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Amaç ve Kapsam

Journal of Academic Research in Medicine-JAREM, yayın dili Türkçe-İngilizce olan, bağımsız ve önyargısız çift-kör hakemlik prosedürlerine bağlı olarak yayın yapan uluslararası bir dergidir. Dergide deneysel ve klinik tıp alanlarında yapılan araştırmalar, vaka sunumları, güncel konularla ilgili derlemeler, editöre mektuplar ve tıp eğitimiyle ilgili yazılar yayınlanır. Dergi, Nisan, Ağustos ve Aralık aylarında olmak üzere yılda 3 sayı yayınlanmaktadır. Derginin finansmanı G.O.P. Taksim Eğitim ve Araştırma Hastanesi tarafından sağlanmaktadır.

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Journal of Academic Research in Medicine (JAREM) is an international journal published in both Turkish and English and complies with independent and unbiased double-blind reviewing procedures. The journal publishes researches in the fields of experimental and clinical medicine, case reports, reviews on recent topics, letters to the editor, and other manuscripts on medical education. The journal is published three times per year; in April, August, and December. The journal is funded by G.O.P. Taksim Training and Research Hospital.

The aim of JAREM is to publish researches on recent topics at an international level. Moreover, reviews, editor's note, case reports and images are also published in the journal. The target audience of readers and authors is composed of educators, academics, researchers, specialists and general practitioners, and all publication process and procedures comply with the standards of ICMJE, WAME and COPE.

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JOURNAL OF ACADEMIC RESEARCH IN MEDICINE

Yazarlara Bilgi

Journal of Academic Research in Medicine-JAREM, çift-kör hakemli bir dergi olarak, tıp alanında yapılan deneysel, temel, özgün klinik çalışmaları; mezuniyet sonrası eğitim, olgu sunumları, tıp tarihi, yayın ve araştırma etiğiyle ilgili yazıları yayınlar. Editörlerin yazı seçiminde temel unsur olarak dikkate alacağı hakemler, yurt içi ve yurtdılında konusunda uzman olan dış bağımsız kişilerden seçilir. Dergi, Nisan, Ağustos ve Aralık aylarında olmak üzere yılda 3 sayı yayınlanmaktadır.

Deneysel, klinik ve ilaç araştırmaları için ilgili uluslararası anlaşmalara uygun etik komisyon raporu gerekmektedir. (Helsinki Declaration of 1975, revised 2008-http://www.wma.net/en/30publications/10policies/b3/index.html, "Guide for the care and use of laboratory animals - www.nap.edu/catalog/5140.html)

Tüm yazarlar bilimsel katkı ve oranlarını ve ilgili sorumluluklarını; ayrıca çıkar çatışması olmadığını bildiren toplu imzaları ile yayına katılmalıdırlar. Araştırmalara kısmi de olsa yapılan nakdi ya da ayni yardımların hangi kurum, kuruluş, ilaç-gereç firmalarınca yapıldığı dip not olarak bildirilmelidir. (ICMJE Potansiyel Çıkar Çatışmaları Bildirim Formu)

Makalelerin formatı *ICMJE-Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (updated in December 2013 - http://www.icmje.org/icmje-recommendations.pdf)* kurallarına göre düzenlenmelidir.

Orijinal Araştırmalar ve Derlemeler'in sunumu çalışma bildirimi kılavuzlarına göre düzenlenmelidir: randomize çalışmalar için CONSORT, gözlemsel çalışmalar için STROBE, tanısal değerli çalışmalar için STARD, sistematik derleme ve meta-analizler için PRISMA, hayvan deneyli çalışmalar için ARRIVE, randomize olmayan davranış ve halk sağlığına müdahale çalışmaları için TREND.

Orijinal Araştırma, hatta bazı Olgu Sunumları için genel etik kurallar çerçevesinde yayının yapıldığı kurumun yetkililerinin hazırladığı etik kurul onayı ya da eşdeğeri bir kabul yazısının sunulması şarttır. Yazılardaki düşünce ve öneriler tümüyle yazarların sorumluluğunda olup, Editör ve yardımcıların kanaatlerini yansıtmaz.

Dergide basılması amacıyla gönderilen yazılar başka yerde yayınlanmamış olmalıdır. Daha önce bilimsel toplantılarda sunulan 200 kelimeyi geçmeyen özet yayınları, durumu açıklanmak koşulu ile kabul edilebilir.

İşlemleri yürütülüp karar aşamasına yaklaşmış olan yazıların, makul bir neden olmadan geri çekilme talebi "ret" kapsamına girmektedir. Yayına kabul edilen yazılar için birinci yazar, Türkçe ve İngilizce açısından olduğu gibi, metinde temel değişiklik yapmamak kaydı ile düzeltmelerin Editörlerce yapılmasını kabul etmiş sayılır.
Yazıların dergide yayınlanmak üzere kabul edilmesi için; atıf alabilme olasılığı, orijinal ve bilimsel akademik üst düzeyde olması ön koşuldur.

Genel Kurallar
Yazılar sadece derginin çevrimiçi makale kabul sistemi www.jarem.org üzerinden gönderilebilir. Yayına kabul edilmeyen yazılar, sanatsal resimler dışında geriye gönderilmez. Tüm yazılar, Editör başta olmak üzere, Editör danışmanı ve yardımcıları, istatistik danışmanları ve en az iki hakem tarafından incelenir. Yazı konusunun en önde gelen otörü olan, fakat çalışmanın dışında olup yazarlarla ve kurumları ile ilişkisi-bilgisi olmayan üç kişinin ilk yazar tarafından hakem olarak önerilmesi dergi için çok önemlidir.

Editör, hakemlere yazıyı göndermeden önce aşağıda bildirilen biçimsel kurallara uygunluğunu araştırır. Düzeltmeler orijinal metinde değil, düzeltilmesi istenen bölümlerle kısıtlı olmalıdır. Yazılar gönderilmeden önce yazım ve çizim hatalarından tam olarak arındırılmalıdır.

Yazım Kurallarına uygun hazırlanmayan makaleler değerlendirmeye alınmayacaktır.

Araştırma Yazıları

1. Özgün Araştırmalar: Yazının tamamı 5000 kelimeyi geçmemeli ve yalnızca anlamak için gerekli olan sayı ve içerikte tablo ve grafik desteği olmalıdır. Kaynakların 50'den az olması inandırıcılık için genelde yeterlidir.

1.1 Kapak sayfası: Birinci sayfadır ve ayrı MS Word dosyası olarak düzenlenir. Yazarların tam ve açık isimleri, son aldıkları akademik unvanlar ile 50 karakteri geçmeyecek şekilde yazının başlığı yazılır. Yazarların ilgili oldukları kurum, bölüm ve şehir sıra ile bildirilmelidir. Birden fazla yerde yapılan çalışmalar sembollerle açıklanır. Bu sayfanın altına yazışmaya yetkili ve düzeltmeleri yapacak yazarın açık adı, posta ve e-posta adresi, telefon ve faks numaraları yazılır. Ayrıca çalışma bilimsel toplantıda önceden bildirilen koşullarda tebliğ edildi ya da özeti yayınlandı ise açıklaması yapılır.

1.2 Orijinal araştırma makalesi için bölümlü özet: Makalenin tam metni Türkçe ise, Türkçe özeti minimum 200, maksimum 250 kelime; İngilizce özeti minimum 400-maksimum 500 kelime olmalıdır.
Tam metni İngilizce olan yazılarda, İngilizce özeti minimum 200, maksimum 250 kelime; Türkçe özet minimum 400, maksimum 500 kelime olmalıdır.
Bu uygulamanın amacı İngilizce ve Türkçesi yeterli olmayan (yerli ve yabancı) okuyucuların da dergiyi okuyabilmelerini sağlamaktır.
Özetler; Amaç, Yöntemler, Bulgular, Sonuç şeklinde alt başlıklarla düzenlenmelidir.
NLM MESH terimleri ile uyumlu en az 3, en fazla 6 tane anahtar kelime bölümlü özetin altında verilmelidir (http://www.nlm.nih.gov./mesh/MBrowser.html).

1.3 Metin: Makale Başlığı, Giriş, Yöntemler (alt başlıklı), Bulgular, Tartışma, Çalışma kısıtlamaları ile Sonuçlar ve Kaynaklar kısımlarını içermelidir. Metnin özellikle yöntemler, bulgular ve tartışma kısmının alt başlıklara bölünmesi yararlı olabilir. Metin toplam 5000 kelimeyi geçmemeli ve Times New Roman yazım sitili ile 12 puntoda yazılmalıdır. En son bölüme teşekkür yazılacak ise, ciddi bilimsel katkı dışında araştırmanın yürütülmesine önemli katkıda bulunanlarla, yazının son şeklinin verilmesine yardım edenler yazılır. Bu bilginin e-posta ile gönderilmesi gerekir veya ayrı MS Word dosyasında "Teşekkür Notu" olarak sisteme yüklenir.

1.4 İstatistiksel Analiz: Tıbbi dergilerdeki istatistik verilerini bildirme kurallarına göre yapılmalıdır (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals. Br Med J 1983: 7; 1489-93). İstatistiksel analiz için kullanılan yazılım tanımlanmalıdır. Sürekli değişkenlerin karşılaştırılmasında parametrik testler kullanıldığı zaman verilerin ortalama±standart sapma olarak bildirilmesi gerekir. Parametrik olmayan testler için de Medyan (Minimum-Maksimum) veya Medyan (25'inci ve 75'inci persantiller) değerleri olarak bildirilmesi gerekir. İleri ve karmaşık istatistiksel analizlerde, göreceli risk (RR, relative risk), olasılık (OR, odds ratio) ve tehlike (HR, hazard ratio) oranları güven aralıkları (confidence intervals) ve p değerleri ile desteklenmelidir.

1.5 Kaynaklar: Metin içinde geçiş sırasına göre numaralandırılır ve ayrı sayfada yazılır. Kişisel bilgi, yayınlanmamış veriler, "baskıda gibi" ulaşılamayan kaynaklar burada değil, metin içinde parantez ile sunulur. İki yıldan eski özetler kaynakçaya alınmaz; alınanlar parantezde (abstr.) şeklinde verilir. Kaynakların gerçekliğinden yazarlar sorumludur.

Dergiler
Dergi isimlerinin kısaltmaları Index Medicus/Medline/PubMed listesine göre yapılır (dergilerin kısaltmaları için NLM tarafından her yıl yayınlanan MEDLINE dergilerin listesine http://www.nlm.nih.gov/tsd/serials/lji.html adresinden ulaşılabilir). Altı ve daha yazarlı makalelerde tüm isimler yazılır. Yedi ve fazla yazarlı olanlarda ilk altı isim yazılır ve "et al." ilave edilir. Yazar

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isimlerinden sonra, o yazının tam başlığı, yıl, cilt ve sahifeler sıralanır.
Örnek: Müller C, Büttner HJ, Petersen J, Roskomun H. A randomized comparison of clopidogrel and aspirin versus ticlopidine and aspirin after the placement of coronary-artery stents. Circulation 2000; 101: 590-3.

Kitaplar
Kitap içinde bölüm: Sherry S. Detection of thrombi. In: Strauss HE, Pitt B, James AE, editors. Cardiovascular Medicine. 2nd ed. St Louis: Mosby; 1974. p.273-85.
Tek yazarlı kitap: Cohn PF. Silent myocardial ischemia and infarction. 3rd ed. New York: Marcel Dekker; 1993.
Yazar olarak Editör (ler): Norman IJ, Redfern SJ, editors. Mental health care for elderly people. New York: Churchill Livingstone; 1996.
Toplantıda sunulan makale: 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. P. 1561-5.
Bilimsel veya teknik rapor: Smith P. Golladay K. Payment for durable medical equipment billed during skilled nursing facility stays. Final report. Dallas (TX) Dept. of Health and Human Services (US). Office of Evaluation and Inspections: 1994 Oct. Report No: HHSIGOE 169200860.
Tez: Kaplan SI. Post-hospital home health care: the elderly access and utilization (dissertation). St. Louis (MO): Washington Univ. 1995.

Elektronik formatta makale
Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis (serial online) l995 Jan-Mar (cited 1996 June 5): 1(1): (24 screens). Available from: URL: http:/ www.cdc.gov/ncidodlElD/cid.htm.

1.6 Şekiller, Tablolar ve Resimler: Şekil ve resimler, hasta, doctor ve kurum isimleri gözükmeyecek şekilde hazırlanmalıdır. Metinden ayrı olarak, metin içinde geçiş sırasına göre numaralandırılarak verilir. Başlık ve altyazılar ayrı bir sayfada sunulur. Grafiklerde yeteri kalınlıkta çizgi kullanılır. Böylece gerekli küçültmelerde kayıplar en aza iner. Genişlikler en fazla 9 ya da 18 cm. olmalıdır. Çizimlerin profesyonellerce yapılması faydalı olacaktır. Gri renkler kullanılmamalıdır. Kullanılan kısaltmalar alt kısımda alfabetik sıra ile mutlaka açıklanmalıdır. Tablo ve Şekil başlıklarında ve tablonun yazı içinde anılmasında Roma rakamları kullanılmamalıdır. Metin, Tablo ve Şekillerde kullanılan ondalık sayılar Türkçe metinlerde virgül İngilizce metinlerde ise nokta ile ayrılmalıdır. Özellikle tablolar metni açıklayıcı ve kolay anlaşılır hale getirmek amacı ile hazırlanmalı ve metnin tekrarı olmamalıdır.

Video Görüntüler
Olgu Sunumları ve Özgün Görüntüler'de yer alan resimlere ek olarak video/hareketli görüntüler ve ekstra imaj/statik görüntüler aşağıdaki teknik özelliklerde gönderildiği takdirde web sayfamızda yayınlanacaktır.

1. İmaj/statik görüntü formatında sunumlar: JPG, GIF, TIFF, BMP
2. Video/hareketli görüntü formatında sunumlar: MPEG, VMF.
3. Dosya boyutu maksimum 2 MB olmalıdır.
4. Resimlerde ve özellikle video görüntülerinde doktor, kurum, şehir ve hasta tanımlamaları tümü ile silinerek gönderilmelidir.

