.
20. Shrimanker I, Bhattarai S. Electrolytes. 2023 Jul 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
21. Bockbrader HN, Radulovic LL, Posvar EL, et al. Clinical pharmacokinetics of pregabalin in healthy volunteers. J Clin Pharmacol 2010;50(8):941-50.

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Mesane Tümör Boyutuyla Depresif Semptomlar Arasında İlişki var mı?

Is There a Relationship Between Tumor Size and Depression in Bladder Cancer?

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ÖZET

Amaç: Mesane kanseri sadece fiziksel hasara neden olmakla kalmayıp, aynı zamanda psikolojik sıkıntıları da beraberinde getiren önemli bir malignitedir. Depresyon, mesane kanseri hastalarında en sık görülen ruhsal hastalıklardan olup hastalık ve ilişkili faktörlere bağlanmaktadır. Çalışmamızda mesane kanseri tanısı konulmuş olan hastalarda depresif semptomların şiddeti tümör özelliklerinin karşılaştırılması ve aralarındaki ilişkinin belirlenmesi amaçlanmıştır.
Yöntemler: Üroloji Kliniği'ne başvurup USG ile mesane kanseri tanısı alan 30 hasta çalışmaya dahil edildi. Hastaların 21 soruluk Beck Depresyon Envanteri(BDE)'ni doldurması istendi. Hastaların yaş, cinsiyet, tümör boyutu ve BT görüntülemelerine göre yapılan klinik TNM evreleri kaydedildi. Daha sonra veriler hastaların tümör özellikleriyle birlikte değerlendirilerek sonuçlar SPSS ile değerlendirildi.
Bulgular: Hastaların ortalama BDE skoru 9.43±7.93 olarak ölçüldü. 17 hasta BDE'ye göre Minimal, 9 hasta Hafif, 2 hasta Orta, 2 hasta Şiddetli depresyon sınıfına dahil olduğu görüldü.
Tümör boyutu ve BDE arasında yapılan ROK kurv analizine göre tümör boyutunu 1.75 cm cutoff değer kabul edersek bu değerin üzerinde BDE'nin anlamlı olarak yüksek olduğu görülmüştür.(p:0.016)(Resim 1) Ayrıca yapılan korelasyon analizinde BDE skoru ile tümör boyutunun pozitif korele olduğu bulunmuştur. (p:0.002)
Sonuç: Mesane kanseri depresif semptomlara sebep olabilen önemli bir hastalıktır. Çalışmamızda tümör boyutunun semptom düzeyine etkisi araştırılmış olup büyük tümöre sahip hastalarda semptomların daha şiddetli olduğu sonucuna varılmıştır. Mesane kanseri olan hastalarda hastalık tanısı ve takibi sırasında depresif semptomları olan hastalarda psikiyatri görüşü alınmalıdır.

Anahtar Kelimeler: Mesane kanseri, mesane tümörü, depresyon, beck depresyon envanteri

ABSTRACT

Purpose: Bladder cancer is an important malignancy that not only causes physical damage, but also brings psychological distress. Depression is one of the most common mental disorder in patients with bladder cancer and is attributed to the disease and related factors. In our study, we aimed to compare the severity of depressive symptoms in patients diagnosed with bladder tumor with tumor characteristics and to investigate the relationship between them.
Material-Method: Thirty patients who applied to the Urology Clinic and were diagnosed with bladder tumor by USG were included in the study. A 21-item Beck Depression Inventory(BDI) questionnaire was applied to the patients. Age, gender, tumor size of the patients and clinical TNM stages according to CT scans were recorded. The data were compared with the tumor characteristics of the patients and the results were evaluated with SPSS.
Results: The mean BDI score of the patients was 9.43±7.93. According to BDI, 17 patients were found to be in the Minimal depression class, 9 patients Mild, 2 patients Moderate, and 2 patients Severe depression. According to the ROK curve analysis between tumor size and BDI, if we accept the tumor size as a cut-off value of 1.75 cm, BDE was found to be significantly higher above this value. (p:0.016)(Figure-1) In addition, in the correlation analysis, it was found that BDI score and tumor size were positively correlated. (p:0.002)
Discussion: Bladder tumor is an important disease that can cause anxiety and depressive symptoms. In our study, the effect of tumor size on symptom level was investigated and it was concluded that the symptoms were more severe in patients with large tumors. Patients with depressive symptoms should be consulted to psychiatry during the diagnosis and follow-up of patients with bladder tumors.

Key words: Bladder cancer, bladder tumor, depression, beck depression inventory

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GİRİŞ

Kanser fiziksel ve ruhsal hastalıkların eş zamanlı olarak bir arada görüldüğü ve bu eş zamanlılığın hasta, hasta yakınları ve hekime maddi ve manevi yükler getirdiği bir hastalıktır (1). Kanser hastalığı insanlarda ölümü çağrıştırdığı için ruhsal bir yıkıma sebep olur. Kanser tanısı alan hastalarda anksiyete, depresyon gibi birçok psikiyatrik bulgu ortaya çıkabilir. Kanser hastalarındaki psikiyatrik bozuklukların yaygınlığı %9-60 arasında değişebilmektedir (2). En sık ortaya çıkan ruhsal bozukluklar depresyon, anksiyete bozuklukları ve deliryumdur (3).

Mesane kanseri ürolojik maligniteler içinde sık görülen malign tümörlerdendir. Mesane kanseri sadece fiziksel hasara neden olmakla kalmaz, aynı zamanda psikolojik sıkıntıları da beraberinde getirir. Mesane kanserli hastalarda psikolojik bozukluk, normal insanlardan çok daha yaygındır (4, 5). Bunun en önemli sebepleri; hastaların cerrahi sonrası ağrı çekmesi, azalmış yaşam kalitesine sahip olmaları ve tekrarlayan invaziv girişimlerdir (6). Hastalığın tanısında altın standart sistoskopi olup hastalar üzerinde stres kaynağı oluşturabilir (7). Kanser hastalarında hastalıklarının bir döneminde major depresyon yaygınlığı %38 bulunmuş, hastaların %58'inde de depresif belirtilerin mevcut olduğu bildirilmiştir (8). Türkiye'de kanser hastalarındaki depresyon sıklığı ise bir çalışmaya göre %22 olarak tespit edilmiştir (9).

Depresyon, mesane kanseri hastalarında en sık görülen ruhsal hastalıktır, bu da mutluluk kaybına ve intihar oranında artışa neden olabilir (10). Ayrıca, depresyonu olan mesane kanseri hastalarının hastalığa bağlı ölüm oranının, ruhsal bozukluğu olmayan mesane kanseri hastalarına göre 2.2 kat daha yüksek olduğu gösterilmiştir (11). Bu konuda literatürde pek çok çalışma olsa da mesane tümörü özellikleriyle depresyon skoru düzeyini karşılaştıran çalışma bulunmamaktadır. Çalışmamızda mesane kanseri tanısı konulmuş olan hastalardaki depresif belirtilerin düzeyini Beck Depresyon Envanteri'yle değerlendirerek sonucun tümör özellikleriyle karşılaştırılmasını ve aralarındaki ilişkinin saptanmasını amaçladık.

YÖNTEMLER

Görüşmeler hastanın yanında bir başkasının olmamasına özen gösterilerek, özel görüşme odasında yapıldı. Hastalara çalışmanın amacı ve kişisel bilgilerin mutlak gizliliği açıklandı, çalışmaya katılmayı isteyip istemedikleri soruldu ve yazılı izin belgesi alındı. Üroloji Kliniği'ne başvurup USG ile mesane tümörü tanısı alan 30 hasta çalışmaya dahil edildi. Hastalara TUR-M yapıldıktan sonra patoloji sonucu için postoperatif 2 hafta sonra başvurduğunda 21 soruluk Beck Depresyon Envanteri sorgulaması yapıldı. Hastaların yaş, cinsiyet, tümör boyutu ve BT görüntülemelerine göre yapılan klinik TNM evreleri kaydedildi.

Depresif semptom seviyesinin ölçümü

Beck Depresyon envanteri (BDE), depresif semptomların şiddetini değerlendirmek için en popüler 21 maddelik kişisel bildirim anketidir ve semptomatolojinin nörovejetatif semptomlarla örtüştüğü durumlarda bile hastaları depresyon için taramak için kullanılır (12). BDÖ puanı 0 ile 63 arasında değişir ve yüksek puanlar daha şiddetli depresif belirtilere işaret eder. Tüm katılımcılar BDE anketini üroloji hekimi eşliğinde doldurmuştur. Geleneksel cut-off değerleri minimal 0-9, hafif depresyon için 10-18, orta şiddetli depresyon için 19-29 ve şiddetli depresyon için 30-63'tür (13).

Dahil edilme ve dışlanma kriterleri

18-80 yaş arasında belirgin bilişsel bozukluğu olmayan mesane kanseri hastaları çalışmaya dahil edilmiştir.18 yaş altı 80 yaş üstü, metastatik hastalar, daha önce psikiyatrik hastalık hastalık öyküsü olan hastalar, psikiyatrik ilaç kullanımı olan hastalar, başka malignitesi olan hastalar, daha önce transüretral rezeksiyon geçmişi olan hastalar çalışma dışı bırakılmıştır.

İstatistiksel Analiz

Kategorik değişkenler sayı ve yüzde olarak sunuldu ve ki-kare testi ile karşılaştırıldı. Sürekli değişkenler ortalama ± standart sapma olarak sunuldu ve t-testi kullanılarak karşılaştırıldı. BDE skoru ile tümör boyutu arasındaki ilişkiyi incelemek için ROK kurv analizi yapıldı. $p < 0.05$, istatistiksel olarak anlamlı kabul edildi. İstatistiksel analizler SPSSv25 kullanılarak yapıldı.

BULGULAR

Hastaların yaş ortalaması 57 idi. 30 hastanın 28'i erkek, 2'si kadındı. Ortalama tümör boyutu 2.3±1.28 cm olarak ölçüldü. Patoloji sonuçları değerlendirildiğinde 6 hasta Düşük malignite potansiyelli papiller ürotelyal neoplazi (DMPPÜN), 14 hasta TaG1, 6 hasta TaG3, 4 hasta T1G3 derecesinde idi

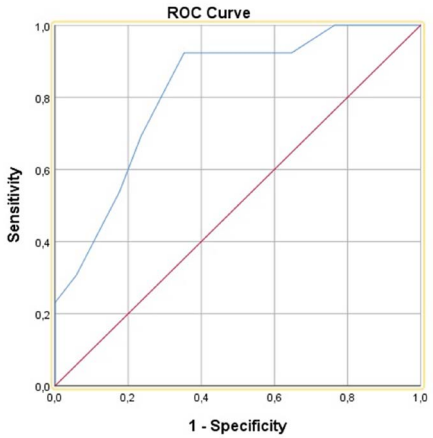

Figure 1. BDE skoru ile tümör boyutu arasındaki ROK kurv analizi

Tablo 1. Demografik veriler ve Beck depresyon anketi skorları

	Hastalar n:30
Yaş(ortalama ±SD)	57 ±15.3
Cinsiyet	
Erkek	28(%93.3)
Kadın	2(%6.7)
Tümör Boyutu(cm) (ortalama±SD)	2.3 ±1.28
Patoloji	
Düşük malignite potansiyelli papiller ürotelyal neoplazi	6(%20)
TaG1	14(%46.7)
TaG3	6(%20)
T1G3	4(%13.3)
BDE Skoru(ortalama±SD)	9.43 ±7.93
BDE Skoruna göre sınıflandırma	
Minimal	17(%56.7)
Hafif	9(%30)
Orta	2(%6.7)
Şiddetli	2(%6.7)

(Tablo 1). Hastaların ortalama BDE skoru 9.43±7.93 olarak ölçüldü. 17 hasta BDE'ye göre Minimal, 9 hasta Hafif, 2 hasta Orta, 2 hasta Şiddetli depresyon sınıfına dahil olduğu görüldü.