Makalenizde yer alan tablolar, şekiller ve resimler için orijinal oldukları ayrıca bildirilmelidir. Orijinali dışında ve başka kaynaktan alındıklarında mutlaka alınan kaynağa atıfta bulunmalı ve alınan kaynağın "hardcopy" veya elektronik formatta versiyonları Telif Hakkı sahibinden (yayınevi, dergi veya yazar) alınan izinler ile birlikte Baş Editör ofisine sunulmalıdır. Kaynaklar, şekiller ve tablolar ile ilgili kurallar tüm makale türleri için geçerlidir.

Özel Bölümler

2. Derlemeler: Editör ofisinin kararıyla davetli yazarlar tarafından hazırlanabilir. Bir bilgi ya da konunun klinikte kullanılması için son vardığı düzeyi anlatan, tartışan, değerlendiren ve ileride yapılacak çalışmalara yön belirleyen düzeyde olmalıdır. Yazarının konusunda otör olması ve atıfta bulunulmuş yazılarının olması gerekir.

Bölümsüz özet: Araştırma makalelerindeki kelime sayıları burada da geçerlidir, sadece bölümlü olmayacaktır. NLM MESH terimleri (http://www.nlm.nih.gov./mesh/MBrowser.html adresinde bulunabilir) ile uyumlu en az 3, en fazla 6 tane anahtar kelime bölümlü özetin altında verilmelidir. Kelime sayısı 5000, kaynak sayısı 50 ile sınırlıdır.

3. Editöryel Yorum: Dergide çıkan bir araştırmanın o konunun otörü veya iyi değerlendirme yapan hakem tarafından kısaca değerlendirilmesi amacı güder. Sonunda; klinik anlam ve kısa özet bulunur.

4. Olgu Sunumları: Otörlerce de çok nadir görülen, tanıda ve tedavide güçlük gösteren ya da uygulamada genellikle gözden kaçtığı anlaşılan, yeni bir yöntem öneren, textbook'larda olmayan bilgileri içeren çok ilgi çekici ve öğretici sunular yayınlanabilir. Bu özelliklere sahip olgular sınırlı sayıda basılmaktadır. Video görüntüsü olanların basılma şansı yüksektir. Kaynak sayısı 10, içerik ise 700 kelime ile sınırlıdır. Özeti bulunmamakla birlikte İngilizce başlık içerir. Olgu sunumu formatı, Giriş, Olgu Sunumu, Tartışma, Sonuç başlıklarından oluşmaktadır.

5. Bilimsel Mektup: Yeni bilimsel buluş ve verileri duyurmayı amaçlayan, klinik açıdan önemli ancak ön bildiri niteliğinde olan yazılar bilimsel mektup olarak yayına kabul edilir. Bilimsel mektuplar içerik olarak alt başlıksız olup toplam 900 kelimeyi aşmamalıdırlar. Kaynak sayısı 10, tablo ve resim sayısı ise 2 ile sınırlı olmalıdır.

6. Editöre Mektuplar: Derginin temel yayın amaçlarından birini oluşturmaktadır. Yayınlanan bir yazının önemini, gözden kaçan bir yapısını ya da noksanını tartışır. Yazarlar, yayınlanan makaleler hakkında yorum içeren mektuplar dışında da okurlarımızın ilgi alanlarına giren konular veya özellikle eğitici vakalar hakkında da Editöre Mektup formatında yorumlarını sunabilirler. Kaynak sayısı 5, metin ise 500 kelimeyi geçmemelidir, alt başlıkları bulunmaz.

7. Eğitim: Son yıllarda araştırma sonuçları ile kesinleşen, akademik düzeydeki eğitimde yerini alan ve klinik uygulamada yer bulan bilgiler ayrıntıları ile sunulur.

Bölümsüz özet: Araştırma makalelerindeki kelime sayıları burada da geçerlidir, sadece bölümlü olmayacaktır. NLM MESH terimleri (http://www.nlm.nih.gov./mesh/MBrowser.html adresinde bulunabilir) ile uyumlu en az 3, en fazla 6 tane anahtar kelime bölümlü özetin altında verilmelidir. Kelime sayısı 5000, kaynak sayısı 50 ile sınırlıdır.

8. Özgün Görüntü: Klinik bilime dayalı önemli bulguları yansıtan, hastalıkların temel mekanizmalarına ışık tutan, anormallikleri vurgulayan veya yeni tedavi yöntemlerini aydınlatan çarpıcı ve nadir görüntüler yayına kabul edilir. Video görüntüsü olanların basılma şansı yüksektir. Başlığı ile beraber tanımlayıcı metin ve resim alt yazıları (kaynaksız) toplam 250 kelimeyi geçmemelidir.

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İçindekiler / Contents

Patellofemoral Arthrosis and Patellofemoral Arthroplasty

Patellofemoral Artroz ve Patellofemoral Artroplasti

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ABSTRACT

The patellofemoral joint tends to develop osteoarthritis due to the high rates of anatomical abnormalities and exposure to large weights through relatively small areas. The rate of isolated patellofemoral arthrosis is 11% in men and 24% in women above 55 years of age. This gender difference may be due to the more frequent presence of patellar aligment problems and dysplasia in women. Although, patellofemoral arthrosis, in general, is treated by conservative methods, surgery should be considered for patients who have failed to benefit from weight loss, physical therapy and drug treatment because the disease leads to pain and loss of function. In the surgical treatment of patellofemoral arthrosis, methods such as arthroscopic debridement, management of loads that affect the patella, cartilage grafting, patellar resurfacing, patellafemoral arthroplasty (PFA), total joint replacement and patellectomy can be used. However, PFA has not been widely used. The reasons were problems with the initial design, and mistakes in patient selection, but those were reduced recently and this has led to increasing interest in the PFA. The current indications of PFA comprise of patients with little or no malalignment, and young patients with isolated patellofemoral disease who were planned for patellectomy due to symptom severity. Indeed, the outcomes from patients who were below 55 years of age with a 5-year follow up are promising. *(JAREM 2014; 1: 1-3)*

Key Words: Patellafemoral joint, arthrosis, patellofemoral arthroplasty

ÖZET

Patellofemoral eklem büyük yüklerin dar temas alanları üzerinden etki etmesi ve nispeten anatomik anomali oranının sıklığı nedeniyle osteoartrite oldukça meyilli bir eklemdir. Tek başına patellofemoral artroz varlığı 55 yaş üstü erkeklerde %11, kadınlarda %24 oranında görülmekle birlikte bu cinsiyet farklılığının nedeni kadınlarda daha sık olan patellar dizilim bozukluğu ve displazi olabilir. Patellofemoral artroz genellikle konservatif yöntemler ile tedavi edilmeye çalışılsa da; tek başına ağrı ve fonksiyon kaybı yaratması nedeniyle kilo verme, fizik tedavi ve ilaç tedavisinden fayda görmeyen hastalar için cerrahi seçenekler gözönünde bulundurulmalıdır. Patellofemoral artroz cerrahi tedavisinde artroskopik debridman, patellayı etkileyen yüklerin düzenlenmesi, kıkırdak greftlemeleri, patellar yüzey yenilemeleri, Patellofemoral artroplasti (PFA), total eklem replasmanı ve patellektomiye uzanan yöntemler uygulanabilmektedir. Bununla birlikte PFA çok yaygın kullanım alanı bulamamıştır. Bunun nedeni olarak gösterilen ilk tasarımlardaki sorunlar ve hasta seçimindeki hata oranlarının azaltılması ile özellikle son yıllarda PFA'ye olan ilgi de artmıştır. PFA'nin günümüzdeki endikasyonları arasında yanlış dizilimin çok az olduğu ya da hiç olmadığı hastalar ve semptomların ciddiyeti nedeniyle patellektomi planlanan izole patellofemoral hastalığı olan genç hastalar vardır. Gerçekten de 55 yaş altı ve en az 5 yıllık takibi olan hastaların sonuçları cesaret vericidir. *(JAREM 2014; 1: 1-3)*

Anahtar Sözcükler: Patellofemoral eklem, artroz, patellofemoral artroplasti

INTRODUCTION

The patellofemoral joint is a part of the knee and is located between the femoral condyles and patella. This joint is affected by various loads at different flexion angles. When the knee is fully extended, load on the patellofemoral joint is minimal, whereas the load becomes at the largest level at 60° to 90° flexion (1). In other words, at 10° knee flexion, the load on the patellofemoral joint equals to half the body weight, whereas it may be 3.5-fold body weight at 60° knee flexion. During difficult activities such as ascending or descending the stairs, the load on the patellofemoral joint may be 8 times the body weight (2). Between 0° to 30° flexion, dynamic stability of the patellofemoral joint is achieved by musculus vastus medialis obliqus, whereas static stability is achieved by the medial patellofemoral ligament. At further degrees of flexion movements, stability is achieved by bony structures following patellar sliding into the trochlear sulcus (3). However, the patellofemoral joint is actually accepted as the joint of extensor muscles since this joint lengthens the force arm of the quadriceps femoris muscle and changes the direction of muscle force. Thus, it plays an important role in knee stability. Therefore, patellofemoral joint problems may be considered as the problems of the knee extensor mechanism (4, 5).

Complaints arising from the patellofemoral joint occur during movements against gravity. The primary complaint is pain behind the patella, medial to the joint, and sometimes at the popliteal fossa. This kind of pain intensifies during activities such as ascending the stairs, sitting with knees at flexion, and squatting (6, 7). At times, pain can be bilateral and, in general, it is not related to any trauma. Among the other complaints, patients frequently report sounds from the patellofemoral joint, feeling of uncoil or instability, and locking. These symptoms stem from impairment of the normal rhythmic movement of the patellofemoral joint (8, 9). Sensation of friction may be prominent, especially when the load on the patellofemoral joint is increased during ascending stairs and, rarely, it may be heard. Most of the patients with patellofemoral joint disease show effusion of the knee joint. Quadriceps atrophy may be seen in chronic cases.

Diagnosis should be based on at least anteroposterior and lateral x-ray radiography of knee. Tunnel and tangential patella

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radiographies may frequently be added. Tangential patella radiography mostly involved Merchant and Mountain techniques in the literature. These radiographies show the patellofemoral joint. Although they are not routine, oblique radiographies may be necessary. Computerized tomography (CT) imaging of the patellofemoral joint enables evaluation of the patella and femoral condyle contours. CT arthrography may show retropatellar and trochlear articular cartilage and synovial surfaces. Magnetic resonance imaging (MRI) may be preferred in the diagnosis of patellofemoral joint diseases, as it is non-invasive and enables evaluation of bone, cartilage and soft tissues. The imaging plane is not confined to the transverse plane as in CT. It may provide imaging in all planes and it does not involve ionizing radiation. When necessary, arthroscopy is one of the most important current diagnostic and interventional methods (10, 11).

The patellofemoral joint tends to develop osteoarthritis due to high rates of anatomical abnormalities and exposure to large weights through relatively small areas. Lateral patellofemoral joint involvement frequently accompanies lateral and medial femorotibial joint osteoarthritis. However, patellofemoral joint involvement may be isolated. Involvement of the medial patellofemoral joint is rare. The rate of isolated patellofemoral arthrosis is 11% in men and 24% in women above 55 years of age. This gender difference is due to the more frequent presence of patellar alignment problems and dysplasia in women (12, 13).

Although conservative methods are preferred in the treatment of patellofemoral arthrosis, surgery should be considered for patients who fail to benefit from weight loss, physical therapy and drug treatment because the disease leads to pain and loss of function. In the surgical treatment of patellofemoral arthrosis, methods such as arthroscopic debridement, management of loads that affect the patella, cartilage grafting, patellar resurfacing, PFA, total joint replacement and patellectomy can be used (14). However, PFA has not been widely used. The reasons were problems with the initial design, and mistakes in patient selection, but those were reduced recently and this has led to increasing interest in PFA (15, 16).

DISCUSSION

The first report on patellofemoral arthroplasty was published by McKeever in 1955 which was an report of a successful prosthesis approach in patients with symptomatic isolated patellofemoral degenerative disease. Initial results showed that PFA was a good alternative to patellectomy and patellar skiving in the treatment of patellar osteoarthritis (17). In 1973, Levitt supported those results in his study and suggested that patellar resurfacing is a good alternative in the treatment of patellofemoral osteoarthritis. Subsequently, 39 of 45 patients reported that they were pleased with the McKeever prosthesis during 22 year follow up. In 1979, Blazina et al. (18) published the first report of patellar resurfacing and gave rise to PFA applications in the literature. Later studies reported a success rate of 44% to 90% for PFA. However, a 50% failure in 76 knees with a Lubinus prosthesis in 8 years was reported (19) and the main reasons for this failure were reported to be malalignment, wear and tear, repeated traumas and disease progression. New designs with shallow and wide femoral rims that enabled better fixation of the trochlea during flexion were developed. In addition, these designs allowed total replacement when the disease progressed (20, 21). Among the features of the new products, intramedullary instrumentation, wider size choices, minimal incision technique, longer cement and polyethylene forms, trochlear rims with superolateral extension which increase patellar clutch and trachlear angle that may reduce patellar prosthesis application problems can be listed. The purpose is to achieve success rates close to total knee prosthesis with normal knee kinematics. Results from the literature demonstrate that these sophisticated designs eliminate wrong alignment and early abrasion. Low complication rates and excellent range of motion were reported. Disease progression in the tibiofemoral joint is a problem that remains to be solved. These types of new design prostheses present an alternative treatment for total joint replacement in patients with isolated patellofemoral disease (Figure 1, 2) (22, 23).

The current indications of PFA are patients without alignment problems and young patients who have severe symptoms and are planned for patellectomy due to isolated patellofemoral disease. An important advantage of this treatment is that meniscus and cruciate ligaments and thus the natural structure of the knee joint are preserved. The outcomes of a -5 year follow up in patients below 55 years of age are promising. In this group, the underlying reason is mostly the secondary osteoarthritis. Osteoarthritis results from isolated traumas such as patellar fracture, thus other parts of the knee are not affected, and disease progression in the tibiofemoral joint is slower (23, 24).