Tümör boyutu ve BDE arasında yapılan ROK kurv analizine göre tümör boyutunu 1.75 cm cutoff değer kabul edersek bu değerin üzerinde BDE'nin anlamlı olarak yüksek olduğu görülmüştür (p:0.016) (Resim 1). Ayrıca yapılan korelasyon analizinde BDE skoru ile tümör boyutunun pozitif korele olduğu bulunmuştur (p:0.002). Çalışmada değerlendirilen tüm hastalar postoperatif hastanede en az bir gün takip edilmiş olup günübirlik yatış yapılan hasta yoktur.

TARTIŞMA

Bu çalışmada mesane kanseri hastalarında BDE skorlarını değerlendirerek karşılaştırdık. Literatürdeki diğer çalışmalardan farklı olarak çalışmamızda BDE skoru ile tümör boyutu arasındaki ilişki değerlendirilmiştir. Çalışmamız sonucunda yapılan ROK kurv analizinde 1.75 cm boyutunun üzerindeki mesane tümörü hastalarında BDE skorunun anlamlı olarak yükseldiği tespit edilmiştir. Mesane kanserleri, üriner sistemin en sık görülen malign tümörlerinden biridir. Genellikle ağrısız makroskopik hematüri ile başvururlar. Mesane tümörü tanısında konvansiyonel sistoskopi en güvenilir yöntemdir (7).

Kanser tanısı olan hastalarda tanıya ve sonrasındaki alınan tedaviye bağlı anksiyete ve depresif semptomların geliştiği literatürde daha önce bildirilmiştir. Tüm kanser hastalarında yapılan bir çalışmada depresif ve anksiyöz semptomatolojinin yaygınlığı sırasıyla %23.4 ve %19.1-19.9 olarak bulunmuştur (14). Kanser hastalarında meydana gelen depresyon gelişiminde kanserin türü, evresi ve uygulanan tedavi seçeneği önemli rol oynar (15).

Mesane kanseriyle depresyon ilişkisini inceleyen literatürde az sayıda çalışma mevcuttur. Bunlardan bir tanesine göre yeni mesane kanseri tanısı konulmuş olan hastalarla normal populasyon karşılaştırmış olup mesane kanseri hastalarında depresyon gelişme ihtimalinin normal popülasyona göre daha yüksek olduğu izlenmiştir (1). Fareler üzerinde yapılan bir çalışmaya göre; mesane kanseri oluşturulan farelerde depresyonun etkisi araştırılmıştır. Çalışmada immün mekanizmaların değerlendirilmesi için IL6, IL1, TNF-α, IL10 düzeyleri ölçülmüştür. Sonuç olarak deneysel depresyon oluşturulan farelerde tümör boyutunun daha fazla büyüdüğü görülmüştür. Çalışmamızda mesane kanserinin depresyon üzerindeki etkisi incelenirken bu çalışmada tam tersine depresyonun tümör büyümesi üzerindeki olumsuz etkisi incelenmiştir. Depresyon düzeyi arttıkça ACTH ve Kortizol seviyeleri artmış buna bağlı immünsupresyon meydana gelmiştir (16). Bu açıdan mesane kanseriyle depresyon arasındaki ilişki iki yönlü olup mesane tümörü depresyonu tetiklerken aynı zamanda hastadaki artmış depresyon ve stres de mesane tümörü boyutunda büyümeye sebep olmaktadır.

Mesane tümörü olan hastalarda yapılan retrospektif bir çalışmada mesane kanserli hastalarda depresyon sıklığı %14 olarak bulunmuştur (17). Çalışmamızda BDE'ye göre değerlendirildiğinde %6.7 orta, %6.7 şiddetli depresyon sınıfında depresif semptomlar tespit edilmiş olup literatürdekine benzer oranlarda depresif semptomlar tespit edilmiştir. Depresif semptomların ölçülmesinde pek çok anket ve sorgulama formu mevcuttur. Çalışmamızda her ne kadar klinik olarak depresyon tanısı konmamış olsa da depresif semptomları belirlemek için BDE kullanılmıştır. BDE, depresif semptomların şiddetini değerlendirmek için yapılan 21 maddelik kişisel bildirim anketidir ve semptomatolojininnörovejetatif semptomlarla örtüştüğü durumlarda bile hastaları depresyon için taramak için kullanılır (12). BDE'nin kullanıldığı prostat kanseri hastalarında AndrojenDeprivasyon Tedavisi (ADT) öncesi ve

sonrası depresif semptomların karşılaştırıldığı bir çalışmada BDE skoru 10.27'den 19.40'a yükseldiği görülmüştür. Çalışma sonunda araştırmacılar ADT'nin depresif semptomları kötüleştirebileceği sonucuna varmıştır (18).

Çalışmamızda tümör boyutu ile BDE arasındaki ilişkiyi incelemek için yapılan ROK kurv analizinde 1.75 cm'yi cutoff olarak kabul edersek bu değerin üzerinde BDE'nin anlamlı olarak yükseldiği gözlenmiştir. Burada daha önce literatürde bahsedilmeyen tümör boyutuyla depresyon skoru arasında pozitif bir korelasyon olduğu görülmektedir. Özellikle 1.75 cm'den büyük mesane tümörü olan hastalarda depresif semptomların arttığı görülmektedir. Büyük tümörü olan hastalarda artmış depresif semptomlar tümör boyutu arttıkça artan hematüri ve alt üriner sistem semptomlarına bağlı olabilir. Ayrıca yine artan tümör boyutuna bağlı artmış lokal invazyon ve lokal semptomlar hastaların yaşam kalitelerini etkileyerek depresif semptomlar ortaya çıkarabilir.

Çalışmanın limitasyonları

Yine de bu çalışmanın birkaç limitasyonu vardır. Bu çalışmanın örneklem büyüklüğü küçüktü ve daha büyük bir kohort verilerin gücünü artırmak için gelecekteki çalışmalarda kullanılmalıdır. Ayrıca hastalardaki depresif semptomların düzeyi sadece kendi bildirim ölçeği ile belirlenmiş olup psikiyatrik klinik görüşme yapılmamıştır. Skorların karşılaştırılacağı kontrol grubunun olmaması da bir diğer kısıtlılıktır. Hastalığa atfedilen depresif semptomlar kanser süreci içinde ek ilaç kullanımı, sosyal çevre gibi durumlardan etkilenebilir. Ayrıca geleneksel deneysel çalışmalardan farklı olarak, psikometrik analizler doğası gereği daha tanımlayıcıdır ve tespit edilen cutoff değerler çalışmalar arası değişkenlik gösterebilir.

SONUÇ

Mesane kanseri hastanın kendisinde ve sosyal çevresinde depresif semptomlara sebep olabilen önemli bir hastalıktır. Mesane kanseri ile depresyon arasındaki ilişki daha önce araştırılmıştır. Çalışmamızda buna ek olarak tümör boyutunun semptom düzeyine etkisi araştırılmış olup büyük tümöre sahip hastalarda semptomların daha şiddetli olduğu sonucuna varılmıştır. Büyük mesane tümörlü hastalar hastalığın takibinde yüksek risk grubuna dahil edildiği gibi depresif semptomlar açısından da yüksek riskli olduğu akıldan çıkarılmamalı ve gereklilik halinde psikiyatri hekimlerinden konsültasyon istenmelidir.

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KAYNAKLAR

1. Noyan, M.A.J.P., 11, Mesane kanseri hastasına psikiyatrik yaklaşım ilkeleri ve üroonkologlara öneriler. 2012: p. 305-310.
2. Sadock, B.J., V.A. Sadock, and P. Ruiz, Comprehensive textbook of psychiatry. Vol. 1. 2000: lippincott Williams & wilkins Philadelphia.
3. Akechi, T., et al., Psychiatric disorders in cancer patients: descriptive analysis of 1721 psychiatric referrals at two Japanese cancer center hospitals. 2001. 31(5): p. 188-94.
4. Steel, Z., et al., The global prevalence of common mental disorders: a systematic review and meta-analysis 1980–2013. 2014. 43(2): p. 476-493.
5. Kutlu, R., et al., Kanserli hastalarda depresyon ve yaşam kalitesini etkileyen faktörler. 2011. 27(3): p. 149-153.
6. Vartolomei, L., M.D. Vartolomei, and S.F.J.E.U.F. Shariat, Bladder cancer: depression, anxiety, and suicidality among the highest-risk oncology patients. 2020. 6(6): p. 1158-1161.
7. Kıvrak, A.S.J.S.T.D., Mesane tümörlerinin tanısında sanal BT sistoskopi ve konvansiyonel sistoskopi bulgularının karşılaştırılması. 2006. 23(2): p. 47-56.
8. Massie, M.J.J.J.M., Prevalence of depression in patients with cancer. 2004. 2004(32): p. 57-71.
9. Tokgöz, G., et al., Kanser hastalarinda majör depresyon yayginligi ve iliskili etkenler/Prevalence of major depression in patients with cancer and related factors. 2008. 9(2): p. 59.
10. Pinquart, M. and P.J.P.m. Duberstein, Depression and cancer mortality: a meta-analysis. 2010. 40(11): p. 1797-1810.
11. Wang, Y.-H., et al., Depression and anxiety in relation to cancer incidence and mortality: a systematic review and meta-analysis of cohort studies. 2020. 25(7): p. 1487-1499.
12. Pop-Jordanova, N.J.P., BDI in the assessment of depression in different medical conditions. 2017. 38(1): p. 103-111.
13. Hisli, N.J.P.D., Beck Depresyon Envanterinin gecerliligi uzerine bit calisma (A study on the validity of Beck Depression Inventory.). 1988. 6: p. 118-122.
14. Naser, A.Y., et al., Depression and anxiety in patients with cancer: a cross-sectional study. 2021. 12: p. 1067.
15. Smith, H.R.J.O.l., Depression in cancer patients: Pathogenesis, implications and treatment. 2015. 9(4): p. 1509-1514.
16. Qian, Z., et al., Depression Induced by CUMS Leads to Bladder Cancer Development and Local Tumor Immunosuppression in Mice. 2021. 2021: p. 1-10.
17. Oserowsky, A., et al., The significant role of depression in elderly patients with bladder cancer. 2021. 33: p. 11-18.
18. Shin, D., S.R. Shim, and C.H.J.P.o. Kim, Changes in Beck Depression Inventory scores in prostate cancer patients undergoing androgen deprivation therapy or prostatectomy. 2020. 15(6): p. e0234264.

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Association of Kinesiophobia with Core Muscle Endurance, Functional Mobility and Physical Activity Level in Patients with Fibromyalgia Syndrome: A Cross-Sectional Study

Fibromiyalji Sendromlu Hastalarda Kinezyofobinin Kor Kas Dayanıklılığı, Fonksiyonel Hareketlilik ve Fiziksel Aktivite Düzeyi ile İlişkisi: Kesitsel Bir Çalışma

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ÖZET

Amaç: Bu çalışmada FMS hastalarında kinezyofobi düzeyini analiz etmek ve kinezyofobi ile ağrı, hastalık aktivitesi, yorgunluk, fiziksel aktivite düzeyi, fonksiyonel mobilite ve kor kas dayanıklılığı süreleri arasındaki olası ilişkiyi araştırmak amaçlanmıştır.
Gereçler ve Yöntem: Bu çalışmaya FMS'li 41 kadın katılmıştır. Hastalar kinezyofobi için Tampa Kinezyofobi Skalası, ağrı düzeyi için görsel analog skala, hastalık aktivitesi için Fibromiyalji Etki Anketi, fiziksel aktivite düzeyi için Uluslararası Fiziksel Aktivite Anketi-Kısa Form ve yorgunluk için Yorgunluk Şiddeti Ölçeği kullanılarak değerlendirildi. Kor kas dayanıklılık ve fiziksel uygunluk testleri uygulandı. İstatistiksel analiz için Spearman korelasyon katsayıları ve Mann-Whitney U testi uygulandı.
Bulgular: Hastaların hastalık durasyonu 3 (2/10) yıldı ve 25'inde (%60.9) yüksek düzeyde kinezyofobi vardı. Kinezyofobi ile ağrı düzeyi ($p<0.001$), fiziksel aktivite düzeyi, yorgunluk, fiziksel uygunluk testleri ve gövde fleksör kas dayanıklılık süresi ($p<0.05$) arasında anlamlı ilişkiler tespit edildi. Ancak kinezyofobinin hastalık aktivitesi ve diğer kor kas dayanıklılık testleri ile ilişkisi yoktu ($p>0.05$). Ağrı, yorgunluk ve fiziksel aktivite düzeyi, fiziksel uygunluk testleri, gövde ekstansör testi dışındaki kor kas dayanıklılık testleri yüksek kinezyofobi ve düşük kinezyofobi grupları arasında farklılık gösterdi ($p<0.05$). Ancak yüksek kinezyofobi ve düşük kinezyofobi grupları arasında hastalık aktivitesi benzerdi ($p>0.05$).
Sonuç: Kinezyofobinin ağrı, fiziksel aktivite düzeyi, yorgunluk, gövde fleksör kas dayanıklılığı ve fonksiyonel hareketlilik ile ilişkili olduğu görülmektedir. FMS hastalarında kinezyofobi ve ilişkili faktörlerin değerlendirilmesi rehabilitasyon programının oluşturulmasına yardımcı olabilir.