Philippe H. and Caton J. of France reported the results of 70 PFA with a 10-year follow up and they observed no complication of arthroplasty and 3 of 5 patients underwent revision surgery due to progression of tibiofemoral joint disease. Four patients had

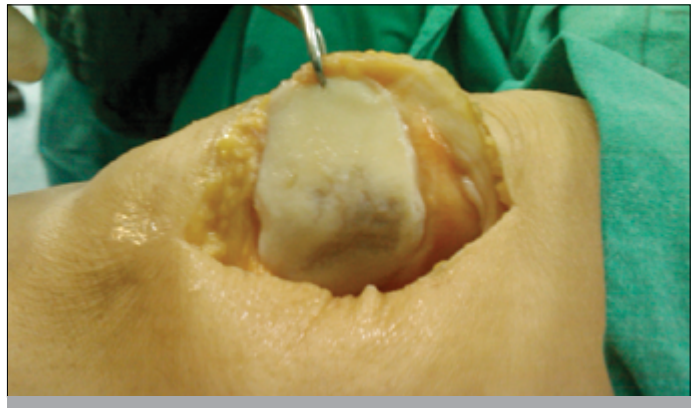

Figure 1. Full thickness cartilage defect of the patella

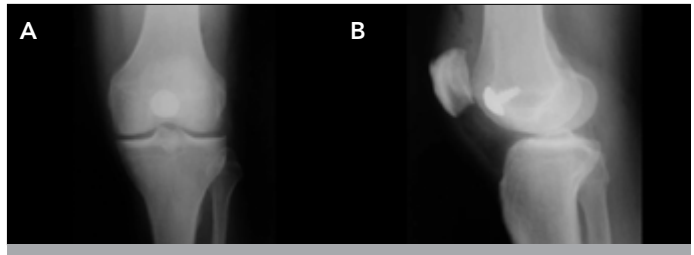

Figure 2. Postoperative AP and lateral view following patellar resurfacing

intractable anterior knee pain, whereas the other four patients had slight patellar lateral subluxation. This implant was reported to be a good alternative to total knee prosthesis, with the same safety profile in patients with isolated patellofemoral disease (25).

Van Jonbergen HPW et al. (26) investigated the stress distribution differences in the distal femur of patients who underwent patellofemoral joint arthroplasty and total knee arthroplasty. Patellofemoral joint arthroplasty forms a stress shield around the prosthesis, but this is less than total knee arthroplasty. They suggested that special designs of patellofemoral prostheses may result in differences of the femoral stress shield (26).

CONCLUSION

Patellofemoral Artroplasti alone is efficient in patients with patellofemoral arthrosis and middle-term follow up showed good-excellent results in 90-95% of the patients. On the other hand, anterior knee pain rates of 7-19% and better knee society scores of total knee arthroplasty, for arthrosis involving three compartments of the knee when compared to PFA, stress the importance of correct patient selection. In current practice, despite lack of any rule regarding age, PFA may be a better choice than total knee arthroplasty or patellectomy in knee anterior compartment arthrosis patients who are younger than 55 years of age (27, 28).

Peer-review: Externally peer-reviewed.

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Tragal Perikondrium ve Temporal Kas Fasyası Kullanılan Tip 1 Timpanoplastilerde İşitme Sonuçları

Hearing Results in Type 1 Tympanoplasty Using with Tragal Cartilage and Temporalis Muscle Fascia

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ÖZET

Amaç: Biz bu çalışmada timpanik membran perforasyonu olan kolesteatomsuz, timpanik membran retraksiyonu ve kemikçik zincir problemi olmayan kronik otitis media'lı, hastalarda greft olarak temporal kas fasyası ve perikondrium kullanımının uzun dönem odyolojik sonuçlarını karşılaştırmayı amaçladık.

Yöntemler: Bu çalışmaya timpanik membran perforasyonu nedeniyle Tip 1 timpanoplasti yaptığımız kolesteatomsuz kronik otitis medialı 35 hasta dahil edilmiştir. Tüm hastalara hem pre operatif hem de post operatif 1 yılda tonal odyometri yapılmıştır ve 500, 1000, 2000 ve 4000Hz de kemik ve hava yolu işitme seviyeleri kaydedilmiştir.

Bulgular: Toplam 35 hastaya timpanoplasti uygulanmıştır. Bunların 20'sinde tragal kartilaj perikondriumu ve 15'inde temporal kas fasyası greft materyali olarak kullanıldı. Greft materyali olarak tragal kartilaj perikonriumu ve temporal kas fasyası kullanılan hastaların pre op ve post op hava ve kemik yolu işitmeleri arasındaki farkları karşılaştırıldığında her iki grubun kendi arasındaki pre op ve post op hava kemik yolu arasındaki fark istatistiksel anlamda farklı idi. ($p<0,005$) Temporal kas fasyası ve perikondrium timpanoplastisi yapılan hastalardaki işitme kazancında iki grup arasında istatistiksel bir farklılık saptanmamıştır ($p>0,005$).

Sonuç: Tip 1 timpanoplastilerde, timpanik membran perforasyonunun onarımında greft materyali olarak temporal kas fasyası veya perikondrium dokusunun kullanılması odyolojik açıdan bir farklılık oluşturmamaktadır. *(JAREM 2014; 1: 4-6)*

Anahtar Sözcükler: Perikondrium, timpanoplasti, kronik otitis media

ABSTRACT

Objective: This study aimed to compare the long-term result of hearing in patients with tympanic membrane perforation without cholesteatoma and ossicle problems using the temporalis fascia and perichondrium.

Methods: It included 35 patients with chronic otitis media without cholesteatoma who underwent type 1 tympanoplasty due to tympanic membrane perforation. Preoperative and 1-year postoperative air-bone gap (ABG) and postoperative gain in ABG at frequencies of 0.5, 1, 2, and 4 kHz were recorded.

Results: The 35 patients were operated. Tragal perichondrium was used in the 20 patients. Temporalis muscle fascia was used in 15 patients. There was statistically significant difference between preoperative and after the operation at the first year in the group that used the perichondrium and the temporalis muscle fascia group. There was no statistically significant difference in air bone gap gain between perichondrium and temporalis muscle groups.

Conclusion: There was no difference in hearing results between procedures where the perichondrium was used for reconstruction of the tympanic membrane as temporalis muscle fascia. *(JAREM 2014; 1: 4-6)*

Key Words: Perichondrium, tympanoplasty, chronic otitis media

GİRİŞ

Timpanoplasti kronik otitis mediada hem patolojinin ortadan kaldırılması hem de işitme rekonstriksiyonu için yapılan cerrahi bir girişimdir. Timpanoplastide timpanik membran perforasyonunun onarımı için temporal kas fasyası, perikondrium ve kartilaj gibi dokular değişik teknikler uygulanarak kullanılmaktadır (1-3). İlerlemiş orta kulak patolojileri, retraksiyon poşlarının varlığı ve atelektatik kulaklarda greft materyali olarak kullanılan temporal kas fasyasının atrofiye olma olasılığı fazla olduğu için bu tür vakalarda perikondrium kullanılmasının daha uygun olacağı yönünde yayınlar her geçen gün artmaktadır (4).

Daha çok revizyon timpanoplasti vakalarında kullanımı önerilse de basit timpanik membran perforasyonu olan hastalarda da perikondrium ile timpanik membran rekonstrüksiyonu yapılmaktadır. Perikondrium dokusunun temporal kas fasyasından daha kalın olmasının perforasyon onarımı için avantajları olsa da operasyon sonrası işitmeyi olumsuz yönde etkileyebileceğine dair görüşler bulunmaktadır. Biz bu çalışmada timpanik membran perforasyonu olan kolesteatomsuz, timpanik membran retraksiyonu ve kemikçik zincir problemi olmayan kronik otitis media'lı, hastalarda greft olarak temporal kas fasyası ve perikondrium kullanımının uzun dönem odyolojik sonuçlarını karşılaştırmayı amaçladık.

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YÖNTEMLER

Bu çalışmaya timpanik membran perforasyonu nedeniyle Tip 1 timpanoplasti yaptığımız kolesteatomsuz kronik otitis medialı 35 hasta dahil edilmiştir. Hastaların hepsinden operasyon öncesi onam formu alındı. Kolesteatomlu kronik otitli, retraksiyonu olan hastalar ve revizyon vakaları çalışma dışı tutulmuştur. Tüm hastaların aynı cerah tarafından opere edilmiştir. Operasyonları postauriküler insizyonla yapılmıştır. Fasya temporal kastan ek bir kesi yapılmadan alınmıştır. Perikondrium için tragal kartilaj perikondriumu kullanılmıştır. Tüm hastalarda greftler underlay olarak yayılmıştır. Tüm hastalara hem pre operatif hem de post operatif 1. yılda tonal odyometri yapılmıştır ve 500, 1000, 2000 ve 4000 Hz de kemik ve hava yolu işitme seviyeleri kaydedilmiştir. Ayrıca tüm hastalara düzenli aralıklarla otoskopik muayene yapılmıştır. Ameliyat sonrası 1. yılda timpanik membranda perforasyonu olmayan hastalar çalışma grubuna dahil edilmiştir.

İstatistiksel analiz

İstatistiksel değerlendirmede t-test kullanılmıştır ($p<0,005$).

BULGULAR

Toplam 35 hastaya timpanoplasti uygulanmıştır. Bunların 20'sinde tragal kartilaj perikondriumu ve 15'inde temporal kas fasyası greft materyali olarak kullanıldı. Hastaların 21 tanesi kadın 14 tanesi erkekti ve yaş ortalaması 45 idi. Perikondrium kullanılan hastaların yaş ortalaması 43 idi ve 12 kadın 8 erkekti. Temporal kas fasyası kullanılan hastaların yaş ortalaması 47 idi ve 9 kadın 6 erkekti. Temporal kas fasyası kullanılan hastaların pre op hava kemik aralığı 24,71 idi. Post op hava kemik aralığı ise 13,15 idi. Greft materyali olarak tragal kartilaj perikondriyumu kullanılan hastaların pre op hava kemik aralığı 22,72'di. Post op hava kemik aralığı ise 13,31 idi. Greft materyali olarak tragal kartilaj perikonriumu kullanılan hastaların pre op ve post op hava ve kemik yolu işitmeleri arasındaki farkları karşılaştırıldığında pre op ve post op hava kemik yolu arasındaki fark istatistiksel anlamda farklı idi ($p<0,005$) (Tablo 1). Greft materyali olarak temporal kas fasyası kullanılan hastaların pre op ve post op hava ve kemik yolu işitmeleri arasındaki farkları karşılaştırıldığında pre op ve post op hava kemik yolu arasındaki fark istatistiksel anlamda farklıydı ($p<0,005$). Temporal kas fasyası ve perikondrium timpanoplastisi yapılan hastalardaki işitme kazancında iki grup arasında istatistiksel bir farklılık saptanmamıştır ($p>0,005$) (Tablo 2).

TARTIŞMA

Timpanoplastide amaç intakt bir timpanik membranla birlikte işitme fonksiyonunun düzeltilmesidir. Timpanik membranın perforasyonunun onarımında greft materyali olarak değişik greft materyalleri kullanılmışsa da en sık kullanılan greft materyalleri temporal kas fasyası ve perikondriumdur (3-8). Temporal kas fasyası 1950'lerden beri kullanılan kullanımı ve elde edilmesi kolay bir greft materyalidir (5-7). Ancak son yıllarda revizyon vakalarının artması, daha komplike kronik otitis medialı vakaların olması sebebi ile perikondrium grefti ile timpanoplasti yapılmaya başlanmıştır (8-10). İlk olarak 1967 yılında Goodhilltragal kartilaj perikondriumu ile temporal kas fasyasını karşılaştırmıştır (11). Bu çalışmada iki greft materyali ile timpanoplasti yapılan hastalar karşılaştırılmış ve sonuçlar benzer bulunmuştur. Daha sonraki dekadlarda timpanoplastide perikondrium greft materyalinin kullanımı giderek yaygınlaşmıştır (9, 11).

Tablo 1. Greft materyali olarak perikondrium kullandığımız hastalarda ameliyat öncesi ve sonrası hava-kemik aralığı sonuçları

Hasta no	Pre-op hava-kemik aralığı (dB)	Post-op hava-kemik aralığı (dB)
1	33,75	23,75
2	11,25	2,5
3	33,25	10
4	15	3,75
5	21,25	1,25
6	26,25	8,75
7	27,5	28,75
8	17,5	2,5
9	26,5	55
10	25	27,5
11	17,5	1,25
12	18,5	16,25
13	37,5	16,25
14	32,5	13,75
15	11,25	5
16	16,25	13,75
17	27,5	8,75
18	11,25	1,25
19	18,75	12,5
20	26,25	13,75

Tablo 2. Greft materyali olarak temporal kas fasyası kullandığımız hastalarda ameliyat öncesi ve sonrası hava-kemik aralığı sonuçları

Hasta no	Pre-op hava-kemik aralığı (dB)	Post-op hava-kemik aralığı (dB)
1	21,25	15
2	35	1,25
3	31,5	15
4	13	15
5	13,75	13,75
6	23,75	7,5
7	28,75	11,5
8	18,75	12,5
9	27,5	7,5
10	28,75	5
11	21,25	8,75
12	40	27,5
13	42,5	22
14	8,75	7,5
15	16,25	27,5

Perikondrium kas fasyasına göre daha sağlam bir doku olduğu için greft başarısını artırmasına rağmen doku kalınlığı nedeni ile işitsel sonuçların iyi olmayacağına dair görüşlerde bulunmaktadır (12). Ancak, bu konu ile ilgili yapılan çalışmalarda perkondrium dokusu kullanılan hastalarda odyometrik açıdan da tatmin edici sonuçlara ulaşılmıştır (13).

Çalışmamızda temporal kas fasyası ve perikondrium timpanoplastisi yapılan hastalardaki işitme kazancında iki grup arasında istatistiksel bir farklılık saptanmamıştır. İki grubunda sadece timpanik membran perforasyonlu, komplike olmayan, kolesteatomsuz kronik otitis medialı hastalar olması ve hastalara kemikçik zincir rekonstrüksiyonu yapılmaması nedeni ile temporal kas fasyası ve perikondriumu işitsel kazanç açısından daha net değerlendirme fırsatımız olmuştur.