Anahtar Kelimeler: Fibromiyalji, kinezyofobi, kor kas dayanıklılığı, fiziksel uygunluk, ağrı.

ABSTRACT

Aim: Present study analyzes kinesiophobia level in FMS patients and investigates the possible relationship between kinesiophobia and pain, disease activity, fatique, physical activity level, functional mobility and core muscle endurance (CME) times.
Materials and Methods: Forty-one female patients were participated in present study. Patients were assessed performing Tampa Scale for Kinesiophobia for kinesiophobia, a visual analog scale for pain level, the Fibromyalgia Impact Questionnaire for disease activity, the International Physical Activity Questionnaire- Short Form for physical activity (PA) level and Fatigue Severity Scale for fatigue. Core muscle endurance and physical fitness tests were applied. For statistical analysis were performed Spearman correlation coefficients and Mann-Whitney U test.
Results: Of the patients, disease duration was 3 (2/10) years and 25 (60.9%) had a high level of kinesiophobia. Significant relationships were detected between kinesiophobia and pain level ($p<0.001$), PA level, fatique, physical fitness tests and trunk flexor endurance time ($p<0.05$). However, kinesiophobia were not related to disease activity and other CME tests ($p>0.05$). Pain ($p<0.001$), fatique amd PA level, physical fitness tests, CME tests except trunk extensor test differed between high- kinesiophobia and low-kinesiophobia groups ($p<0.05$). However, disease activity was similar between high- kinesiophobia and low- kinesiophobia groups (>0.05).
Conclusions: Kinesiophobia seems to be associated with pain, PA level, fatigue, trunk flexor endurance and functional mobility. Evaluating kinesiophobia and associated factors in FMS patients may help in creating rehabilitation program.

Key words: Fibromyalgia, kinesiophobia, core muscle endurance, physical fitness, pain.

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INTRODUCTION

Fibromyalgia syndrome (FMS) is a chronic and complex disease accompanied by widespread and persistent pain, poor sleep quality, fatigue, cognitive and mood disorders (1). The etiology of FMS is complex and unclear, and biological, genetic and psychological factors are effective in the development of the disease (2, 3). FMS also has an advers impact on daily activities and quality of life. Especially, it has been frequently reported that severe fatique and pain in FMS may reduce physical activities and lead to a sedentary lifestyle by reducing functional mobility and increasing disability risk (4). It has also been shown that loss of function in these patients may be strongly associated with work disability (5).

Movement-related fear is highly associated with disability in individuals with chronic musculoskeletal complaints (6, 7). Fear of movement, frequently called "kinesiophobia," is an irrational, debilitating and excessive fear of physical movement that can cause painful injuries and re-injury (8). Research states that kinesiophobia is related to reduced physical mobility and higher pain severity in FMS patients (9-11). Kinesiophobia causes activity limitation by reducing mobility, strength and stability and activity limitation reduces tolerance to activity, which turns into a vicious circle (10, 12). Furthermore, activity limitation restricts successful activity opportunities, diminishing opportunities for positive reenforcement (13). Negative emotions such as fear and anxiety also increase the perception of pain.

Anatomically, the core muscles consists of the muscles surrounding the lumbopelvic-hip complex. These muscles have an important place in the stabilization of the lumbopelvic region and spine (14). Core muscle endurance (CME) indicates to the capacity of core muscles to maintain their activity in long periods of time (15). It has been reported that core muscles are accountable for spinal stability; thus lack of endurance may cause deterioration of functional mobility and spinal stabilization (16). Previous studies reported that the strength of lower extremity and trunk muscles in FMS patients is reduced compared to healthy individuals (17, 18). Furthermore, CME has been demonstrated to be associated with posture disorders, lower back pain, deterioration of functional mobility and balance in FMS patients (17).

Although the effect of kinesiophobia on mobility, fear of falling and postural control has been studied in FMS patients, there is no evidence on how kinesiophobia influences CME in patients with FMS (9-11). Therefore, the aims of present study is to define kinesiophobia level in FMS patients and to investigate the correlation between kinesiophobia and pain, disease activity, fatique, physical activity level, functional mobility and CME times.

MATERIALS AND METHODS

A total of 41 female FMS patients who came to rheumatology clinic at Necmettin Erbakan University, participated in this prospective and cross-sectional study. Patients were participated if they met the following criteria: (a) were from 18 to 65 ages, (b) were diagnosed with FMS by a rheumatologist, (c) met the American College of Rheumatology's 2010 diagnostic criteria (19). Patients were excluded if they had musculoskeletal surgery, neurological deficits, fracture, osteoporosis, vestibular system disorder, inflammatory joint disease, psychiatric disorders with psychotic symptoms, and/or being pregnant. Necmettin Erbakan University Ethics Committee approved the study protocol (approval number: 2023/4664). The patients were first informed about the study and then their written consent was received. The study was administered in regarding the Declaration of Helsinki's principles.

Participants completed a sociodemographic information form consisting of body mass ındex age, marital status, current opioid use, years since diagnosis. To assess self-reported pain severity was performed visual analog scale (VAS) (20). It consists of a solid line defined as 0 = "no pain" and 10 = "worst pain". Participants described their pain level on a line. There were no negative situations during the evaluation process. No medication changes were made in the patients.

Core Muscle Endurance

McGill's trunk muscle endurance tests were performed to evaluate CME times (15). These consist of the trunk extension and flexion, and right/left side bridge tests. Patients were asked to continue isometric postures for as long as possible for each test position. The time that the patients were able to continue the correct test position was documented in seconds. Previously, it has been reported that these four CME assessment have excellent reliability: trunk extensor test intraclass correlation coefficient (ICC) = 0.97, trunk flexor test, ICC = 0.97, and right/left side bridge tests ICC = 0.99 (15).

Physical Fitness Tests

- Timed Up and Go (TUG): It was performed to measure functional mobility. According to the test instructions, the patient stands up from a chair without armrests, walks 3 m, turns and sits down. Using a manual stopwatch, time was recorded. The test period starts when the patient gets up from the chair and ends when the patient sits down. This test has shown excellent reliability (ICC = 0.935) in previous study in women with FMS (21).
- 30-s chair stand test: The test was performed to measure lower body muscle strength. This test includes counting the number of times an individual rises from a sitting position to a full standing position in 30 seconds (22).

Kinesiophobia

The Turkish version of the Tampa Scale of Kinesiophobia (TSK) was performed to evaluate kinesiophobia (23). This scale includes 17 questions. A 4-point Likert scoring is used in the scale (1=completely disagree, 4=completely agree). The subject receives a total score ranging from 17 to 68. High scores from the questionnaire indicate a high kinesiophobia level. The cut-off score of the scale was determined as 37; a total score of 37 and above presents high kinesiophobia level, and a score below 37 presents low level kinesiophobia.

Physical Activity Level

To assess physical activity level was performed The Turkish version of the International Physical Activity Questionnaire-Short Form (IPAQ-SF) (24). The questionnaire includes information on daily sitting time and time spent on walking and moderate and vigorous physical activities in the last week. It evaluates the days and minutes of physical activities done in the past seven days. According to total score, subjects are classified as physically very active, minimally active and inactive (7).

Disease Activity

The Turkish version of Fibromyalgia Impact Questionnaire (FIQ) was performed to evaluate disease activity of the patients (25). FIQ consists of ten different parameters containing daily activity, inability to occupation, difficulty doing occupation, fatigue, morning stiffness, pain well-being, anxiety and depression. According to the total score, the disease effect varies between 0 and 100 points. High scores from the questionnaire indicate a high disease activity.

Fatigue

To assess fatigue was used The Turkish version of the Fatigue Severity Scale (FSS) (26). It consist of 9 items that assess the severity of fatigue. Likert-type scoring is used in the scale (1= completely disagree, 7= completely agree). Total score is obtained by adding up all scores and dividing by 9. The cut-off score of the scale was determined as 4; a total score of 4 and above presents high fatique level, and a score below 4 presents low fatique level.

Statistical Analysis

Using G*Power package software program (G*Power, Ver.3.1.9.2 Universitat Düsserldorf Germany) was calculated the required sample size for present study. Regarding the results of relationship between kinesiophobia and disease activity from Leon-Llamas et al (27). (correlation coefficient: 0.458), a total of 37 patients was necessary to acquire 85% power with d = 0.45 effect size, α = 0.05 type I error. The participant rate was calculated to be 10% higher in order to compensate for data losses in research process or statistical analysis process. As a result, 41 patients was participated in this study.

The Statistical Package for the Social Sciences (SPSS Inc.,

Table 1. Characteristics of patients

Characteristic	Median (IQR 25/75) or n (n = 41)
Age (years)	46 (40/50.5)
Height (cm)	160 (155.5/164.5)
Weight (kg)	71 (63/83.5)
BMI (kg/m2)	28.51 (25.36/31.19)
Disease duration (years)	3 (2/10)
Pain (VAS 0–100 mm)	6 (5/8)
Drug use	
Analgesic	15
Anti-depressant	7
No drugs	15
Family history of FMS (yes/no)	23/18

IQR 25/75: Interquartile range 25/75, BMI: Body mass index, VAS: Visual analog scale. FMS: Fibromyalgia syndrome

Table 2. Test results of patients

Test	Median (IQR 25/75)
Core Muscle Endurance	
Trunk flexor endurance (s)	8.83 (5.67/13.42)
Trunk extensor endurance (s)	9.38 (6.84/13.7)
Right side bridge (s)	11.59 (8.22/17.2)
Left side bridge (s)	10.68 (6.88/16.42)
Physical Fitness Tests	
TUG (s)	7.86 (7.28/8.19)
30-s chair stand test (rep)	11 (10/13)
TSK (score)	38 (34/44.5)
IPAQ (MET-min/wk)	198 (41.48/396)
FIQ (score)	56.43 (46.15/61.78)
FSS (score)	4.88 (3.82/5.6)

IQR 25/75: Interquartile range 25/75, TUG: Timed Up and Go, TSK: Tampa Scale for Kinesiophobia, IPAQ: International Physical Activity Questionnaire, FIQ: Fibromyalgia Impact Questionnaire, FSS: Fatigue Severity Scale.

Table 3. Relationship between TSK scores and explanatory variables (n = 41).

Explanatory Variables	Kinesiophobia	
	rho	p-Value
Pain (VAS)	0.669	<0.001**
Trunk flexor endurance (s)	-0.389	0.012*
Trunk extensor endurance (s)	-0.052	0.746
Right side bridge (s)	-0.187	0.242
Left side bridge (s)	-0.146	0.362
TUG (s)	0.357	0.022*
30-s chair stand test (rep)	-0.402	0.009*
IPAQ (MET-min/wk)	-0.454	0.003*
FIQ (score)	0.195	0.222
FSS (score)	0.433	0.005*

VAS: Visual analog scale, TSK: Tampa Scale for Kinesiophobia, TUG: Timed Up and Go, IPAQ: International Physical Activity Questionnaire, FIQ: Fibromyalgia Impact Questionnaire, FSS: Fatigue Severity Scale, rho: Spearman's rank correlation coefficient, *p<0.05,**p<0.001.