Literatürde temporal kas fasyası greft başarı oranı %62 ile %93 arasında değişmektedir (14-17). Greft başarısını etkileyen birçok faktör vardır. Bu faktörleri hasta ile ilgili, yapılan cerrahi teknik ile ilgili ve kullanılan greft materyali ile ilgili faktörler olarak sınıflandırabiliriz. Hastanın yaşının küçük olması, perforasyonun yeri ve boyutu, anemi, malnutrisyon gibi iyileşmeyi olumsuz etkileyecek kronik hastalıklar orta kulakta enfeksiyon varlığı, östaki tüpü disfonksiyonu ve perforasyonun bilateral olması gibi faktörler hasta ile ilgili faktörlerdir (18). Diğer faktörler arasında cerrahi teknik, cerrahın tecrübesi, greft materyalinin cinsi sayılabilir (18-21).

Perikondrium dokusu daha sağlam bir doku olduğu için daha çok timpanik membran retraksiyonu olan subtotal perforasyonlarda veya açık teknik yapılmış vakalarda kartilajla ve kartilaj olmadan da kullanılmaktadır (8, 11, 21). Greft materyali olarak kullanıldığında Kartilaj, perikondriuma ve kas fasyasına göre daha rijid olduğu için, odyometrik sonuçlar daha düşük olmaktadır (21). Ayrıca kartilaj kullanımda post operatif takip sürecinde timpanik membran altında kalan olası patolojilerin (kolesteatom vs.) örtülmesine sebeb olabilmektedir. Perikondrium kullanılan timpanoplastilerde ise bu sıkıntılar olmamaktadır.

SONUÇ

Tip 1 timpanoplastilerde, timpanik membran perforasyonunun onarımında greft materyali olarak temporal kas fasyası veya perikondrium dokusunun kullanılması odyolojik açıdan bir farklılık oluşturmamaktadır.

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Hasta Onamı: Yazılı hasta onamı bu çalışmaya katılan hastalardan alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir - A.D.; Tasarım - A.D., T.K.; Denetleme - T.K.; Kaynaklar - A.D.; Malzemeler - A.D.; Veri toplanması ve/veya işlemesi - A.D.; Analiz ve/veya yorum - A.D.; Literatür taraması - A.D.; Yazıyı yazan - T.K., A.D.; Eleştirel İnceleme - T.D.

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An Evaluation of Partial Matrix Excision with Winograd Method for the Surgical Treatment of Ingrown Toenails

Tırnak Batması Cerrahi Tedavisinde Winograd Yöntemi ile Yapılan Kısmi Matriks Eksizyonu Sonuçlarının Değerlendirilmesi

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ABSTRACT

Objective: The most frequent nail pathology of the hallux is the ingrown toenail. In our study, we evaluated Winograd's partial matrix excision method as a treatment for unilateral ingrown hallux toenail.

Methods: Winograd's partial toenail excision was performed on 239 patients (127 males, 112 females; mean age 37.4 years) with an ingrown toenail. Primary patient complaints included a painful hallux toenail, discharge, nail deformation, and difficulty walking. According to the Heifetz staging system, there were 62 patients evaluated as Stage I, 96 as Stage II, and 81 as Stage III. A total of 174 (74%) patients had discharge from infection. In infected cases, an antibiotic was administered until inflammatory signs and discharged ceased, at which time surgical treatment was performed. Patients' duration to return to daily living and work, recurrence ratio, satisfaction, and cosmetic issues were evaluated. The mean follow-up time was 27 months (range: 14-45 months).

Results: Patients returned to daily living in 10-15 days (mean 11.3) and to work in 8.7 days (range: 6-13 days). A total of 230 patients (96.3%) were satisfied with the procedure, and 231 patients (96.6%) were satisfied with the cosmetic results. Nine patients were dissatisfied with the surgical outcome, and eight patients who experienced recurrence were dissatisfied with the cosmetic results. None of the patients experienced deep tissue infections or neurovascular complications.

Conclusion: Winograd's partial matrix excision method is a beneficial surgical procedure for ingrown toenail, resulting in low recurrence and high satisfaction rates. *(JAREM 2014; 1: 7-11)*

Key Words: Big toe, hallux, nail disorders, ingrown toenail surgery

ÖZET

Amaç: Tırnak batması, toplumda sık görülen ve en sık tırnak hastalığıdır. Bu çalışmada, ayak baş parmağına tek taraflı tırnak batması nedeniyle Winograd yöntemiyle kısmi matriks eksizyonu yapılan hastalarda tedavi sonuçları değerlendirildi.

Yöntemler: Tırnak batması nedeniyle 239 hastaya (127 erkek, 112 kadın; ort. yaş 37,4) Winograd prosedürüne uygun olarak kısmi matriks eksizyonu uygulandı. Hastaların temel şikayetleri ayak baş parmağına ağrı, akıntı, tırnakta şekil bozukluğu ve yürüme güçlüğü idi. Heifetz'in tırnak batması evrelendirmesine göre 62 hasta evre I, 96 hasta evre II, 81 hasta evre III olarak değerlendirildi. Yüz yetmiş sekiz (%74) hastada enfeksiyon zemininde aktif akıntı vardı. Enfekte olgularda enflamasyon bulguları ve akıntı ortadan kalkıncaya kadar antibiyoterapi uygulandı ve sonrasında cerrahi tedavi yapıldı. Hastaların günlük hayat ve işe dönüş zamanları, nüks gelişme oranı, hasta memnuniyeti ve kozmetik sorunlar açısından değerlendirildi. Ortalama takip süresi 27 ay (dağılım 14-45 ay) idi.

Bulgular: Dokuz hastada (%3,7) nüks görüldü. Ortalama nüks gelişim süresi 5,6 aydı (dağılım 2-9 ay). Hastalar ortalama 6,7 günde (dağılım 3-11 gün) günlük aktivitelerine geri döndü. İşe dönüş süresi ortalama 10,2 gün (dağılım 7-16 gün) bulundu. İkiyüzotuz (%96,3) hasta yapılan müdahaleden memnundu. İki yüz otuz bir (%96,6) hastada kozmetik olarak memnundu. Nüks gelişen hastaların dokuzu cerrahiden ve sekizi ise kozmetik açıdan memnun kalmadığını bildirdi. Hastaların hiçbirinde derin doku enfeksiyonu veya nörovasküler komplikasyon gelişmedi.

Sonuç: Tırnak batması tedavisinde Winograd yöntemiyle yapılan kısmi matriks eksizyonu nüks oranı düşük ve hasta memnuniyet oranı yüksek bir tedavi yöntemidir. *(JAREM 2014; 1: 7-11)*

Anahtar Sözcükler: Baş parmak, tırnak hastalığı, tırnak batması cerrahisi

INTRODUCTION

Ingrown toenails occur frequently and are the most common hallux toenail disease (1-3). There are many causes of ingrown toenails, including tight shoe wear and improper nail trimming. An ingrown toenail occurs as the nail grows into the nail bed (4). Complaints from patients with ingrown toenails include a disappearing nail, groove, soft tissue hypertrophy-related pain, an odorous discharge, and nail destruction. The nail groove is covered with a thin epidermal tissue layer. Normally, this layer prevents nail groove irritation. Wearing tight shoes or socks can increase the pressure on the nail and nail groove. Hyperplasia occurs as a result of irritation of the nail groove and the reaction

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of the surrounding soft tissues. Finally, the nail substance enters the nail groove and causes infection (5-10). Although there are many conservative and surgical treatments for ingrown toenails, the optimum treatment method has not been clearly defined because of the high recurrence rates, low degrees of patient satisfaction, and reported cosmetic issues.

In this study, we evaluated the partial matrix excision treatment for the unilateral ingrown hallux toenail.

METHODS

Partial matrix excision was performed on 239 patients (127 males, 112 females, mean age: 37.4 years, age range: 16-71 years) who had a unilateral ingrown toenail from December 2008-October 2011. Fully informed consent was obtained from all patients. The ethics committee approved our study. Patients with onychomycosis were excluded from study after a dermatology consultation. Also, patients who had prior surgical treatment or bilateral or recurrent ingrown toenails and those who healed with conservative treatment were excluded. Radiography was not performed routinely. Major complaints included hallux pain, a foul-smelling discharge, and difficulty walking. Etiologies included inappropriate nail trimming (118 patients), narrow, tight footwear (28 patients), recurrent trauma (17 patients), and poor foot care (76 patients).

Patients were classified according to Heifetz's ingrown toenail classification system (11). This system classifies ingrowing toenails into the following three Stages: 1) Stage I: mild swelling, erythema, and tenderness along the lateral nail fold (inflammatory Stage), 2) Stage II: infection with active pus that was dependent on a bulged nail fold over the lateral nail plate edge (abscess Stage), and 3) Stage III: inhibition of free drainage by granulation tissue on the lateral nail fold (granulation Stage). During the first evaluation, 62 patients were classified as Stage I, 96 as Stage II, and 81 as Stage III. Infection-related active drainage was evident in 178 (74%) patients. Prior to treatment with surgery, Stage I and II patients were advised to wear shoes with a wide and open forefoot box and to utilize warm foot baths. Silver nitrate was applied to the Stage III patients' ingrown toenails. In addition to the aforementioned conservative treatments, an oral, systemic, first-generation cephalosporin (cephalexin, 1 gr/day in two doses) was prescribed to patients with infections before the surgical procedure. Bacteriological and fungal examinations were not performed. Surgical treatment was indicated for patients who did not benefit from conservative treatment.

Surgical Technique

The surgical procedure was performed on 239 patients after administration of digital anesthesia using 20 mg/mL prilocaine HCl and with use of a digital tourniquet. A colored (different from skin) tourniquet was used or a clamp was fixed to the tourniquet for identification (Figure 1). Winograd's partial matrix excision procedure was performed on all patients. A vertical incision was made through the nail plate on the ingrown side with a 15 blade. The incision included the length of the nail bed up to 4-5 mm proximal to the nail-skin border. The proximal aspect of the nail bed was excised with an oblique incision. Hypertrophied soft tissue covering the nail groove was excised through to the nail bed margin (Figure 2). Care was taken to prevent interphalangeal articulation and extensor tendon damage. All white-colored germinal matrix located near the nail fold was excised. The matrix on the distal phalanx cortex was curetted, and polypropylene sutures were placed in the skin edges (Figure 3). A pressurized dressing was applied, and the foot was elevated. Patients were prescribed non-steroidal anti-inflammatory drugs and antibiotics (cephalexin 1 gr/day in two doses). The dressings were changed every 2 days, and the sutures were removed after 2 weeks. Patients were evaluated at 6-month

Figure 1. Preoperative preparation

Figure 2. Winograd's partial matrix excision procedure

Figure 3. Postoperative appearance

intervals. Time periods until return to daily living, return to work, and recurrence were recorded. Patients were asked if they would undergo the same surgical procedure it they had another ingrown toenail and were also were asked about their overall satisfaction and if they had any cosmetic issues. The mean follow-up time was 27 months (range: 14-45 months).

RESULTS

There were no reports of neurological or vascular complications, nor any deep tissue infections or osteomyelitis. Recurrence occurred in 3.7% of patients (four females, five males). The mean recurrence time was 5.6 months (range: 2-9 months). Of those cases of recurrence, three were Stage I, five were Stage II, and six were Stage III. Revision surgery was performed for recurrent cases, and after an average of 14 months, no cases of recurrence were reported.

Patients without recurrence returned their daily activities without any symptoms. The mean times until returning to daily living and work were 11.3 days (range: 10-15 days) and 8.7 days (range 6-13 days), respectively.

A total of 230 patients (96.3%) were satisfied with the procedure. Each of the nine patients who were not satisfied had experienced recurrence and undergone revision surgery. The majority of patients (231; 966%) was satisfied with the cosmetic results. Of the eight patients who were not, six had revision surgery after recurrence. All patients had complaints of a narrowed nail.

DISCUSSION

Ingrown toenail is common nail pathology. The hallux is most commonly affected toe. It is believed that both habitual and anatomical factors are involved in the etiology of ingrown toenail. While a congenital, thick nail substance is a predisposing anatomical factor, improper nail trimming, tight footwear, recurrent trauma, poor foot care, and hyperhidrosis are also involved in ingrown toenail development (12, 13). In our study, 118 patients exercised inappropriate nail trimming; 28 wore narrow, tight footwear; 17 had a history of recurrent trauma; and 76 patients practiced improper foot care.

Several theories have been suggested regarding ingrown toenail etiology involving the nail itself or the soft tissue surrounding the nail (14-16). The patient experiences pain and swelling and may notice granulation tissue, depending on the penetration of the nail rim into the soft tissues (17). That penetration causes an inflammatory response and frequently results in the formation of bulge at the nail rim (18).

Contrarily, the wider medial and lateral soft tissue of the hallux may cause the pathology instead of the nail. According to this theory, the wider load creates pressure, which in turn causes necrosis and inflammation that induce the ingrown toenail (16, 19). Pearson et al. (20) reported no nail abnormalities in symptomatic patients with ingrown toenails in a prospective study. They concluded that treatment should not be related to nail abnormalities. However, others believe nail abnormalities to be the primary factor in ingrown toenails, and controversy remains regarding whether nail abnormalities or ingrown nail folds are the cause.

Ingrown toenail may also result from osseous malformation of the dorsal surface of the distal phalanx or rough thickening of the nail as a consequence of a fungal infection of the nail bed. Trauma, paronychia, onycholysis, and fungal infections should be considered differential diagnoses in ingrown toenails and thoroughly investigated. In our study, any patients with a suspicion of nail malformation or fungal infection were evaluated by a dermatologist and excluded. In these cases, maintaining focus on the possible predisposing factors is suggested.