Table 4. Comparison of clinical parameters between low- and high-level kinesiophobia groups

	Low-level kinesiophobia group (n=16) Median (IQR 25/75)	High-level kinesiophobia group (n=25) Median (IQR 25/75)	p-Value
Pain (VAS)	5 (4/5)	8 (6/8)	<0.001[b]
Trunk flexor endurance (s)	13.42 (8.95/18.24)	6.76 (4.92/10.2)	0.001[a]
Trunk extensor endurance (s)	11 (7.43/14.96)	8.92 (5.66/13.7)	0.419
Right side bridge (s)	14.97 (10.04/27.72)	10.36 (4.8/14.8)	0.046[a]
Left side bridge (s)	14.48 (9.73/27.92)	10.35 (5.67/11.96)	0.026[a]
TUG (s)	7.43 (7.05/7.91)	8.05 (7.41/9.44)	0.011[a]
30-s chair stand test (rep)	13 (10.25/14.75)	11 (9.5/12)	0.035[a]
IPAQ (MET-min/wk)	214.5 (173.25/486.75)	132 (0/247.5)	0.040[a]
FIQ (score)	54.93 (46.86/62.13)	57.22 (43.85/61.8)	0.905
FSS (score)	3.94 (2.85/4.74)	5.22 (4.71/5.88)	0.002[a]

IQR 25/75: Interquartile range 25/75, VAS: Visual analog scale, TUG: Timed Up and Go, IPAQ: International Physical Activity Questionnaire, FIQ: Fibromyalgia Impact Questionnaire, FSS: Fatigue Severity Scale, ap < 0.05, bp<0.001, Mann-Whitney U test.

version 21; IBM, Raleigh, NC) was used to calculate data analysis. $p < 0.05$ was accepted for statistical significance level. Analytical (Shapiro–Wilk test) and visual (probability plots, histograms) methods were performed to find the distribution of the variables. Nonparametric methods were determined more convenient to represent the results. To evaluate the relationship between kinesiophobia and pain, CME times, functional mobility, physical activity level, disease activity and fatique in FMS patients was performed Spearman correlation coefficient (ρ). The size of correlation coefficient was interpreted as following, high; between 0.90 and 0.71, good; between 0.70 and 0.51, moderate; 0.50 and 0.31, negligible; 0.3 or less (28). Mann-Whitney U test was performed to determine between group differences.

RESULTS

Forty-one patients with FMS were completed this study. Fifteen patients were excluded due to various reasons (11: musculoskeletal disorders, 3: non-volunteer to participate, 1: severe psychological disorders). Patients' demographic characteristics are showed in Table 1. Patients' pain level was 6 (5/8) cm. Fifteen patients (35.5%) used analgesic medicine, eleven patients (26.8%) used anti-depressant, and fifteen patients (37.7%) don't used any medicine prior to the study. Twenty three patients (%56) have family history of FMS. The results of CME times, physical fitness tests, TSK, IPAQ, FIQ and FSS evaluations are listed in Table 2. Regarding patients' TSK scores, 16 patients had low-level kinesiophobia and 25 patients had high-level kinesiophobia.

Relationship between TSK scores and explanatory variables were presented Table 3. Good correlation between TSK and pain level was found (p<0.001). Moderate correlations between TSK and TUG, 30-s chair stand test, IPAQ, FSS were found by using spearman correlation test (p<0.05). Regarding relationship between TSK score and CME tests, Mooderate correlation between kinesiophobia level and trunk flexor endurance test was obtained (p<0.05). However, significant correlation were not obtained between TSK and FIQ (p>0.05) (Table 3).

Participants were separated two groups as high level kinesiophobia (n=25) and low level kinesiophobia (n=16) regarding their kinesiophobia level. The patients' trunk flexor and right/left lateral bridge tests were significantly greater in the low-level kinesiophobia group (p<0.05) (Table 4). Pain level was significantly higher in the high- level kinesiophobia group (p<0.001). While the TUG duration and FSS score were higher in high-level kinesiophobia group; the 30-s chair stand test result and IPAQ score were lower (p<0.05). No other significant differences were obtained between groups for trunk extensor test and FIQ score (p>0.05) (Table 4).

DISCUSSION

This study was designed to determine kinesiophobia level in patients with FMS. In addition, it assessed relationship between kinesiophobia and CME times, physical fitness tests (TUG and 30-s chair stand test), pain, disease activity, fatique, physical activity level. As we hypothesized, results revealed that 60.9% of FMS patients had high levels of kinesiophobia. Furthermore, kinesiophobia are associated with trunk flexor endurance, physical fitness tests, physical activity level and fatigue, where as significant relationship was not obtained between pain, disease activity and other CME times.

In most studies on kinesiophobia in chronic musculoskeletal diseases, high level kinesiophobia was reported with a prevalence of 56% (29). Our results indicated that women with FMS had high level kinesiophobia. Similar to our result, Koçyiğit et al. reported that the rate of high-level kinesiophobia in FMS patients was 71.5%, and Russek

et al. showed that this rate was 72.9% in patients with FMS (9, 10). On the other hand, few studies have demonstrated that a lower percentage of FMS patients have kinesiophobia. Turk et al. showed that 38.6% of FMS patients had the high level kinesiophobi and other previous study also revealed that 40% of FMS patients had kinesiophobia (30, 31). Cultural differences and ethnicity may influence kinesiophobia level of FMS patients. In addition, differences in disease duration, educational status, psychiatric diseases and manegementof the disease process may have affected the results.

It has been reported that the main cause of decreased CME in different populations is atrophy of the lumbar region muscles (15, 32, 33). Previous researches have shown that common symptoms of FMS patients, such as chronic pain, fatigue, immobility and cytokines may cause muscle atrophy. These researches generally include evaluations of strength of upper and lower extremity muscles and grip strength (34-36). Previously, it has been reported that CME in FMS patients is lower than compared to healthy subjects (17). It has been known that trunk muscles are especially important in maintaining physical activity and balance during daily life, improving extremity functions and protecting spine health (37-39). Therefore, in our study, we evaluated the possible relationship between CME and kinesiophobia in FMS patients. Our study showed that trunk flexor endurance was associated with kinesiophobia in FMS patients. There is no study assessing relationship between CME and kinesiophobia in FMS patients, hence, it is difficult to discuss the amount of relationship. Therefore, more studies are needed to understand the possible reasons of kinesiophobia in FMS patients. On the other hand, we think that it will be important for clinicians to consider protective exercise approaches for trunk muscle groups in the rehabilitation programs of FMS patients in terms of reducing kinesiophobia.

It has been reported that physical impairment in FMS patients may decline their ability to perform daily living activities (40, 41). Furthermore, some studies have found that kinesiophobia is related to physical performance (5, 27). In line with above studies, in our study, kinesiophobia was found to be associated with physical activity level, TUG 30-second chair stand test. Furthermore, these performance tests are relatively close to the activities that people with FMS have difficulty performing in daily life. Regarding association between kinesiophobia and performance tests in present study, these relationship may be interpreted with the Fear Avoidance Model (42, 43). Chronic and widespread pain FMS patients may lead to changes in central pain networks that cause central sensitization (44). Additionally, these relationships may be due to kinesiophobia causing fear of physical activity, triggering a vicious cycle that promotes to disease development. Moreover, increase in the disease activity may be one of the factors affecting kinesiophobia. In this regard, previous studies reported relationship between kinesiophobia and disease activity (10, 27). Therefore, what was expected as a result of this study was that kinesiophobia would be associated with an increase in disease activity. However, in our study, kinesiophobia did not have a significant correlation with disease activity, but kinesiophobia was associated with self-reported pain, suggesting that kinesiophobia in FMS patients is a direct result of body pain. Additionaly, cultural differences, disease duration, educational status and comorbid psychiatric diseases may influence perception of disease.

Fatigue has been widely researched because it is one of the main symptoms of FMS. Because of physical and psychological impairments and the disease progression, most of patients with FMS experience chronic fatigue (45, 46). Previous researches have reported that fatigue in FMS is closely associated with chronic inflammation with increased levels of oxidative stress, pain intensity, decreased physical activity and function, impairment sleep quality and psychological disease (46, 47). In this study, moderately significant relationships were obtained between fatigue and kinesiophobia. A previous study has also shown that fatigue is a significant exercise barrier in FMS patients (48). Thus, reducing fatigue may be useful in coping with the adverse impact of kinesiophobia. In this regard, the appropriate rehabilitation program should be determined in following reserch.

In this study, it was observed that patients with high levels kinesiophobia presented more pain and fatigue, and their CME duration, functional mobility and physical activity levels decreased. In line with our results, Turk et al. indicated that FMS patients with high level kinesiophobia presented higher pain, and lower mobility (30). Kocyigit et al. also found pain and disease activity were significantly greater in the high level kinesiophobia group (9). On the other hand, it was found no significant differencebetween the groups regard to disease activity. Kinesiophobia, as its definition suggests, arises and develops from a reaction to a movement that previously caused pain. Thus, learned pain experiences may cause kinesiophobia scores to increase.

In this sense, kinesiophobia significantly affects physical activity levels and daily living activities in FMS patients (49). Moreover in patients with FMS, kinesiophobia leads to a sedentary lifestyle, triggering a vicious cycle that can lead to disability (50, 51). Therefore, physical activity applications are significant as they are an effective way to break the vicious cycle, reduce perceived pain, and improve health-related quality of life in this population (52). Evaluation of kinesiophobia seems to be very important in clinical settings as it can be a barrier to exercise applications (53). In this respect, best to our knowledge, the relationship CME times and kinesiophobia was not evaluated previously. Therefore, we believe that we

have contributed to the literature in terms of kinesiophobia and related factors for FMS patients. Furthermore, future studies need to be investigate factors such as related to pain acceptance and pain catastrophizing in FMS patients.

First limitation of current study is that the sample size was small and included only women patients, thus it cannot be generalized to all FMS patients. Self-reported questionnaires were performed for the evaluation and was not assess psychological state of the patients. Another limitation is lack of control group. Lastly, current study was designed cross-sectional study so it does not allow us to establish causality.

CONCLUSION

In conclusion, we found that the increase in kinesiophobia level in patients with FMS is related to low physical activity level, mobility, trunk flexor endurance and increased pain and fatique level. Exercise is a important treatment application in the management of FMS, and as mentioned aboved, kinesiophobia may affect participation in exercise in FMS patients. Therefore, we believe that these results will be useful when designing a rehabilitation program for FMS patients.

Etik Kurul: Ethical approval was obtained for this study from the local ethics committee (approval number: 2023/4664).

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KAYNAKLAR

1. Wolfe F, Clauw DJ, Fitzcharles MA, et al. 2016 Revisions to the 2010/2011 fibromyalgia diagnostic criteria. Semin Arthritis Rheum 2016;46(3):319-29.
2. Stisi S, Cazzola M, Buskila D, et al. Etiopathogenetic mechanisms of fibromyalgia syndrome. Reumatismo 2008;60(1):25-35.
3. Yilmaz H, Erkin G, Kucuksen S, et al. Correlation Between Body Mass Index and Clinical Parameters in Fibromiyalgia Syndrome. Selcuk Med J 2013;29(1):12-5.
4. Jones J, Rutledge DN, Jones KD, et al. Self-assessed physical function levels of women with fibromyalgia: a national survey. Women's Health Issues 2008;18(5):406-12.
5. Costa IDS, Gamundí A, Miranda JGV, et al. Altered functional performance in patients with fibromyalgia. Front Hum Neurosci 2017;11:14.
6. Denison E, Åsenlöf P, Lindberg P. Self-efficacy, fear avoidance, and pain intensity as predictors of disability in subacute and chronic musculoskeletal pain patients in primary health care. Pain 2004;111(3):245-52.
7. Bargi G, Koku M. Kinesiophobia, Physical Activity, Fear of COVID-19, and Fatigue in Adult Individuals: A Cross-Sectional Study. Selcuk Med J 2022;38(3): 106-13.
8. Lundberg M, Grimby-Ekman A, Verbunt J, et al. Pain-related fear: A critical review of the related measures. Pain Res Treat 2011;2011:494196.
9. Kocyigit BF, Akaltun MS. Kinesiophobia levels in fibromyalgia syndrome and the relationship between pain, disease activity, depression. Arch Rheumatol 2020;35(2):214-9.
10. Russek L, Gardner S, Maguire K, et al. A cross-sectional survey assessing sources of movement-related fear among people with fibromyalgia syndrome. Clin Rheumatol 2015;34(6):1109-19.
11. Varallo G, Suso-Ribera C, Ghiggia A, et al. Catastrophizing, kinesiophobia, and acceptance as mediators of the relationship between perceived pain severity, self-reported and performance-based physical function in women with fibromyalgia and obesity. J Pain Res 2022;15:3017-29.
12. Karsdorp PA, Vlaeyen JW. Active avoidance but not activity pacing is associated with disability in fibromyalgia. Pain 2009;147(1-3):29-35.
13. Crombez G, Vlaeyen JW, Heuts PH, et al. Pain-related fear is more disabling than pain itself: Evidence on the role of pain-related fear in chronic back pain disability. Pain 1999;80(1-2):329-39.
14. Bliss LS, Teeple P. Core stability: The centerpiece of any training program. Curr Sports Med Rep 2005;4(3):179-83.
15. McGill SM, Childs A, Liebenson C. Endurance times for low back stabilization exercises: Clinical targets for testing and training from a normal database. Arch Phys Med Rehabil 1999;80(8):941-4.
16. Cholewicki J, McGill SM. Mechanical stability of the in vivo lumbar spine: implications for injury and chronic low back pain. Clin Biomech (Bristol, Avon) 1996;11(1):1-15.
17. Toprak Çelenay Ş, Külünkoğlu B, Küçükşahin O. Fibromiyalji Sendromu Olan Kadınlarda Denge, Endurans Ve Esnekliğin Değerlendirilmesi. Turk J Physiother Rehabil 2017; 28(3):125-31.
18. Góes SM, Leite N, Shay BL, et al. Functional capacity, muscle strength and falls in women with fibromyalgia. Clin Biomech (Bristol, Avon) 2012;27(6):578-83.
19. Wolfe F, Clauw DJ, Fitzcharles MA, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. Arthritis Care Res (Hoboken) 2010;62(5):600-10.
20. Begum MR, Hossain MA. Validity and reliability of visual analogue scale (VAS) for pain measurement. JMCRR 2019;2(11):394-402.
21. Collado-Mateo D, Domínguez-Muñoz FJ, Adsuar JC, et al. Reliability of the timed up and go test in fibromyalgia. Rehabil Nurs J 2018;43(1):35-9.
22. Álvarez Gallardo IC, Carbonell Baeza A, Segura Jiménez V, et al. Physical fitness reference standards in fibromyalgia: The al. Ándalus project. Scand J Med Sci Sports 2017;27(11):1477-88.
23. Yilmaz O, Yakut Y, Uygur F, et al. Turkish version of the Tampa Scale for Kinesiophobia and its test-retest reliability. Turkish Journal Of Physiotherapy Rehabilitation-Fizyoterapi Rehabilitasyon. 2011;22(1):44-9.
24. Saglam M, Arikan H, Savci S, et al. International physical activity questionnaire: reliability and validity of the Turkish version. Percept Mot Skills 2010;111(1):278-84.
25. Sarmer S, Ergin S, Yavuzer G. The validity and reliability of the Turkish version of the Fibromyalgia Impact Questionnaire. Rheumatol Int 2000;20(1):9-12.
26. Armutlu K, Korkmaz NC, Keser I, et al. The validity and reliability of the Fatigue Severity Scale in Turkish multiple sclerosis patients. Int J Rehabil Res 2007;30(1):81-5.
27. Leon-Llamas JL, Murillo-Garcia A, Villafaina S, et al. Relationship between kinesiophobia and mobility, impact of the disease, and fear of falling in women with and without fibromyalgia: A cross-sectional

study. Int J Environ Res Public Health 2022;19(14):8257.
28. Mukaka MM. A guide to appropriate use of correlation coefficient in medical research. Malawi Med J 2012;24(3):69-71.
29. Bränström H, Fahlström M. Kinesiophobia in patients with chronic musculoskeletal pain: differences between men and women. J Rehabil Med 2008;40(5):375-80.
30. Turk DC, Robinson JP, Burwinkle T. Prevalence of fear of pain and activity in patients with fibromyalgia syndrome. J Pain 2004;5(9):483-90.
31. Van Koulil S, Kraaimaat F, van Lankveld W, et al. Screening for pain-persistence and pain-avoidance patterns in fibromyalgia. Int J Behav Med 2008;15(3):211-20.
32. Barati A, Safarcherati A, Aghayari A, et al. Evaluation of relationship between trunk muscle endurance and static balance in male students. Asian J Sports Med 2013;4(4):289-94.
33. Acar Y, Ilçin N, Gürpinar B,et al. Core stability and balance in patients with ankylosing spondylitis. Rheumatol Int 2019;39(8):1389-96.
34. Cigarán-Méndez M, Úbeda-D'Ocasar E, Arias-Buría JL, et al. The hand grip force test as a measure of physical function in women with fibromyalgia. Sci Rep 2022;12(1):3414.
35. Latorre Román PÁ, Santos e Campos MA, García-Pinillos F. Effects of functional training on pain, leg strength, and balance in women with fibromyalgia. Mod Rheumatol 2015;25(6):943-7.
36. Munguía-Izquierdo D, Legaz-Arrese A. Reliability and validity of a low load endurance strength test for upper and lower extremities in patients with fibromyalgia. Arch Phys Med Rehabil 2012;93(11):2035-41.
37. Hides JA, Oostenbroek T, Franettovich Smith MM, et al. The effect of low back pain on trunk muscle size/function and hip strength in elite football (soccer) players. J Sports Sci 2016;34(24):2303-11.
38. Chung EJ, Kim JH, Lee BH. The effects of core stabilization exercise on dynamic balance and gait function in stroke patients. J Phys Ther Sci 2013;25(7):803-6.
39. Ayhan C, Unal E, Yakut Y. Core stabilisation reduces compensatory movement patterns in patients with injury to the arm: A randomized controlled trial. Clin Rehabil 2014;28(1):36-47.
40. Huijnen IP, Verbunt JA, Meeus M, et al. Energy Expenditure during Functional Daily Life Performances in Patients with Fibromyalgia. Pain Pract 2015;15(8):748-56.
41. Gaudreault N, Boulay P. Cardiorespiratory fitness among adults with fibromyalgia. Breathe (Sheff) 2018;14(2):e25-e33.
42. Vlaeyen JWS, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain 2000;85(3):317-32.
43. Leeuw M, Goossens ME, Linton SJ, et al. The fear-avoidance model of musculoskeletal pain: current state of scientific evidence. J Behav Med 2007;30(1):77-94.
44. Borisovskaya A, Chmelik E, Karnik A. Exercise and Chronic Pain. Adv Exp Med Biol 2020;1228:233-53.
45. Sarzi-Puttini P, Giorgi V, Marotto D, et al. Fibromyalgia: An update on clinical characteristics, aetiopathogenesis and treatment. Nat Rev Rheumatol 2020;16(11):645-60.
46. Ericsson A, Mannerkorpi K. How to manage fatigue in fibromyalgia: Nonpharmacological options. Pain Manag 2016;6(4):331-8.
47. Romano GF, Tomassi S, Russell A, et al. Fibromyalgia and chronic fatigue: The underlying biology and related theoretical issues. Adv Psychosom Med 2015;34:61-77.
48. McVeigh JG, Lucas A, Hurley DA, et al. Patients' perceptions of exercise therapy in the treatment of fibromyalgia syndrome: A survey. Musculoskeletal Care 2003;1(2):98-107.
49. Larsson C, Ekvall Hansson E, Sundquist K, et al. Kinesiophobia and its relation to pain characteristics and cognitive affective variables in older adults with chronic pain. BMC Geriatr 2016;16:128.
50. Zale EL, Lange KL, Fields SA, et al. The relation between pain-related fear and disability: A meta-analysis. J Pain 2013;14(10):1019-30.
51. Zale EL, Ditre JW. Pain-Related Fear, Disability, and the Fear-Avoidance Model of Chronic Pain. Curr Opin Psychol 2015;5:24-30.
52. Mascarenhas RO, Souza MB, Oliveira MX, et al. Association of Therapies With Reduced Pain and Improved Quality of Life in Patients With Fibromyalgia: A Systematic Review and Meta-analysis. JAMA Intern Med 2021;181(1):104-12.
53. Ishak NA, Zahari Z, Justine M. Kinesiophobia, Pain, Muscle Functions, and Functional Performances among Older Persons with Low Back Pain. Pain Res Treat 2017;2017:3489617.

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Yetişkinde Ektopik Böbrek ve Kolon ile Birlikte Bochdalek Hernisi

Bochdalek Hernia with Ectopic Kidney and Colon in Adult

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ÖZET

Bochdalek hernisi konjenital diyafragma hernilerinin en sık görülen tipi olup yetişkinlerde görülme sıklığı oldukça nadirdir. Daha çok yenidoğanda görülür. Defektler büyük oranda sol taraftadır. Sağ tarafta ve bilateral olarak da görülebilirler. Genellikle nonspesifik solunum ve gastroinstestinal semptomlarla karşımıza çıktığı için erişkinlerde geç tanı alırlar. Literatür incelendiğinde yetişkin bireylerde bochdalek hernisi olgularının azlığı dikkat çekmektedir. Olgu sunumu sayısı sınırlıdır. Biz bu olgu sunumumuzda birkaç yıldır varolan nefeste daralma ve sırta vuran ağrı şikayetleriyle gelen ve yapılan incelemeler sonucunda sol diyafragma posteriorundaki defektten toraksa herniye kolon ansları ve intratorasik ektopik böbrek tespit edilen 54 yaş erkek hastayı nadir görülen bir vaka olması nedeni ile sunacağız.

Anahtar Kelimeler: Renal ektopi, bochdalek herni, diafragma hernisi

ABSTRACT

Bochdalek hernia is the most common type of congenital diaphragmatic hernia. Its incidence in adults is rare. It is mostly seen in newborns. The defects are mostly on the left side. They can also be seen on the right side and bilaterally. It usually presents with nonspecific respiratory and gastrointestinal symptoms. That's why they are diagnosed late in adults. When the literature is examined, it is noteworthy that there are few cases of Bochdalek hernia in adults. The number of case reports is limited. In this case report, we will present a 54-year-old male patient. He had been suffering from shortness of breath and back pain for several years. As a result of the examinations, a defect was seen in the posterior part of the left diaphragm. It was determined that the colon and kidney were herniated from this defect. We will present this because it is a rare case.