There are various conservative and surgical treatments for ingrown toenail (21, 22). Although the effectiveness of conservative treatments, such as footwear with an open and wide toe, warm foot baths, bandaging, administration of antibiotics, the use of the corrugated splint technique, or cotton seton, has not yet been demonstrated, these treatments continue to be suggested as the standard of care for mild and moderate ingrown toenail cases (5, 21, 22). For our Stage I and II patients, footwear with an open and wide toe, warm footbaths, and antibiotics were used prior to surgery. Silver nitrate was applied to Stage III patients. Surgical treatment was performed in patients who did not benefit from conservative treatment.

Surgery can easily be performed under local anesthesia. A digital tourniquet made from a surgical glove should be applied. At the end of the surgery, the tourniquet must be removed and not be forgotten, as this could cause serious complications (5). To prevent this oversight, we suggest using a different colored surgical glove or attaching a clamp as a reminder. In our study, we used both blue surgical gloves and a clamp.

Surgical techniques may incorporate the following: 1) partial nail substance excision, 2) nail bed and nail matrix partial excision, 3) nail matrix chemical ablation, 4) soft tissue excision with nail bed and nail matrix treatment, or 4) only soft tissue excision (11, 22).

Resection and ablation techniques aim at the germinal matrix, which provides nail growth, thereby preventing regeneration of the nail. However, this method can cause cosmetic issues, depending on the level of matricectomy. Also, new nail spicules can form, and recurrence is possible if matricectomy is performed inadequately (11, 22).

Partial nail substance excision is performed on unilateral Stages I and II ingrown toenails without granulation tissue. After this procedure, patients quickly return to their daily activities and wear wide casual shoes. However, the recurrence rate of this procedure can reach 70% (22).

In 1936, Winograd determined that both the nail bed and nail matrix curettage should be used in ingrown toenail treatment (11). This method is a relatively easy and standardized surgical technique. The advantage of this technique is that no specialized chemicals or surgical equipment is needed. However, Kose et al. (23) reported that patients who had partial matrix excision with Winograd's technique complained of a narrowed nail substance with a proximal incision scar. Isik et al. (24) compared the partial matrix excision with a combined treatment (partial matrix excision-phenol application). Although no significant differences in duration of time to return to daily activities, postoperative pain, or recurrence rate were detected, the treatment cost and surgical

durations were higher in the combined treatment group. The recurrence rate was 92% in the partial matrix excision group. In other studies, the recurrence rate of Winograd's procedure was 1.7-27% (4, 5, 11, 23-25).

Procedures involving partial nail substance excision and chemical ablation of the germinal matrix gained popularity in 1945. For chemical ablation, 80-88% phenol, 100% trichloroacetic acid (TCA), or 10% sodium hydroxide (NaOH) can be used. The recurrence rate after phenol ablation is reported to be 5%. Complications included soft tissue necrosis, corrosion, drainage lasting >6 weeks, and rare systemic toxicity (22, 26-28).

Similar local complications, such as efflux and soft tissue necrosis, occurred after chemical ablation of the matrix with TCA or NaOH. However, the success rates of these treatments were 95% (22, 29-31). There are not yet enough controlled clinical trials to evaluate these treatments fully. On the other hand, matricectomy can be performed using a carbon dioxide (CO_2) laser, radiofrequency, and electrocautery. Success rates for matricectomy with a CO_2 laser have been reported to be 50-100%. It also has advantages, such as decreased postoperative hemorrhage and pain, as well as limited effects on the surrounding soft tissue. Several deleterious effects have been reported, including delayed epithelialization and prolonged soft tissue healing, lasting 3-6 weeks after the procedure (22, 32-34). There is no standard application time, technique, or chemical matricectomy procedure. Evolution of this technique could not prevent recurrence.

CONCLUSION

In our study, there was a 5.8% recurrence rate in patients who underwent the partial matrix excision procedure. Recurrence included development of nail spicules, which is related to inadequate matrix excision. In all cases of recurrence, revision surgery was performed with Winograd's technique, and new recurrence was not detected. A total of 96% of our patients expressed treatment satisfaction. All cases who were not satisfied were patients who had experienced recurrence and undergone revision surgery. All eight patients with cosmetic complaints had undergone revision surgery, which resulted in a narrowed nail substance. There was no continuous drainage, soft tissue necrosis, or wound problem in any patient. We believe that those complications are related to postoperative care and wound dressing changes. Dressing changes were performed every 2 days by the surgeon who performed the surgical procedures.

The learning curve of the partial matrix excision is steep. In this study, satisfactory results were achieved in terms of return to daily activity and work in patients who underwent Winograd's technique. Winograd's technique with partial matrix excision is a simple, cost-effective, and safe procedure with a low complication rate for patients who do not respond to conservative treatments for ingrown toenail.

Ethics Committee Approval: Ethics committee approval was not received due to the retrospective nature of the study.

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

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Hasta Onamı: Yazılı hasta onamı bu çalışmaya katılan hastalardan alınmıştır.

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Investigation of Neurologic Complications in Closed Wedge High Tibial Valgization Osteotomy Technique by Using Electrophysiological Methods

Kapalı Kama Yüksek Tibial Valgizasyon Osteotomi Tekniği Nörolojik Komplikasyonlarının Elektrofizyolojik Yöntemle Araştırılması

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ABSTRACT

Objective: The aim of this study is to investigate neurologic complications of closed wedge valgization osteotomy technique using electrophysiological methods.

Methods: Eleven extremities of 11 patients (mean age 52.75±5.39) with medial gonarthrosis and varus deformity were included. All patients underwent closed wedge valgization osteotomy in order to correct varus deformity.

Results: The post-operative amplitude of nervus peroneus superficialis significantly decreased when compared to pre-operative amplitude. The mean pre-operative *N. peroneus* superficialis amplitude was 12.77, whereas it reduced to 5.44 postoperatively ($p<0.05$). Other nerve conduction velocity investigations showed no significant differences between pre- and post-operative values. A Needle Electromyography (EMG) study demonstrated neurogenic involvement in 4 patients after surgery. All of these 4 patients had denervation in the m.extensor hallucis longus needle EMG study. In 2 patients, the musculus tibialis anterior needle EMG study showed neurogenic involvement. One of these had denervation. One patient showed denervation in the m.extensor digitorum brevis needle EMG study.

Conclusion: Although fibula osteotomy used in the closed wedge osteotomy technique was applied from the safe zone, electrophysiological investigations suggested that this zone may, in fact, not be safe. *(JAREM 2014; 1: 12-7)*

Key Words: Closed wedge, high tibial osteotomy, valgization osteotomy, peroneal nevre

ÖZET

Amaç: Bu çalışmanın amacı kapalı kama valgizasyon osteotomisi tekniğinin nörolojik komplikasyonlarını elektrofizyolojik yöntemlerle araştırmaktır.

Yöntemler: Ortalama yaşları 52,75 (±5,39) olan varus deformitesi bulunan medial gonartrozlu 11 hastanın 11 ekstremitesi çalışmaya alınarak mevcut varus deformitelerini düzeltme amacıyla uygulanan kapalı kama valgizasyon osteotomisi uygulanan hasta grubu çalışmaya dahil edilmiştir.

Bulgular: Nervus peroneus süperfisialis amplitüdü incelendiğinde ameliyat öncesine göre ameliyat sonrası ortalama olarak anlamlı şekilde azalma saptanmıştır. Ameliyat öncesi ortalama *N. peroneus* süperfisialis amplitüdü 12,77 iken ameliyat sonrası ortalama değer 5,44 olarak bulunmuştur ($p<0,05$). Diğer sinir ileti hızları incelemelerinde ise ameliyat öncesi ve sonrası arasında istatiksel olarak anlamlı fark saptanmamıştır.

İğne Elektromyografi (EMG) çalışmasında ise 4 hastada ameliyat sonrası incelemede nörojen tutulum saptanmıştır. Dört hastanın tamamında m. ekstansör hallusis longus iğne EMG çalışmasında denervasyon saptanmıştır. İki hastanın musculus tibialis anterior iğne EMG çalışmasında nörojen tutulum saptanmıştır. Bunlardan birinde denervasyon saptanmıştır. Bir hastada m. ekstansör dijitorum brevis iğne EMG çalışmasında denervasyon saptanmıştır.

Sonuç: Kapalı kama osteotomi tekniğinde kullanılan fibula osteotomisi güvenli bölgeden yapılmasına rağmen elektrofizyolojik inceleme sonuçları bu bölgenin güvenli olduğu konusunda şüphe uyandırmaktadır. *(JAREM 2014; 1: 12-7)*

Anahtar Sözcükler: Kapalı kama, yüksek tibial osteotomi, valgizasyon ostetomisi, peroneal sinir

INTRODUCTION

Currently, although arthroplasty is prevalent in the treatment of gonarthrosis, high tibial osteotomy (HTO) in the treatment of young patients still maintains its importance. However, as in the other knee surgeries, HTO has complications. Complications related with peroneal nerve especially are among the important complications of the technique (1). In our study, we aimed to investigate the peroneal nerve complications by using electrophysiological methods in patients who underwent HTO with the closed wedge valgization technique. The reason for using electrophysiological examination in the study is to determine peroneal nerve lesions without clinical signs or symptoms.

In the literature, in a study conducted on thirty cadaveric legs, the innervation of m.extensor hallucis longus was examined. The muscle was innervated by only one branch of n.peronealis profundus in twenty seven (90%) cases, and by 2 branches of the nerve in only 3 (10%) cases. The nerve penetrated the muscle from the fibular side in twenty one cases, from the tibial side in 6 cases and from the anterior aspect in 6 cases. The nerve following the fibular route was extending very close to fibular periosteum (3).

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Patient selection is one of the most important factors affecting the success of high tibial osteotomy. In the last 15 years, patient selection criteria for HTO have become more limited in parallel with developments in total knee arthroplasty. Despite successful results, due to activity limitations in the post-operative period of total arthroplasties and limited life of prosthesis, osteotomy seems to be the most convenient intervention in young and active patients with single compartment arthritis.

At present, the indications for osteotomy and prosthesis are not clearly defined and intervention is shaped by the personal evaluation criteria of patient and surgeon. In these criteria, the patient should be evaluated as a whole, not only the knee.

METHODS

Our study was planned on the patients with medial gonarthrosis and varus deformities between April 2002 and April 2004. Preoperatively, all patients signed consent forms for surgery.

Surgical Technique

In all patients of our series, lateral closed wedge valgization osteotomy was applied. After the patient was taken to a standard operation table, anesthesia was achieved by using one of the general or spinal anesthesia techniques and a pneumatic tourniquet was applied to the lower extremity. Knee joint compartments were evaluated by arthroscopy before osteotomy. The fibular head, gerdi tubercleand tuberositas tibia were determined and an oblique incision was made from the fibular head to the tuberositas tibia. Subdermal tissue was passed (Figure 1). The anterior part of the osteotomy area was exposed by removing the anterior retinaculum from the lateral rim of the patellar tendon by sharp dissection, and extensor muscles were detached subperiostally from the tibia metaphysis. Attachment sites of tibialis anterior were scraped in distal and lateral directions. The lateral tibial metaphysis was completely exposed for osteotomy. To do this, a homan retractor was placed onto the posterior tibia by scraping the periosteum. The proximal part of the osteotomy was cut by a chisel from lateral to medial, 2-2.5 cm distal to the joint, and parallel to the K-wire guide inserted into the knee joint. Then, the height of the wedge was calculated and the distal border determined. The distal border of osteotomy was cut from lateral to medial and from distal to proximal by guidance of a ruler placed on the first osteotomy line. Thus the two osteotomy lines combined in the medial site. Both rims of the osteotomy were made deeper with the help of a thin and wide osteotom, but the medial cortex was kept intact and the wedge was removed. Then, a 5-cm longitudinal incision was made from the lateral cruris 16 cm distal to the fibular head. After passing through skin and subdermal structures, the fibula was exposed by blunt dissection among the fibers of m. peroneus longus. 2 retractors with round shaped endings were placed around the fibula by scraping the periosteum. Then, a 1-2 cm bone block was removed using a motor saw, and the intact medial cortex of the tibia was used as a hinge, and the knee was forced into valgus and theosteotomy area was closed. After controlling the alignment of the knee, two deep stepped "U" staple and one smooth "U" staple were used for internal fixation (Figure 2). In case of "U" staple absence, or in cases who were planned for bilateral operation, rigid fixation were made by a half T plate. In total, two drains were placed: one for the tibia osteotomy area and one for the fibular osteotomy area. All layers were closed according to anatomy and a Jones bandage was applied (Figure 3). Evaluation was made by post-operative radiography (Figure 4).

Radiological and Clinical Method

Preoperative orthoroentgenograms are used to measure mechanical axis, anatomical axis 1 and 2, mechanical axis deviation, proximal medial tibial angle, distal lateral femoral angle, knee joint converggence angle and ankle adaptation angle in all patients. Then, the above-mentioned closed wedge valgization HTO operation was made. Patients were followed up at hospital services after surgery. Of the 20 patients who were operated by the closed wedge valgization HTO and U staple fixation method, 11 patients younger than 60 years and without peripheral neuropathy were included in the study. In total, 15 extremities were

Figure 1. Pre-operative preparation and incision

Figure 2. Closing and fixation of osteotomy line

Figure 3. Closing incisions

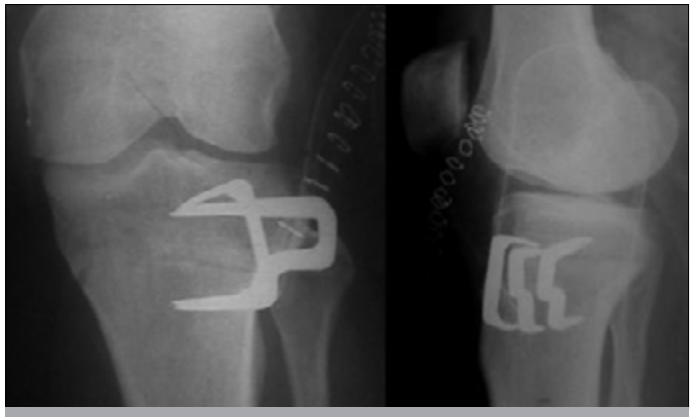

Figure 4. Radiographic evaluation after surgery

operated. Four patients had operations on both sides at different sessions and 7 patients had an operation on a single side. In the patients who had bilateral operations, only one extremity was evaluated. The mean age of the patients was 52.75 (±5.39) years. All patients underwent electrophysiological investigation 1-day before the operation. In this investigation, the unoperated side served as control for the operated side.