Key words: Renal ectopia, bochdalek hernia, diaphragmatic hernia

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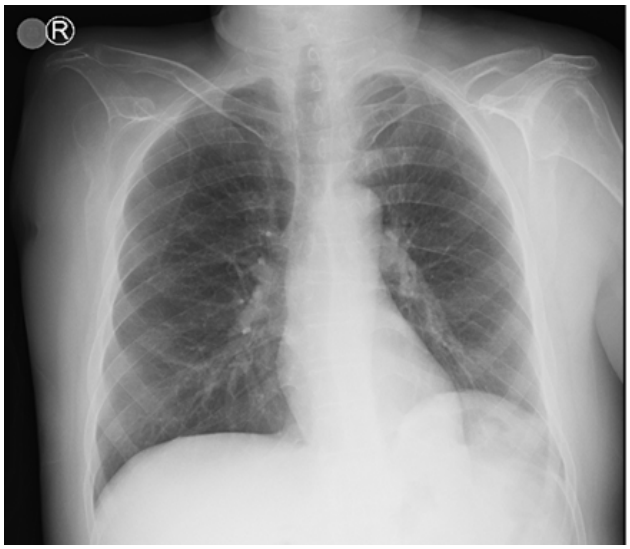
GİRİŞ

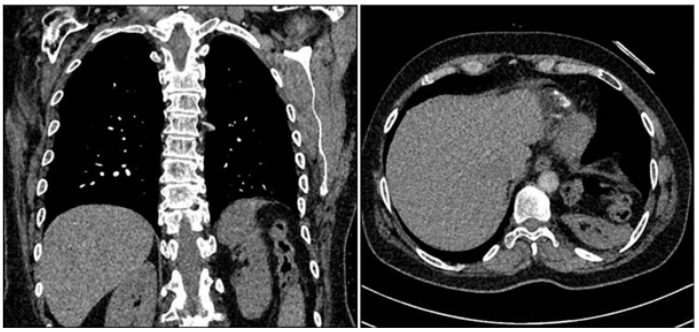
Plöroperitoneal kanalların yeterli kapanmaması sonucu oluşan Bochdalek hernisi ilk kez 1848 yılında anatomist Alexander Bochdalek tarafından tanımlanmıştır. 2200-12500 doğumda bir görülmektedir. Sol hemidiyafragmada daha sık görülmesine rağmen sağda yada bilateralde görülebilir. Herni genellikle yağ dokusu içermekle birlikte mide, ince barsak,karaciğerin sol lobu ,dalak ve kolon da diyafragmadaki defektten herniye olabilir. Ektopik böbrek ile birlikte bochdalek hernisi oldukça nadirdir. Yetişkin hastada değişken semptomlar ile farklı radyolojik görüntülemelere sebep olması veya asemptomatik olabilmesi nedeniyle geç tanı konulabilmektedir (1, 2). Bu olgu sunumunda yetişkin bir hastada semptomatik olması nedeniyle opere edilen intratorasik ektopik böbrek ve herniye kolon ansının birlikte olduğu bochdalek hernisi vakası sunacağız.

OLGU SUNUMU

54 yaşında erkek hasta birkaç yıldır var olan nefeste daralma ve sırt ağrısı şikayeti ile başvurduğu göğüs cerrahisi kliniği tarafından yapılan görüntülemelerinde posteroanterior akciğer grafisinde diafragma üzerinde anormal opasite izlenmesi bunun üzerine çekilen toraks BT'de sol diyafragma posteriorundaki defektten toraksa herniye kolon ansları ve sol böbrek üst polü görülmesi üzerine tarafımıza yönlendirildi (Şekil 1, 2). Hastanın özgeçmişinde alerjik astım dışında özellik yoktu. Travma öyküsü yoktu. Fizik muayenesinde batın rahat, defans-rebound-hassasiyet yoktu. Solunum sistemi muayenesinde sol hemihemitoraksta alt lobta solunum sesleri azalmıştı. Diğer sistem muayeneler doğaldı. Herhangi bir ürolojik yakınma tariflemeyen hastanın yapılan laboratuvar incelemelerinde de patolojik değer tespit edilmedi.

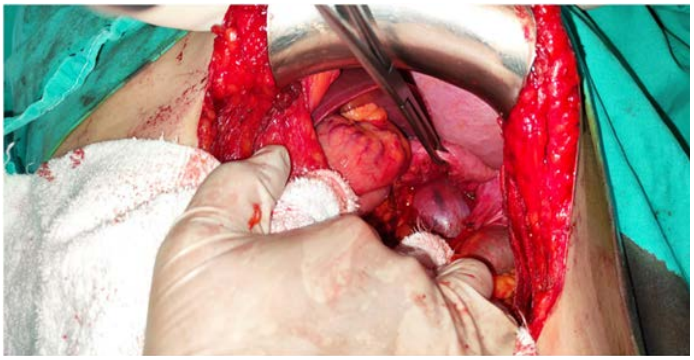


Şekil 1. PA akciğer grafisinde sol hemitoraksta diafragma üzerinde anormal opasite görünümü.

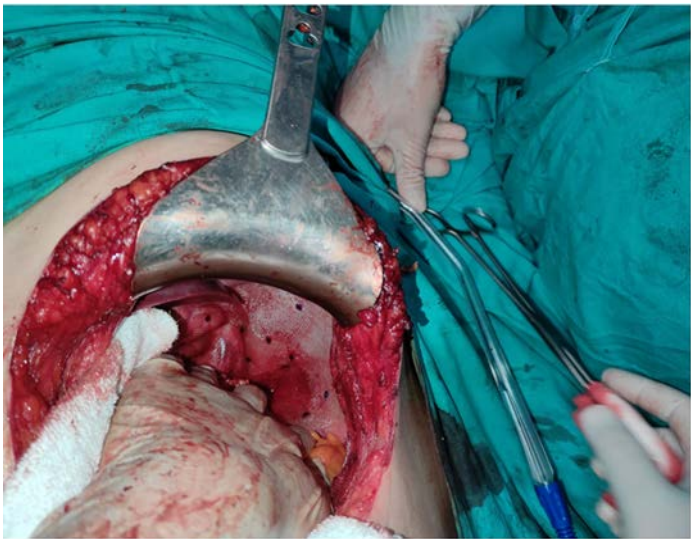


Şekil 2. Sol diyafragma posteriorundaki defekten kolon ansları ve sol böbrek üst polününün sol hemitoraksa heniasyonun Bilgisayarlı Tomografi görüntüsü

Hasta gerekli hazırlıklar sonrası operasyona alındı. Sol diyafragma posteriorunda 7x7 cm ebatlarında defekt olduğu, splenik fleksura ve sol böbreğin tamamına yakını sol hemitoraksa herniye olduğu görüldü. Dalak normal anatomik pozisyonundaydı. Splenik fleksura serbestlendikten sonra kolon batına redükte edildi.Sol böbrek herni kesesine ileri derece yapışıktı. Sol böbrek serbestlendikten sonra splenik köşe ve sol kolon mobilize edildi. Böbrek batına redükte edilip normal anatomik pozisyonuna iade edildi. Renal arter, ven ve üreter salimdi. Diyafragmadaki defekt 1/0 ipek ile sütüre edilerek primer onarıldı. Daha sonra anestezi ekibi tarafından hiperventilasyon yapılarak hava-su testi yapıldı. Diyafragmadan kaçak olmadığı görüldü. 15x15 cm ebatlarında kompozit mesh mesh sabitleyici ile defekt alanını kapatacak şekilde tespit edildi. Onarılan defekt komşuluğuna bir adet nelaton dren yerleştirildikten sonra batın kapatıldı. Hasta ekstübe olarak yoğun bakım ünitesine çıkarıldı.



Şekil 3. Laparotomi sonrası göğüs boşluğuna herniye olmuş sol böbrek



Şekil 4. Defektin meshli onarım sonrası görüntüsü

Postoperatif takiplerinde postop 1. gününde orali açıldı. Günlük olarak göğüs cerrahi ile konsulte edildi. Postop 2. günde çekilen akciğer grafisinde solda efüzyon görülmesi üzerine göğüs cerrahi ekibi tarafından 400 cc torasentez yapıldı. Torasentez sonrası çekilen akciğer grafisinde patoloji saptanmayan hasta postop 4.gününde batın dreni çekilip taburcu edildi. Postop 8 aylık takipte olan hastada herhangi semptom yada şikayet saptanmadı.

TARTIŞMA

Konjenital posterolateral diyafragma defekti olan Bochdalek hernisi konjenital diafragma hernileri arasında en sık görülen tip olup gestasyonun 8. haftasında plöroperitoneal membranda bir kapanma bozukluğu sonucu oluştuğu düşünülmektedir (1,2). Bochdalek hernisi olguları genellikle yaşamın ilk günlerinde solunum sıkıntısı semptomuyla başvurur (1,2). Yetişkin olguların çoğu asemptomatik olup genellikle insidental olarak tespit edilmektedir. Tesadüfen tanı alan bochdalek hernisi insidansı bir çalışmada %0,17 olarak bulunmuştur (3). Görüntüleme tekniklerindeki gelişmelere bağlı asemptomatik kişilerde bochdalek hernisi saptama sıklığı artmaktadır. Semptomatik erişkin hastalarda nadir görülen bir durum olması nedeniyle klinik tanı kolay olmamaktadır. Bu hastalar tekrarlayan göğüs ve karın ağrısı, yemek sonrası dolgunluk hissi ve kusma gibi kronik semptomlarla gelebilmektedir. Öksürük, dispne, göğüs ağrısı gibi pulmoner semptomlar daha nadir görülmektedir (4). Sunduğumuz olguda 54 yaşındaki hasta bir yıldır devam eden nefes darlığı ve sırt ağrısı şikayetleri ile gelmiştir.

Sağ ve sol taraflı Bochdalek hernilerinin prevalansı hakkında farklı çalışma verileri mevcuttur. Bu konuda yapılan çalışmaların çoğunda %70-90 arasında sıklıkla sol taraflı prevalans bildirilmiştir (5). Sağda karaciğerin herni oluşumuna karşı bariyer görevi görmesi ve sağ hemidiyafragmanın sola göre erken gelişmesi gibi nedenlerin sol taraflı bochdalek hernisi prevalansının yüksek olmasına neden olduğunu düşündürmektedir (6, 7). Bizim olgumuzdaki herni lokalizasyonu da sol hemitorakstadır.

Direk göğüs ve batın grafileri tanıda kullanılan ilk görüntüleme yöntemleri olmasına rağmen teşhise yönelik çok kesitli bilgisayarlı tomografi daha efektif ve kullanışlıdır. Fizik muayenede barsak seslerinin toraksta duyulması gibi durumlarda diyafragma hernisinden şüphelenilmeli ve tanıya yönelik radyolojik görüntülemelere başvurulmalıdır. Bizim olgumuz ilk olarak akciğer grafisi çekildi. Sonrasında ise kesin tanı için Bilgisayarlı tomografi çekildi (8).

Bu olguda Bochdalek hernisine intratorasik ektopik böbrek de eşlik etmektedir. İntratorasik böbrek renal ektopilerin en nadir görülen formudur, prevalansı 1/10000 den az bildirilmekte olup erkeklerde ve sol tarafta daha sık görülmektedir (8). Genellikle bizim olgumuzda da olduğu gibi ürolojik semptom vermemektedir.

Bochdalek hernisinin tedavisi fıtık içeriğinin periton boşluğuna alınıp diyafragmatik defektin onarımını içermektedir (8). Bu olguda defektin meshli onarımı tercih edilmiştir.

Sonuç olarak bochdalekhernisi sıklıkla yenidoğan döneminde klinik bulgu vermesine rağmen nadirende olsa erişkin çağa kadar asemptomatik seyredebilir. Bochdalek hernisi ile birlikte görülen intratorasik böbrek çok ender rastlanan bir durumdur. Semptomatik olgularda cerrahi tedavi önerilmelidir.