Electrophysiological Method

Electrophysiological investigations of the patients were made at the EMG laboratory by using the Nihon-Kohden Neuropack 2 device. Needle EMG investigations for motor and sensory nerve conduction velocities of patients were performed before the HTO operation and 2 months after the operation in both lower extremities.

The inter-electrode distance was 25 mm during motor and sensory nerve conduction velocity assessments. Supramaximal electrical stimulation was made with a superficial stimulator at 0,2 msec durations. In the investigation of motor conduction velocity, both peroneal nerves were stimulated at the ankle, fibular head, and 80-100 mm proximal to the fibular head. Latency and amplitude values of motor unit potentials (MUP) in the extensor digitorum brevis muscles were recorded. For MUP recordings, 6 mm diameter circular metal superficial electrodes were used.

In the investigation of sensory conduction velocity, both sural nerves were stimulated at 100-150 mm proximal to the lateral malleolus, and the latency and amplitude values of sensory potentials were recorded. Both superficial peroneal nerves were stimulated at the anterior border of the fibula 100-120 mm proximal to the lateral malleolus, and the latency and amplitude values were recorded. In the investigation of sensory conduction velocity, the distance between active and reference electrodes was 25 mm, and 6 mm diameter round-shaped metal superficial electrodes were used. During motor and sensory conduction velocity assessments, a ground electrode was placed between the stimulator and recording electrodes.

Concentric needle electrodes were used for needle EMG and vastus medialis, tibialis anterior, extensor hallucis longus, extensor digitorum brevis, extensor digitorum longus and gastrocnemius muscles of both extremities were investigated.

Statistical analysis

All patients who completed the 2 months follow up period were re-evaluated for electrophysiological changes at the same polyclinics by the same neurologist. The data obtained were transferred to SPSS (Statistical Package for the Social Sciences)10.5 software and comparisons were made by paired samples t-test.

RESULTS

The amplitude of *N. peroneus* superficialis significantly reduced postoperatively when compared to preoperative values. The mean amplitude of *N. peroneus* superficialis before and after surgery were 12.77 and 5.44 respectively ($p<0.05$). When operated and unoperated sides were compared in terms of n. peroneus superficialis amplitude, the amplitude of the operated side was significantly lower. The amplitude of n. peroneus superficialis was 15.27 on the unoperated side, whereas it was 5.44 on the operated side ($p<0.05$). In the nerve conduction velocity study, the nerve conduction velocity of *N. peroneus* superficialis was normal. Thus, amplitude reduction was explained by axonal involvement.

There was no significant difference in pre- and post-operative distal latency of *N. peroneus* communis, distal conduction velocity of *N. peroneus* communis, proximal conduction velocity of *N. peroneus* communis, *N. peroneus* communis amplitude, n.suralis conduction velocity, n.suralis amplitude, and *N. peroneus* superficialis conduction velocity ($p>0.05$ for all comparisons).

Pre- and post-operative nerve conduction velocities of the control group were comparable ($p>0.05$). In addition, there was no significant difference between pre- and post-operative nerve conduction velocities of the operated and unoperated sides ($p>0.05$).

The Needle EMG study revealed neurogenic involvement in 4 patients after surgery. All of these four patients showed denervation in the m. extensor hallucis longus needle EMG study (*N. peroneus* profundus). Two patients showed neurogenic involvement in the m. tibialis anterior needle EMG study. One of these had denervation. One patient showed denervation in the m. extensor digitorum brevis needle EMG study. Results of nerve conduction velocity studies were given in Table 1.

There was no significant relationship between the ages of patients, the amount of wedge resection and electrophysiological investigation. In addition, there was no significant relationship between preoperative mechanical axis values and electrophysiological investigation results.

DISCUSSION

Peroneal nerve dysfunction is one of the important complications of knee surgery. The peroneal nerve complication rate is around 20% in the HTO operations. Peroneal nerve injury may be due to two factors in HTO operations: injury due to surgery and injury due to ischemia resulting from a tourniquet. Nebelung et al. (3) compared two methods of peroneal nerve conduction testing during surgery. The study aimed to investigate tourniquet-dependent nerve injury. Fibula osteotomy was applied from the fibular head after closed wedge osteotomy. Plate and staples were used to fix the osteotomy line. It is known that axonal conduction velocity of peripheral nerves is reduced under ischemic conditions. Excitability of nerve and reduction in conduction velocity totally recover when the ischemic time is under 10 minutes. How-

Table 1. Statistical evaluation of nerve conduction velocities and amplitudes

	Operated extremity (preop)		Operated extremity (postop)		
	Mean	**SD**	**Mean**	**SD**	**p**
fibdg1	3.8400	0.4334	3.5382	1.2814	0.473
fibdg2	9.7036	0.6309	8.9418	3.0481	0.445
fibdg3	11.564	0.693	10.527	3.614	0.368
fibhdi	48.591	3.226	42.527	14.280	0.174
fibhpr	54.164	5.778	50.873	18.360	0.572
fibap1	4.2645	1.0793	3.8055	1.9440	0.328
fibap2	3.9736	1.1481	3.5391	1.9763	0.401
fibap3	3.739	1.149	3.485	1.788	0.613
slsrlh	44.31	15.64	44.14	15.15	0.843
psph	46.418	16.315	30.864	24.884	0.067
pspamp	12.7736	7.3059	5.4427	5.5879	0.024*
	Unoperated extremity (preop)		**Unoperated extremity (postop)**		
	Mean	**SD**	**Mean**	**SD**	**p**
fibdg1	3.9845	0.5467	3.5382	1.2814	0.311
fibdg2	9.5527	0.7297	8.9418	3.0481	0.528
fibdg3	11.335	0.803	10.527	3.614	0.474
Fibhdi	50.055	3.078	42.527	14.280	0.097
Fibhpr	56.545	4.365	50.873	18.360	0.354
fibap2	4.664	1.251	3.5391	1.9763	0.054
fibap3	4.539	1.274	3.485	1.788	0.058
srlh	49.536	4.429	44.14	15.15	0.358
srlamp	16.033	4.475	17.200	8.061	0.551
psph	47.28	16.54	30.864	24.884	0.058
pspamp	15.2709	9.5607	5.4427	5.5879	0.007**

(SG: right, SL: left, FIB: fibular, DG:distal delay, H:velocity, DI: distal, PR: proximal, AMP: amplitude, SRL: nervus suralis, PSP: nervus peroneus superficialis, ORT: mean, SD: standard deviation, p: p value)

ever, because of long-tourniquet times in orthopedic surgery, there may be irreversible motor function loss which cannot be defined clinically (7).

In a study by Aydogdu et al. (1), peroneal nerve dysfunction after HTO was examined by electrophysiological methods in 11 patients. Pre- and post-operative EMG and nerve conduction velocity studies were performed. Pre-operative investigations were made 1 day before surgery, whereas post-operative invetigations were made 6 months after surgery. Maquet type HTO was applied to the patients. At the end of the study, there was a positive correlation between the degree of deformity and neurologic involvement. However, there was no significant relationship between the degree of deformity and neurologic involvement in our study (1). Three patients showed motor and/or sensory involvement of the peroneal nerve. Only 1 patient had clinical signs. Nerve conduction velocity was reduced in two patients with motor involvement. Sensory nerve conduction velocity was reduced in 2 patients. In 2 patients with motor involvement in the EMG examination, there was partial degeneration. Electrophysiological parameters could not be recorded in 2 patients due to lack of stimulation. In the literature, the rate of weakness in ankle and thumb extensors was 2 to 20% in patients who underwent HTO. Possible exlplanations included anterior tibial compartment syndrome, peroneal nerve injury, tibialis anterior artery injury and ischemia due to the tourniquet. We suggest that nerve injury mostly results from surgery because peroneal nerve and its branches extend very close to the area of surgery and peroneal nerve injury occurs mostly during fibular ostetomy. This is because of the partial character and distal location of the lesion. Recent anatomic studies pointed out osteotomy as the reason for peroneal nerve lesions. In osteotomies applied at the 1/3 proximal part of the fibula, the risk of peroneal nerve injury is higher due to the close relationship between the bone and nerve. Nerve lesions can be seen even in the osteotomies applied in the so-called safe region (distal part). In our study, fibular osteotomy was applied in the safe zone, but electrophysiological investigations questionned the safety of this region. Thus, the safe zone is still debated.

There are few studies on the rate of peroneal nerve injury seen early after surgery. In the moderate nerve lesions, pain in the dorsal foot and ankle is seen as the symptom. The t pain is rather

considered as a post-operative pain. Therefore, electrophysiological studies are very important in order to define nerve lesions after HTO. On the other hand, early EMG and nerve conduction velocity studies are thought to give incorrect results due to edema, and a second investigation is recommended at least 6-months after the surgery. This in turn fails to define early lesions that recover in this period. The rate of peroneal nerve lesion was 27%. However , he symptomatic patient rate was 9%. This suggested that peroneal nerve lesions after HTO are more frequent than is reported (1).

Georgoulis et al. (4) investigated the possible causes of complications in the HTO operation in 23 cadaveric knee dissections, including arteries and nerves. The tibial nerve and popliteal artery were 0.5-1 cm behind the tibia at the osteotomy level. Popliteus and tibialis posterior muscles were located between the tibia and these neurovascular structures. A wrongly placed dispenser during surgery may compress the tibial nerve and popliteal artery. The tibialis anterior muscle is innervated by the n. peroneus profundus branch of the peroneal nerve. As n. peroneus profundus passes through the proximity of fibular periosteum, there is the risk of injury. Branches innervating the extensor digitorum longus muscle are surrounded by muscles, thus the risk of injury is low. The same condition is present for the branches innervating peroneus longus and brevis muscles. Extensor hallucis longus muscle is innervated by two tiny and long nerve branches arising from the peroneus profundus. These are located at the tibial and fibular sides of the muscle. These branches are the longest muscular branches of peroneal nerve, and are located 10 cm distal to the fibular head. Nerve branch on the tibial side may be injured during retraction. However, this injury can be seen more often during insertion of the distal staple used for osteotomy fixation. Therefore, less invasive material (U-staple, semitubular plate) may solve this problem. The lateral cutaneous nerve, a branch of the superficial peroneal nerve, may be injured during distal fibular osteotomy (12 cm proximal to ankle or 16 cm distal to fibula). The nerve is mostly seen and protected by moving anteriorly (4).

Kirgis et al. (5) conducted a study on 29 cadavers and indicated important points related with the peroneal nerve and its branches. Cadaveric dissection showed that m.extensor hallucis is innervated by a single nerve in 16 cases and by 2 or more nerve branches in 13 cases. Measurements showed that the nerve branch innervating m.extensor hallucis arises 68-136 mm distal to the branching point of n.peronealis profundus in 91% of the cases. Therefore, the area 68 to 153 mm above the fibular head can be defined as a risk zone. The safe zone for fibular osteotomy may be defined as 16 cm distal to the fibular head.

Wildner et al. (6), studied the HTO operation in 182 patients and used U-staples for fixation except in four patients. 9 patients (4.9%) had transient peroneal nerve palsy. Of these, 6 had motor deficits and 3 had sensory deficits (8).

Curley et al. (7) studied pre- and post-operative electrophysiologic parameters, creatine phosphokinase level, radiology and intracompartmental pressure in 16 patients who underwent HTO. Pre-operative electrophysiologic investigation revealed mild lesions in 12 patients. In terms of peroneal nerve involvement, scoring was made as 0-1-2-3 (0=normal, 3=the highest lesion). The mean pre-operative score was 3.0±0.87 and post-operative score was 8.8±2.17 in patients who underwent proximal fibular osteotomy. This difference was significant ($p<0.05$). On the other hand, in patients without proximal fibular osteotomy, the mean pre-operative score was 5.5±1.61 and post-operative score was 5.2±1.65. As seen, fibular osteotomy can be considered as a risky intervention for peroneal nerve injury. Hpwever, the importance of the fibular osteotomy site should be kept in mind (2).

Gibson et al. (8) studied HTO in 20 patients and measured anterior and deep posterior compartment pressures after closing the skin and before applying a plaster cast. Anterior compartment pressure of the other leg served as control. Half of the patients used a drain and the remaining half did not. In the group without a drain, anterior compartment pressure significantly increased in 7 patients (>45 mmHg) and 5 of these patients had transient nerve lesions defined clinically. Only one patient had persistent weakness of the extensor hallucis longus muscle. In the group with a drain, compartment pressures did not increase except in 2 patients. These 2 patients showed no nerve lesion during the early period. However, ankle dorsiflexion was weak in the late period which was explained by late peroneal nerve palsy. The reason for the increase in compartment pressure was considered to be bleeding, but fibular intervention was ignored in the paper because some of the patients had distal fibular osteotomy whereas others had partial excision of the fibular head (6).

Elgafy et al. (2) investigated m.extensor hallucis longus innervation in 30 cadaveric legs. The muscle was innervated by only one branch of *N. peroneus* profundus in 27 (90%) legs, and by 2 branches in 3 (10%) legs. The insertion point of *N. peroneus* profundus into the muscle was fibular in 21 legs, tibial in 6 legs and anterior in 6 legs. The nerve of the fibular side was very close to the fibular periosteum. The most risky zone for iatrogenic nerve injury was 5.9±1.7 cm from the fibular head and 10.9±1.7 cm distal (3).

CONCLUSION

Based on our results, patients who had HTO using the closed wedge valgization technique showed the risk of injury to *N. peroneus* superficialis and *N. peroneus* profundus (branches of *N. peroneus* communis) during fibular osteotomy. This was based on amplitude reduction in the n. peroneus superficialis conduction velocity study and lesions identified during needle EMG study.

Ethics Committee Approval: Ethics committee approval was not received due to the retrospective nature of the study.

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

Peer-review: Externally peer-reviewed.

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Hasta Onamı: Yazılı hasta onamı bu çalışmaya katılan hastalardan alınmıştır.

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Are Thyroid Functions Changing in Patients with Exacerbated COPD?

KOAH Atakta Tiroid Fonksiyonları Değişir mi?

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ABSTRACT

Objective: Non-thyroidal illness syndrome (NTIS) can be induced by chronic obstructive airway disease (COPD) exacerbation. The aim of this study was to evaluate the thyroid function impairments and the presence of thyroid antibodies in exacerbated COPD patients and to demonstrate the probable relationship with other clinical and biochemical parameters, such as the parameters of arterial blood gases, urea, creatinine, prothrombine time (PT), activated partial prothrombine time (APTT), and international normalized ratio (INR), etc.

Methods: We evaluated 21 patients within the exacerbation period of COPD who had undergone non-invasive mechanical ventilation and had measurements of serum fT3, fT4, and TSH levels and other laboratory tests (glucose, urea, creatinine, hematocrits, hemoglobin, PT, APTT) made on their first to third day of stay in the hospital. Ten of 21 patients had measurements of anti-Tg (antithyroglobulin) antibody and anti-TPO (antithyroperoxidase). The healthy control group consisted of 17 age-matched non-smoking voluntary men admitted to the internal medicine outpatient clinic for general check-up purposes without any complaints or diagnoses. Analyses were made with SPSS 17.0.

Results: We found that 33.33% of the patients with COPD exacerbation had fT3 levels below the normal values, and 14.28% of the patients had TSH levels below the normal values. The average fT3 and TSH levels were lower in the patients with COPD exacerbation compared to the healthy volunteers, and fT4 levels were higher in patients compared to the healthy group (patient group mean±SD (median): fT3 2.52±0.48 (2.69), fT4 0.99±0.16 (1.01), TSH 0.95±0.7 (0.80), p=0.001, p=0.001, p=0.009, respectively). Prothrombin time was negatively correlated with fT3 (rs= -0.520, p=0.03).

Conclusion: Negative correlation of pH with platelet counts and fT3 with prothrombin time were the novel findings of this study. This study is the first one to determine the relationship with thyroid hormones and coagulation in COPD patients. The other finding of the study was lower fT3 levels than healthy controls, which has been supported by other studies. *(JAREM 2014; 1: 18-24)*

Key Words: Thyroid, COPD, COPD exacerbation

ÖZET

Amaç: Tiroid dışı hastalık sendromu kronik obstriktif akciğer hastalığı (KOAH) atağında tetiklenebilir. Çalışmamızda KOAH atağında olan hastalarda tiroid fonksiyon bozukluklarını ve tiroid antikorlarının varlığını ve diğer klinik ve arter kan gazı, üre, kreatinin, international normalized ratio (INR) vb. parametrelerle ilişkilerini değerlendirmeyi amaçladık.

Yöntemler: KOAH atağının 1-3. günlerinde non-invaziv mekanik ventilasyon uygulanan 21 olgu (17 erkek/4 kadın) çalışmaya alındı. Olguların tümünün free T3, fT4, TSH düzeyleri, glikoz, üre, kreatin, hematokrit, hemoglobin, protrombin zamanı (PT), aktive parsiyel tromboplastin zamanı (APTT) parametreleri, 10 olgunun tiroid antikorları değerlendirildi. Dahiliye polikliniğine sağlık kontrolü amaçlı başvuran 17 sağlıklı, sigara içmeyenlerden kontrol grubu oluşturuldu ve benzer parametreleri değerlendirildi. Analizler SPSS 17,0 istatistik programında yapılmıştır.

Bulgular: KOAH'lı olguların yaş ortalaması 5,95±10,63, vücut kitle indeksi 23,19±5,8 kg/m^2 (n=21), sağlıklı olguların yaş ortalaması 54,35±7,33 kg/m^2, vücut kitle indeksi 26,94±5,3 (n=17). Ortalama fT3, TSH düzeyi KOAH'lı olgularda sağlıklı kontrol grubuna göre daha düşüktü, fT4 ise daha yüksekti (hasta grup ort±SD (median); fT3 2,52±0,48 (2,69), fT4 0,99±0,16 (1,01), TSH 0,95±0,7 (0,80). Free T3, KOAH ataktaki olguların %33,33'ünde düşüktü, TSH ise %14,28 olguda normal değerlerin altındaydı (sırasıyla, p=0,001, p=0,001, p=0,009). Protrombin zamanı fT3 ile negatif olarak koreleydi (rs= -0,520, p=0,03).

Sonuç: Protrombin zamanı ile free T3 düzeyleri arasındaki negatif korelasyon bu çalışmada saptanan yeni bir bulgudur. Sağlıklı olgulara göre KOAH atakta saptanan daha düşük fT3 düzeyleri diğer çalışmalarla da desteklenmektedir. *(JAREM 2014; 1: 18-24)*

Anahtar Sözcükler: Tiroid, KOAH, KOAH atak

INTRODUCTION

Non-thyroidal illness syndrome (NTIS) is used to describe the typical changes in thyroid-related hormone concentrations that can arise in the serum following any acute or chronic illness that is not caused by an intrinsic abnormality in thyroid function (1). Non-thyroidal illness syndrome or euthyroid sick syndrome is observed in approximately 44% of patients in the intensive care unit (2). Low circulating levels of thyroid hormones, low or normal Thyroid-Stimulating hormone (TSH), diminished TSH pulsality, and implied presence of central hypothyroidism characterize this syndrome. NTIS can be induced by fasting; sepsis; trauma; burns; surgery; cardiovascular, renal, and liver disease; and chronic obstructive airway disease (COPD). T4 can be converted into active tri-iodothyronine (T3) by iodothyronine deiodinases, which have a tissue-specific distribution. There are three deiodinases (D1, D2, D3). Changes in deiodinase expression have been postulated to play important roles in the altered circulating levels of thyroid hor-

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mones in fasting and nonthyroidal illness syndrome (NTIS) (1, 3). There is a strong correlation between the TT3/TT4 ratio and PaO_2 in COPD patients. TT3 and TT3/TT4 were lower in severe COPD. Hypoxemia seems to be a determinant of the peripheral metabolism of thyroid hormones (4-6). However, the mechanism and exact prevalence of thyroid function impairments in COPD patients have not been extensively studied. The exacerbation period of COPD patients is a critically ill condition that causes hypoxic and metabolic changes.

The aim of this study was to evaluate the thyroid function impairments and the presence of thyroid antibodies in exacerbated COPD patients and to demonstrate the probable relationship with other clinical and biochemical parameters, such as arterial blood gases, urea, creatinine, prothrombine time (PT), activated partial prothrombine time (APTT), and international normalized ratio (INR), etc.

METHODS

We evaluated 21 patients (17 male/4 female) within the exacerbation period of COPD admitted between January 2012 and March 2012 to our clinics who had undergone non-invasive mechanic ventilation and had measurements of serum free T3 (fT3), free T4 (fT4), TSH levels, and other laboratory tests made on their first to third day of stay in the hospital. Patients had transferred to our clinic after observed emergency service. Ten of 21 patients had measurements of the anti-Tg (antithyroglobulin) antibody and anti-TPO (antithyroperoxidase). Written informed consent was obtained from all individuals, and the study was conducted in compliance with the approval of the institutional ethical committee. All included patients were evaluated using the GOLD guideline and were diagnosed with a very severe stage (stage 4-FEV^1 30%< or 50%< plus chronic respiratory failure; mean Forced Expiratory Volume 1 (FEV^1) was 39.38±9.97%). On the day of discharge from the hospital, a pulmonary function test had been administered to determine the clinical stage of COPD. We obtained the patients' pulmonary function test results from hospital records. COPD exacerbation was identified according to Anthonisen's Winnipeg criterion, which defines an acute exacerbation as a sustained, worsening dyspnea, cough, or sputum production, leading to an increased use of maintenance medications or the addition of supplemental drugs, usually for at least 2 consecutive days (7, 8). All of the patients were receiving inhaled steroid, beta agonist, and parenteral theophylline, as well as long-term oxygen and non-invasive mechanical ventilation treatment according to their disease status (BILEVEL, BiPAP, Respironics Inc., USA).

The healthy control group consisted of 17 age-matched non-smoking voluntary men admitted to the internal medicine outpatient clinic for general check-up purposes without any complaints or diagnoses. Patients with known endocrine disorders, diabetes, renal or hepatic failure, or connective tissue disorders or using other medications outside of COPD treatment were excluded from the study. The exclusion criteria mentioned above were also implied to the healthy controls, validating with lab studies where applicable. These selective criteria and time intervals of the study restricted the size of the subject group.

The patients that were admitted to the study had been evaluated for arterial blood gas levels (PaO_2, $PaCO_2$, and saturated O_2) and for clinical chemistry tests, such as glucose, urea, creatinine, hematocrit, hemoglobin, PT (prothrombine time), APTT (partial prothrombine time), PT-INR (international normalized ratio), fT3, fT4, and TSH. Additionally, we obtained the results of the anti-Tg (antithyroglobulin) antibody and anti-TPO (antithyroperosidase) antibody measurements in 10 patients. On the day of discharge from the hospital, a pulmonary function test had been administered to determine the clinical stage according to GOLD.

The normal ranges of serum concentrations of thyroid hormone for our laboratory were as follows: fT3, 2.5-3.9 pg/mL; fT4, 0.58-1.64 ng/dL; and TSH, 0.34-5.6 mIU/mL.

The minimum detectable concentration of thyroid antibodies was reported as 20 IU/mL for Tg-Ab (thyroglobulin antibodies) and 1 IU/mL for TPO-Ab (thyroid peroxidise antibodies). The reference ranges are ≤40 IU/mL for Tg-Ab (thyroglobulin antibodies) and ≤50 IU/mL for anti-TPO. Glucose (glucose oxidase), urea (ureas), creatinine, prothrombine time, and activated partial thromboplastin time were measured by, respectively, enzymatic, Jaffe, and coagulametric methods in our laboratory. Tg-Ab and TPO-Ab were measured by electrochemiluminescence immunoassays in a Coulter-Access device. In addition to the laboratory tests, the following data were obtained and analyzed; age, body mass index (BMI), the duration of smoking, frequency of hospitalization, duration of the disease, and particular period since smoking cessation.

Statistical analysis

The values were presented as mean±SD, median interquartile range (IQR), frequency, and percentage. Normal distribution was assessed using the Shapiro-Wilk test by drawing histograms. Comparison of COPD patients and healthy controls was examined using Mann-Whitney U test. Correlations amongst the variables of COPD patients were determined using the Spearman correlation test. The tests were two-way, and statistical significance values were set at $p<0.05$. Analyses were performed using SPSS 17.0 statistical software.

Data are presented as mean±SD, median IQR, frequency, and percentage. A normality control was made by using the Shapiro-Wilk test and histogram graphics. The comparison of COPD to control group was evaluated by Mann-Whitney U test. Correlations between the variances of COPD were made by Spearman correlation. Tests were two-tailed, and $p<0.05$ was accepted as significant. Analyses were made with SPSS 17.0.

RESULTS

The average age of the patients with COPD was 57.95±10.63 years, with an average BMI of 23.19±5.8 kg/m^2 (n=21), whereas the average age of the control group was 54.35±7.33 kg/m^2, with an average BMI of 28.94±5.3 (n=17). The average BMI of the control group was higher than the patient group (p=0.001) (Table 1). The control group contained only non-smokers, while all of the patients with COPD exacerbation were ex-smokers. The average period since they quit smoking was 5.56±8.2 years, and the average duration of smoking was 48.74±43.99 packet-years. The average period of time since the first symptoms of COPD occurred was 17.52±18.53 years (Table 2). The average blood gas values and the average coagulation parameters of the patients

are shown in Table 2, and the comparison of their thyroid test results and biochemical parameters with the normal values are presented in Table 1. We found that 33.33% (n=7) of the patients with COPD exacerbation had fT3 levels below the normal values, and 14.28% (n=3) of the patients had TSH levels below the normal values. The average fT3 and TSH levels were lower in the patients with COPD exacerbation compared to the healthy volunteers, and fT4 levels were higher in patients compared to the healthy group (patient group mean±SD (median): fT3 2.52±0.48 (2.69) pg/mL, fT4 0.99±0.16 (1.01) ng/dL, TSH 0.95±0.7 (0.80) mIU/mL, p=0.001, p=0.001, p=0.009, respectively) (Figure 1-3).