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KAYNAKLAR

1. Yıldız M, İpek MŞ, Aktar F, et al. Late Diagnosed Congenital Diaphragmatic Hernia. Selçuk Tıp Derg 2015;31(4): 31-3.
2. Gezginç K, Kantarcı AH. Prenatal Diagnosis of Congenital Diaphragmatic Hernia in Early Pregnancy. Selçuk Tıp Derg 2012;28(4): 243-4
3. Mullins ME, Stein J, Saini SS, Mueller PR. Prevalence of incidentalBochdalek'shernia in a largeadultpopulation. AJR 2001; 177: 363–6.
4. Yagmur Y, Yigit E, Babur M, et al. Bochdalekhernia: a rarecasereport of adult age. Annals of Medicine and Surgery 2016; 5: 72-5.
5. Kinoshita F, Ishiyama M, Honda S, et al. Late-presenting posterior transdiaphragmatic (Bochdalek) hernia in adults: Prevalenceand

MDCT characteristics. J Thorac Imaging 2009;24:17-22
6. Öztürk CA, Küpeli M. Erişkinlerde Rastlanan Doğumsal Diyafram Hernileri. Ed. ŞT Liman, AK Cangır. Toraks Cerrahisi Bülteni 2013;4(4):246-52
7. Rouanne M, Le Mandat A, Dorgeret S, et al: A rarecase of ectopicintrathoracickidney in a 1-year-old child. Urology 76:57, 2010 http://dx.doi.org/10.1016/j.urology.2010.03.009 PMid:20472271
8. Erkan S, Yabanoğlu H, Gündoğdu R, et al. Adult Congenital Diaphragmatic Hernia Treatment Results. Medical Journal of Mugla Sitki Kocman University 2022;9(2):142-6

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A Case of Infantile Hypertrophic Pyloric Stenosis Presenting with Episodes of Apnea

Apne Ataklari ile Başvuran bir İnfantil Hipertrofik Pilor Stenozu

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ÖZET

İnfantil hipertrofik pilor stenozu (İHPS), pilorik düz kas liflerinin hiperplazisine bağlı olarak pilor kanalının daralmasıdır. Yenidoğan döneminde görülen mide çıkışı darlıklarının en sık sebebidir. Genel olarak, doğum sonrası herhangi bir problemi olmayan 3-6 haftalık infantlarda beslenmeyi takiben fışkırır tarzda ve safrasız kusma ile kendini gösterir. Tanı konulamayan vakalarda dehidratasyon, ciddi beslenme bozukluğu, asit-baz dengesizliği ve apne ile seyredebilmekte olup, ihmal edilmesi halinde ölümle sonuçlanabilir. Yapılan çalışmalarda erkek çocuklarda kızlara göre 4 kat daha sık görülmektedir. Tanı için öykü ve fizik muayene yeterli olsa da ultrasonografi (USG) ve kontrastlı pasaj filmler ile tespit edilmektedir. Tedavi cerrahi olarak yapılan ekstramukozal pyloromyotomidir. Bu yazıda, 1 hafta önce başlayan ara ara nefes almada zorluk-apne, uyku hali ve beslenememe şikâyeti ile başvurup İHPS tanısı alan 1 ay 7 günlük bir erkek olguyu sunmayı amaçladık.

Anahtar Kelimeler: Pilor stenozu,apne,çocuk

ABSTRACT

Infantile hypertrophic pyloric stenosis (IHPS) is narrowing of the pyloric duct due to hyperplasia of pyloric smooth muscle fibers. It is the most common cause of gastric outlet stenosis during neonatal period. It usually presents with projectile nonbilious vomiting in an otherwise healthy infants at 3 to 6 weeks of age. Undiagnosed cases may have a course with dehydration, severely poor feeding, acid-base imbalance and apnea, which may lead to death when neglected. Previous studies have reported that it is 4-fold more common in boys than girls. Although history and physical examination is sufficient to make the diagnosis, it is detected by ultrasonography and contrast-enhanced passage x-rays. Treatment is surgical extramucosal pyloromyotomy. In this manuscript, we aimed to report a 37-day-old male case which was admitted with complaints of intermittent dysnpnea-apnea, somnolence, and difficulty feeding persisting for a week, and then diagnosed with IHPS.

Key words: Pyloric stenosis,apnea,infant

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INTRODUCTION

Infantile hypertrophic pyloric stenosis (IHPS) is narrowing of the pyloric duct due to hyperplasia of pyloric smooth muscle fibers. It is the most common cause of gastric outlet stenosis during neonatal period. It usually presents with projectile nonbilious vomiting in an otherwise healthy infants at 3 to 6 weeks of age. Undiagnosed cases may have a course with dehydration, severely poor feeding, acid-base imbalance and apnea, which may lead to death when neglected (1,2). Previous studies have reported that it is 4-fold more common in boys than girls. Although history and physical examination is sufficient to make the diagnosis, it is detected by ultrasonography and contrast-enhanced passage x-rays. Treatment is surgical extramucosal pyloromyotomy. In this manuscript, a case which was admitted with apnea, which is rare, and then diagnosed with IHPS was reported.

CASE REPORT

A 1 month and 7 day-old male patient admitted to our emergency department with complaints of intermittent shortness of breath, somnolence and difficulty feeding which had begun 1 week before. Patient's history revealed that he had had vomiting 5-6 times a day since postnatal 2nd week and that he had been diagnosed with cow's milk allergy and initiated hydrolyzed formula in another center. Patient's personal history shown that he was born at 38 weeks of gestation via vaginal delivery with a birth weight of 3500 g, and that he had not been hospitalized, except neonatal care following birth. His parents were nonconsangineous. There was no history of abortus-infant death. His on-admission physical examination showed a body temperature of 36.5°C, heart rate of 160 bpm, blood pressure of 65/45 mmHg, respiration rate of 66/min, and oxygen saturation of 99%. His weight was 3500 g (3rd-10th p) (as same as the birth weight), height was 51 cm (10th-50th p), and head circumference was 35 cm (10th p). His general condition was poor, he was dehydrated, anterior fontanel was 2x2 cm in size and sunken, and he had sunken globes and reduced skin turgor. Respiratory system examination revealed equal respiratory sounds in both lungs, with no pathological sounds heard. Abdominal examination was unremarkable with no palpable mass. Emergency intervention was made. Patient with severe dehydration was administered physiological saline at a dose of 10 cc/kg 3 times. During follow-up, he was found to have episodes of apnea with accompanying reduced heart rate. Apneas were lasting about 15 seconds and responding to tactile stimulation. Patient was administered oxygen with hood. Blood gas analysis showed pH: 7.50, CO_2: 38 mm/hg, HCO_3: 29.4 mmol/L, and lactate: 12.3 mmol/L; the blood tests showed that sodium: 141 mmol/L, chlorine: 84 mmol/L, acute phase reactants were negative, total bilirubin: 2.2 mg/dl, direct bilirubin: 0.6 mg/dl, white blood cell count: 17.630 mm^3, neutrophil count: 5740 mm^3, lymphocyte count: 9320 mm^3, and hemoglobin: 12.7 g/dl. Urinalysis was normal. Chest x-ray was normal; erect abdominal x-ray revealed increased gastric gas. A magnetic resonance imaging (MRI) was obtained to exclude organic causes of central apnea, which was normal. An abdominal ultasonography was ordered with preliminary diagnosis of pyloric stenosis due to vomiting and hypochloremic metabolic alkalosis. Ultrasonography revealed that "pyloric single-wall thickness was 7 mm, pyloric length 16 mm and double-wall thickness 14 mm, suggesting pyloric stenosis". The patient requiring an emergency surgery was transferred to department of pediatric surgery. The patient whose apneas resolved after surgery was discharged at postoperative day 3 without any additional clinical problem.

DISCUSSION

Although etiology of IHPS has not been clarified, potential major factors are thought to be spasm and compensatory muscular hypertrophy caused by gastric hyperacidity, neurological degeneration or immaturity, and abnormal endocrine signaling (3). Glomerular filtration rate decreases with fluid loss caused by difficulty feeding. HCO_3-compensation ability of the kidney is therefore impaired, as well. To hold potassium, distal renal tubules excrete hydrogen ions, which complicates metabolic alkalosis. With renal compensation, carbon dioxide (CO_2) retention occurs with hypoventilation. Increased partial CO_2 pressure affects pH level in cerebrospinal fluid, stimulating central chemoreceptors and then central apnea develops (4). It is concluded that it will not cause apnea unless accompanied by conditions stimulation chemoreflex like reflux and that apnea occurs due to compensatory respiratory depression and hypoventilation caused by metabolic alkalosis (3). While rate of preoperative apnea was found as 27% in a study, this rate was reported as 5% in another one (4,5). There is no Turkish study regarding frequency of apnea in patients with IHPS. Cases of apnea accompanying IHPS, however, are extremely rare. Thus, as in our patient, IHPS should always be considered in patients with respiratory distress without any palpable mass when distended stomach is found on chest and supine abdominal x-rays, in addition to hypochloremic metabolic alkalosis. As in our patient, apneas do not recur after surgery and the patient can be discharged to home early. Early diagnosis of patients with IHPS, as well as immediate correction of metabolic gap and taking into operation as immediate as possible is crucial for reduction of disease-related mortality and morbidity rates. Despite of a large number of studies on this topic, number of cases of apnea accompanying pyloric stenosis is scent in the literature. We, thus, aimed to report this case to point out pyloric stenosis in patients presenting with episodes of apnea.

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REFERENCES

1. Uğur C, Ay E, Madenci H. Tekrarlayan Hastane Başvurusuna Rağmen Geç Tanı Alan Nadir Bir Olgu: İnfantil Hipertrofik Pilor Stenozu. Çocuk Dergisi Eylül 2021;21(2):212-4.
2. Altunhan H, Yurtçu M, Tarakçı N, ve ark. (2017). Hipernatremik dehidratasyon ile ilişkili konjenital pilor atrezi. Selçuk Tıp Dergisi 33:(4), 78-9.
3. Pappano Dante MD, MPH. Alkalosis-Induced Respiratory Depression From Infantile Hypertrophic Pyloric Stenosis. Pediatric Emergency Care 2011;27(2):124.
4. van den Bunder FAIM, van Wijk L, van Woensel JBM, et al. Perioperative apnea in infants with hypertrophic pyloric stenosis: A systematic review. Paediatr Anaesth 2020;30(7):749-58.
5. van den Bunder FAIM, van Woensel JBM, Stevens MF, et al. Respiratory problems owing to severe metabolic alkalosis in infants presenting with hypertrophic pyloric stenosis. J Pediatr Surg 2020;55(12):2772-6.

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Cellulitis-Abscess Developing Secondary to Trauma

Travmaya Bağlı Olarak Gelişen Sellülit-Apse

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ÖZET

Sellülit, derin dermis ve deri altı yağ dokusunu içeren derinin akut bir enfeksiyonudur. Klinik belirtiler; kızarıklık, şişlik, sıcaklık ve hassasiyet gibi enfeksiyonun görüldüğü bölgede ortaya çıkar. Sellülit tedavi edilmezse ciddi komplikasyonlar, nekroz, apse ve osteomiyelite yol açabilir. Streptococcus pyogenes ve Staphylococcus aureus (S. Aureus) en sık izole edilen bakteriler arasındadır. Bu bakteriler genellikle deri bütünlüğünün bozulduğu yerlerden dokuya ulaşmaktadır. Hastalarda nadir durumlarda selülit çevre dokulara yayılabilir, apse oluşumunu veya osteomiyeliti tetikleyebilir. Bu yazımızda travmaya sekonder sol tibia ön yüzde selülit olarak başlayan, giderek ilerleyerek apse ve çevre dokuda nekroz gelişimine sebep olan sellülit-apse vakası sunulmuştur. Bilinen hastalığı olmayan 17 yaşında erkek hasta, 10 gün önce merdivenden düşme sonrası sol bacak ön yüzde başlayan şişlik ve kızarıklık şikayeti ile başvurdu ve sellülit tanısı aldı. İzlemde nekrotik yumuşak doku enfeksiyonu gelişti ve yara kültüründe S. aureus üremesi oldu. Olgumuz komplikasyonsuz şekilde başarıyla tedavi edildi. Cilt ve yumuşak doku enfeksiyonlarını tedavi etmek için genellikle birinci kuşak sefalosporinler ve antistafilokokal penisilinler ilk tercihlerdir. Ancak, metisilin dirençli S. aureus (MRSA) tarafından oluşturulan enfeksiyonları etkin bir şekilde kontrol etmeyebilirler. Antibiyotik seçimi önemli olsa da, enfekte yabancı cisimlerin çıkarılması, apse varsa cerrahi olarak drenajı ve düzenli yara temizliğinin sağlanması gibi destekleyici önlemler başarılı bir iyileşme için hayati öneme sahiptir. Sonuç olarak, cilt ve yumuşak doku enfeksiyonlarını yönetmede klinik değerlendirme çok önemlidir. Çünkü laboratuvar sonuçları hastanın durumunu tam olarak yansıtmayabilir. Ampirik antibiyotik tedavisi; lezyonun şiddeti, klinik durum ve muhtemel patojenler göz önünde bulundurularak derhal başlatılmalıdır. Etkilenen bölgeden kültür almak, etkeni tanımlamada ve antibiyotik direnç paternlerini belirlemede yardımcı olur ve buna göre tedavi planını yönlendirir.

Anahtar Kelimeler: Travma, selülit, apse, staphylococcus aureus

ABSTRACT

Cellulitis is an acute bacterial infection of the skin's deeper layers. Clinical indicators such as redness, swelling, warmth, and tenderness manifest at the site of infection . If left untreated, cellulitis can lead to serious complications, necrosis, abscess, and osteomyelitis . The most frequently isolated bacteria are Streptococcus pyogenes and Staphylococcus aureus (S. aureus). These bacteria species often exploit breaches in the skin's integrity to gain entry to tissue. In rare cases, cellulitis may extend to contiguous tissues, precipitating abscess formation or osteomyelitis. We present a case of cellulitis on the anterior left tibia, resulting from trauma, which progressed to abscess formation and surrounding tissue necrosis. A 17-year-old male with no prior medical history presented with swelling and redness 10 days after sustaining a fall down stairs. Despite initial cellulitis diagnosis, the infection worsened, yielding Staphylococcus aureus growth in wound culture and necessitating treatment for necrotic soft tissue infection. Our case was successfully treated without any complications. First-generation cephalosporins and antistaphylococcal penicillins are commonly the initial choices for treating skin and soft tissue infections. However, they may not effectively combat infections caused by methicillin-resistant S.aureus (MRSA). While antibiotic selection is paramount, supportive measures such as removing infected foreign bodies, surgically draining lesions like abscesses, and ensuring regular wound cleansing are crucial for achieving successful recovery. In conclusion, clinical evaluation remains crucial in managing skin and soft tissue infections because laboratory results may not fully reflect the patient's condition. Empirical antibiotic therapy should be initiated immediately, taking into account the severity of the lesion, clinical condition, and likely pathogens. Obtaining cultures from the affected area helps identify the pathogen and determine antibiotic resistance patterns, guiding the treatment plan accordingly.

Key words: Trauma, cellulitis, abscess, staphylococcus aureus

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INTRODUCTION

Cellulitis, a bacterial infection deeply rooted within the skin layers, affects both the dermis and subcutaneous fat tissue. Clinical indicators such as redness, swelling, warmth, and tenderness manifest at the site of infection (1). If left untreated, cellulitis can lead to serious complications, necrosis, abscess, and osteomyelitis (2). The most frequently isolated bacteria are Streptococcus pyogenes and Staphylococcus aureus (S .aureus) (3). These bacteria species often ex ploit breaches in the skin's integrity to gain entry to tissue. In rare cases, cellulitis may extend to contiguous tissues, precipitating abscess formation or osteomyelitis (4). This paper presents a case of cellulitis wherein trauma served as a catalyst for cellulitis onset and subsequent progression resulted in abscess formation and tissue necrosis on the anterior aspect of the left tibia.

CASE REPORT

A 17-year-old adolescent male, with no reported medical history, presented to the hospital about 10 days after sustaining a fall down stairs. Initial evaluation at an external facility revealed notable swelling and erythema on the anterior surface of his left leg (Figure 1a). One week post-injury, the patient returned to the external facility with a malodorous, purulent open wound. The abscess was drained, and a sample was obtained for culture analysis. Treatment with intramuscular cefazolin and oral ciprofloxacin was initiated, and outpatient follow-up was arranged.

On the third day of treatment, the patient presented to our facility. Physical examination revealed a 3x3 cm necrotic open wound on the anterior left t ibia, s urrounded b y e rythema, warmth, and malodorous purulent discharge (Figure 1b). Laboratory tests showed a white blood cell count of 10.250/mm³, with neutrophils at 6.090/mm³ and lymphocytes at 3.310/mm³. The erythrocyte sedimentation rate was recorded at 19 mg/hour, and the C-reactive protein level was 22.9 mg/L.

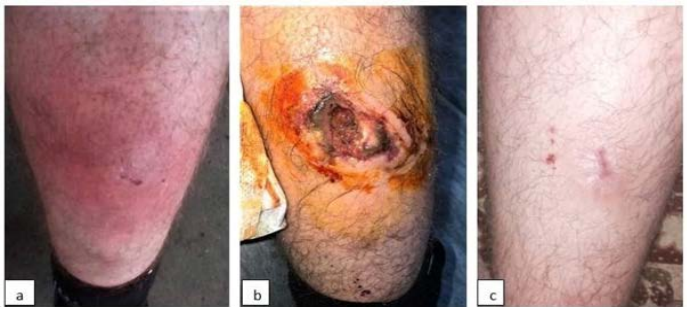

Figure 1. a) Image of cellulitis on the anterior surface of the tibia. b) Purulent necrotic tissue at the wound site. c) Healed appearance of the wound after treatment.

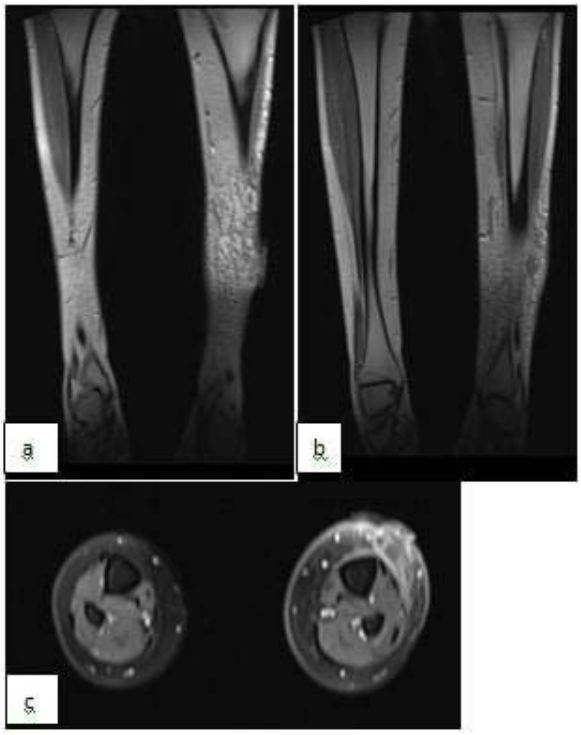

Figure 2. a) Coronal T1-weighted contrest-enhanced image showing fistülization of the abscess with secondary ulseration and defect in the skin. b) Coronal T1-weighted contrest-enhanced image demonstrating loculated fluid collection in the subcutaneous tissue consistent with an abscess. c) Axial T1-weighted image revealing a thick-walled and septated abscess located ın the anterior surface of the tibia.

Results from the abscess culture previously sent to the external center revealed growth of methicillin-sensitive S. Aureus (MSSA). Contrast-enhanced magnetic resonance imaging (MRI) was conducted for osteomyelitis assessment, revealing a 4 cm ulceration on the skin, a 3x2 cm abscess with fissuring on the skin and cellulitis in the surrounding area (Figure 2). The patient was admitted, and wound debridement was performed to remove necrotic tissues. In consideration of the antibiogram obtained from the external center culture and to ensure broad-spectrum coverage, intravenous ceftriaxone were administered. Due to the lack of improvement in the patient's clinical condition within 48 hours, clindamycin was empirically added to the treatment to cover potential pathogens. The cultures obtained at our hospital yielded no growth.

After 10 days of intravenous ceftriaxone and 8 days of intravenous clindamycin, the wound showed signs of healing and acute-phase reactants had decreased. After being discharged with amoxicillin-clavulanic acid, the patient used amoxicillin-clavulanic acid for 7 days. No complications were

observed during follow-up (Figure 1c).

DISCUSSION

Bacterial skin and soft tissue infections remain a notable concern in pediatric populations, presenting a persistent health challenge. S.aureus stands out as the primary culprit in over 70% of cases, maintaining its status as one of the most prevalent pathogens causing human disease despite advancements in antibiotic therapy and hygiene practices. Timely diagnosis and prompt initiation of appropriate treatment are imperative, as delayed recognition or inadequate therapy can precipitate severe complications (5,6). The culture from our patient's abscess also indicated the presence of MSSA. Given the patient's prior good health and lack of hospital exposure, suspicion arose regarding community-acquired MSSA (CA-MSSA). Notwithstanding the trauma-associated MSSA infection in our patient, the development of a necrotic soft tissue infection occurred. Even among immunocompetent individuals, it is essential to closely monitor trauma-related infections and take measures to prevent potential complications.

The treatment approach for bacterial skin and soft tissue infections in children varies depending on the severity of the lesions and the child's clinical status. For those with mild to moderately severe infections not necessitating hospitalization or urgent surgical intervention, timely initiation of oral antimicrobial therapy can prevent disease progression and potential hospital admission. Antimicrobial therapy should be chosen empirically to target the most likely pathogens, considering factors such as the resistance profile of the pathogen, antibacterial spectrum and activity of the chosen agent, and pharmacokinetic properties (5,6). Despite the initial plan for outpatient management with oral ciprofloxacin and intramuscular cefazolin, our patient presented with worsening symptoms, including deepening wound, purulent discharge, and necrotic tissue formation around the wound. Given the clinical deterioration despite ongoing treatment, a decision was made to proceed with inpatient care and follow-up. In cases involving necrotic soft tissue infections, appropriate broad-spectrum antibiotic therapy, meticulous local wound management, and debridement are pivotal (7). Our patient underwent prompt debridement, received suitable parenteral antibiotic therapy, and received comprehensive local wound care.

First-generation cephalosporins and antistaphylococcal penicillins are commonly the initial choices for treating skin and soft tissue infections. However, they may not effectively combat infections caused by methicillin-resistant S.aureus (MRSA). While antibiotic selection is paramount, supportive measures such as removing infected foreign bodies, surgically draining lesions like abscesses, and ensuring regular wound cleansing are crucial for achieving successful recovery (5,8). Our patient was managed successfully following these therapeutic principles.

In conclusion, clinical judgment remains crucial in managing skin and soft tissue infections, as laboratory results may not fully reflect the patient's condition. Empiric antibiotic therapy should be initiated promptly, considering lesion severity, clinical presentation, and likely pathogens. Sampling for culture from the affected area aids in identifying the causative agent and determining antibiotic resistance patterns, guiding treatment adjustments accordingly. Vigilant monitoring, especially in trauma-related infections where skin integrity is compromised, is of paramount importance. Urgent debridement is warranted in cases of necrotizing soft tissue infections, accompanied by timely administration of appropriate antibiotic therapy.

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REFERENCES

1. Bystritsky RJ. Cellulitis. Infect Dis Clin North Am 2021;35(1):49-60.
2. Morris AD. Cellulitis and erysipelas. BMJ Clin Evid2008;2:1708.
3. Mahmutoğlu ÇS, Yılmaz KF, Vahaboğlu MH. Rekürren alt ekstremite selülitlerinde risk faktörlerinin değerlendirilmesi ve laboratuvar ile klinik bulguların tedavi yanıtına etkisi. Ortadogu Tıp Derg 2019;11(4):477-83.
4. Gül Ü. Derinin sık görülen bakteriyel enfeksiyonları. Ankara Med J 2016;16(1):98-114.
5. Ladhani S, Garbash M. Staphylococcal skin infections in children: rational drug therapy recommendations. Paediatr Drugs 2005;7(2):77-102.
6. Hedrick J. Acutebacterial skin infections in pediatric medicine: current issues in presentation and treatment. Paediatr Drugs 2003;5(11):35-46.
7. Peetermans M, de Prost N, Eckmann C, Norrby-Teglund A, Skrede S, De Waele JJ. Necrotizing skin and soft-tissue infections in the intensive care unit. Clin Microbiol Infect 2020;26(1):8-17.
8. Peebles E, Morris R, Chafe R. Community-associated methicillin-resistant Staphylococcus aureus in a pediatric emergency department in Newfoundland and Labrador. Can J Infect Dis Med Microbiol 2014;25(1):13-6.