The difference between the anti-thyroglobulin antibody (Tg-Ab) levels of the patients with COPD and the healthy volunteers was statistically meaningful. Tg-Ab levels were higher in the patient group (Tg-Ab; mean±SD (median): 11.5±4.9 (11.98) IU/mL, TPO-Ab: 18.9±8.9 (16.6) IU/mL, p=0.001, p=0.001, respectively). The results were Tg-Ab: 1.35±1.84 (0.9) IU/mL and TPO-Ab: 1.24±3.32 (0.4) IU/mL for the control group. Tg-Ab levels were negatively

Table 1. The Comparison of Healthy Controls and COPD patients with exacerbation

	Healthy Controls		COPD Patients		
Variables	**Mean±SD**	**Median (IQR)**	**Mean**	**Median (IQR)**	**p***
Age, y	57.95±10.63	60 (50-65.5)	54.35±7.33	55 (48.5-58.5)	0.12
BMI kg/m^2	23.19±5.8	22.3 (21-24.4)	28.94±5.3	28.4 (25.3-30.2)	0.001
O2, saturation	86.2±10.9	88 (79-94.5)	97.58±1.00	97 (97-98.5)	<0.0001
fT3, ng/L	2.52±0.48	2.69 (2.03-2.84)	3.13±0.43	3.15 (3.08-3.4)	0.001
fT4, ng/L	0.99±0.16	1.01 (0.87-1.13)	0.80±0.09	0.79 (0.73-0.9)	0.001
TSH, µIU/mL	0.95±0.70	0.80 (0.35-1.45)	1.76±0.84	1.46 (1.17-2.54)	0.009
TPO-Ab, IU/mL	18.9±8.9	16.6 (11.2-28.5)	1.24±3.32	0.4 (0.35-0.5)	0.001
Tg-Ab, IU/mL	11.5±4.9	10.49 (8.92-13.6)	1.35±1.84	0.9 (0.9-0.9)	0.001
Hematocrit %	42.9±4.64	42.7 (40-46)	44.55±2.91	46 (42-46.6)	0.196
Hemoglobin,gr/dL	14.17±1.56	14.2 (13.3-15.2)	15.21±1.26	15.7 (14-16)	0.034
Glucose, mg/dL	123±39	114 (94-148)	104.64±20.43	104 (89.5-113)	0.011
Urea, mg/dL	40.5±16.7	40.7 (31-47)	16.82±3.45	16 (14.5-18.5)	<0.0001
Creatinine, mg/dL	0.9±0.28	0.9 (0.67-1.15)	0.94±0.18	0.92 (0.82-1)	0.394

*Mann Whitney U Test
BMI (body mass index)
fT3,ng/L (free triiodothyronin)
fT4, ng/L (free thyroxine)
TSH, µIU/mL (thyroid stimulating hormone)
TPO-Ab, IU/mL (antithyroglobulin)
Tg-Ab, IU/mL (thyroglobulin antibodies)
COPD: chronic obstructive airway disease; IQR: interquartile range; SD: sample standard deviation

Table 2. The important clinical features of COPD patients

The features of COPD Patients	**Mean±SD**	**Median (IQR)**
The duration of smoking, y	48.7±43.9	40 (20-60)
The particular period since smoking cessation, y	5.56±8.2	0.5 (0-10)
Recurrent hospitalization, y	2±1.7	2 (0-3)
pO2, mmHg	64.1±25.2	56 (46-76)
pCO2, mmHg	53.9±16.5	50.3 (40.6-65.8)
pH	7.38±0.48	7.38 (7.35-7.40)
HCO3,mEq	30.5±7.3	31.4 (24.3-36.6)
Duration of disease	17.5±18.5	14 (7-20)
Prothrombin Time (PT), seconds	12.44±0.89	12.5 (11.9-13)
INR	1±0.07	1 (0.96-1.06)
APTT (Parsiel Thromboplastin Time), seconds	27.96±3.77	27.5 (25-29.8)

COPD: chronic obstructive airway disease; PT: prothrombin time; INR: international normalized ratio; APTT: activated partial prothrombine time

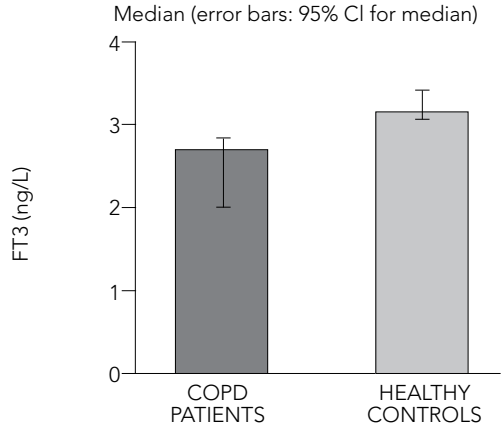

Figure 1. The comparison of fT3 levels of COPD patients with healthy controls
COPD: chronic obstructive airway disease

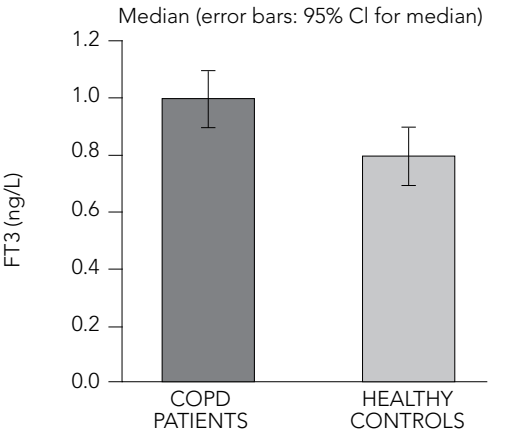

Figure 2. The comparison of fT4 levels of COPD patients and healthy controls
COPD: chronic obstructive airway disease

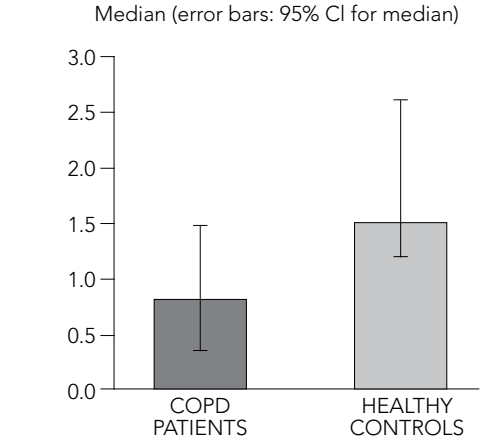

Figure 3. The comparison of TSH levels of COPD patients with healthy controls
COPD: chronic obstructive airway disease

correlated with urea and creatinine levels (r_s=-0.690, p=0.02 and r_s=-0.690, p=0.02, respectively). Creatinine levels were also negatively correlated with fT3 levels (r_s=-0.55, p=0.02 and rs=-0.55, p=0.02, respectively). TSH levels were negatively correlated with fT3 levels and WBC count (r_s=-0.55, p=0.02 and rs=-0.55, p=0.02, respectively). Prothrombin time was negatively correlated with fT3 (r_s=-0.520, p=0.03) (Figure 4). There was no similar correlation in healthy subjects. APTT and INR were not correlated with fT3 levels. pH balance was negatively correlated with platelet count (r_s=-0.36, p=0.01), while arterial pH levels were positively correlated with Tg-Ab levels (r_s=0.718, p=0.019).

DISCUSSION

Nonthyroidal illness syndrome is an adaptive process that promotes survival during life-threating illnesses by reducing metabolic rate and energy cost (9). The changes in serum thyroid hormone levels in critically ill patients occur extensively in critical care units. In COPD, the exacerbation of obstructive symptoms is more distinct, and deterioration in the patient's clinical condition is seen. Patients with COPD exacerbation are exposed to numerous medications as well as non-invasive mechanical ventilation. The important function of thyroid hormone is known to be a regulator of metabolism. Alterations in the peripheral metabolism of thyroid hormones, TSH regulation, and the binding of thyroid hormone cause widespread changes in serum thyroid levels in critically ill patients (10). Thyroid hormone may play a role in the hypermetabolism observed in COPD patients (6).

In our study, fT3 levels and TSH levels in 33.3% and 14.28% of patients were respectively lower than the reference ranges. There are several studies that show alteration of thyroid hormone levels in COPD patients. In those studies, different thyroid hormone levels were observed; in some studies, increased T4 levels were seen, while others reported increased T3 levels, and others found that T3, T4, and TSH levels were changed (5, 11, 12). Karadağ et al. (5) study demonstrated that T3 levels were lower, but they did not evaluate the relations among other biochemical analysis out of arterial blood gases.

Only the study by Dimopoulou et al. (4) reported that there was no difference in thyroid hormone levels in COPD patients compared to a healthy control group. That study also reported a cor-

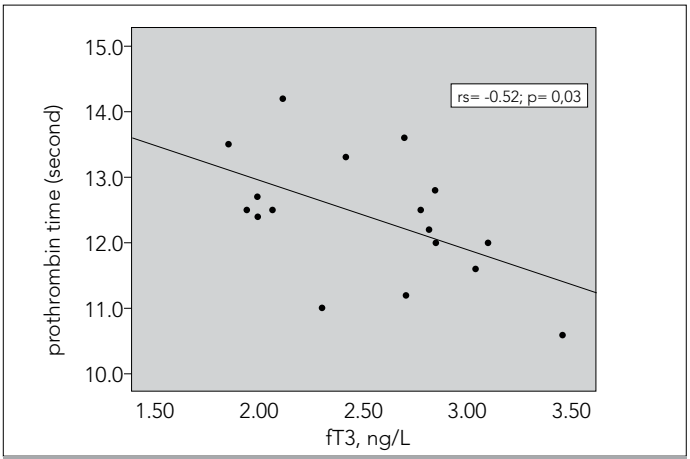

Figure 4. The relation of prothrombin time and fT3 level

relation between the T3/T4 ratio and respiratory tract obstructions (4). Okutan et al. (11) showed that T3 levels are positively correlated with PCO_2. We did not find a correlation with T3 levels and PCO2.

In this study, it was found that COPD patients had lower levels of T3 and higher levels of T4 compared to the control group. These findings are similar to the study done by Mancini et al. (13) who found that COPD patients had lower levels of T3 compared to the control group. The alteration in thyroid hormone levels is thought to be because of decreased turnover of T4 and T3 as an adaptive mechanism in chronic diseases (13). Similarly, TSH levels in COPD patients undergoing acute exacerbation were lower than in the control group. The study by Karadağ et al. (5) also showed that COPD exacerbation patients have decreased TSH levels. Recently, Akbaş et al. (14) found that patients with severe respiratory insufficiency have decreased levels of TSH (14). In our study, patients were under NIMV. Bacakoglu et al. (15) reported the need for invasive mechanical ventilation and hospital mortality in respiratory failure patients with low levels of fT3 and higher levels of fT4.

This study has several limitations, such as lack of a laboratory test pre- and post-NIMV. In a study by Bello et al. (10) serum TSH levels usually remained within the normal range in NTIS, but they increased modestly during recovery. Also, fT4 concentration may be slightly high in the early phase of NTIS under mechanical ventilation. We did not clear NIMV therapy effects on changes in thyroid function.

Fasting leads to a diminution in steady-state T3 levels. Malnutrition is a component of many acute and chronic illnesses (1). Hypermetabolic states and insufficient dietary intake will result in a negative energy balance and may contribute to weight loss in COPD patients. The role of thyroid hormones in COPD patients with cachexia has not been extensively studied (6). A direct action on leptin in hypophysiotropic TRH neurons has been proposed (16, 17). Endotoxins induce D2 (Type 2 iodothyronine deiodinase) and leads thyroid hormones (18). Infections can cause both thyroid hormone changes and exacerbation in COPD patients. There may be several mechanisms of thyroid hormone changes in COPD patients. Future studies should be focused on these points.

A low T3 level represents a biochemical prognostic marker in pulmonary patients with respiratory failure (19). In our study, we did not find a correlation between the recurrence of hospitalization and duration of disease in COPD patients with exacerbation.

In this study, it was found that COPD patients had higher levels of thyroglobulin and thyroid peroxidase antibodies compared to the control group. However, they were in the accepted normal range. Also, our subject group was limited in number. The negative association of smoking with the presence of thyroid antibodies and the associated increased risk for occurrence of thyroid hormones with discontinuation of smoking was reported (20, 21). There has recently been a focus on the relationship between smoking and the autoimmune system (22). Furthermore, COPD has been proposed as an autoimmune disease, like rheumatoid arthritis, because smoking is a risk factor and exacerbations occur both in RA and COPD. Additionally, these diseases have inflammatory features (23). However, the discontinuation period of smoking in our patients was a mean of 5.56±8.2 years. We did not find a correlation between thyroid antibodies and duration of smoking or discontinuation period. We found a positive correlation between thyroid antibodies and arterial PH. There has not been any published literature that showed this relationship. This might point to the influence of metabolic changes as a reason. Thyroid antibodies were negatively correlated with urea and creatinine. Tagher et al. (24) demonstrated that thyroid autoimmunity (increased concentration of anti-thyroid antibodies) and subclinical primary hypothyroidism are highly prevalent in chronic kidney disease. Likewise, fT3 levels were negatively correlated with creatinine levels. Decreased fT3 levels in patients with preterminal and terminal renal failure were shown by Witzke et al. (25). In a study by Carmina Z et al. (26) the fT3 level was significantly low at the peak of inflammation.

In this study, we found that fT3 levels were negatively correlated with prothrombin time. Various abnormalities of coagulation and fibrinolysis with thyroid dysfunction are the consequences of direct effects of thyroid hormones on the synthesis of various hemostatic parameters, according to recent literature. Thyroid autoimmunity may also modify the processes of secondary hemostasis (27). In general, patients with hypothyroidism appear to have an increased risk of bleeding, whereas those with hyperthyroidism are more likely to be prone to thrombosis (27, 28). However, the influence of subclinical hypothyroidism on hemostasis is controversial; both hypercoagulable and hypocoagulable states have been reported. In a study by Erem, some differences in hemostatic parameters and lipid profile between subclinical thyroid patients and healthy controls were reported (29). We did not find any study that reported the relationship between prothrombin time and thyroid hormones in COPD patients. There was a case report that observed prolonged prothrombin time (PT) because of high hematocrit in a COPD patient without coagulation disorder (30). In this study, we observed that pH and platelet counts were negatively correlated. This finding may indicate a hypercoagulable state observed in COPD patients with acidosis. The Biljak et al. study showed that COPD had a significantly increased platelet count. In the Maclay et al. (31, 32) study, platelet activation is increased in patients with COPD during an acute exacerbation. It is well established that COPD is a chronic inflammatory condition with significant extrapulmonary manifestations (7). Systemic inflammation is the first cause of the hypercoagulable state observed in COPD. Furthermore, hypoxia is supposed to activate platelets and induce metabolic changes on platelet membranes and dynamically modulate endothelial function. The ensuing endothelial dysfunction might promote microvascular lesions (33, 34). Sabit et al. (35) observed that hypoxic challenge in patients with COPD resulted in coagulation activation in conjuction with an increase in systemic inflammation.

CONCLUSION

A negative correlation of pH with platelet counts and fT3 with prothrombin time was the novel finding of this study. We did not find any report that designed the same study concept and result. Future prospective studies should be comparatively focused on the relationship among inflammation, coagulation, and metabolic features and daily thyroid hormones changes in different

stages of COPD patients, depending on acid-base balance. The other finding of the study was lower fT3 levels than healthy controls, which has been supported by other studies.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Yedikule Thoracic Diseases and Surgery Center (2/7/2011, Document no: 0013-020711-090911-0013).

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

Peer-review: Externally peer-reviewed.

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Abdominal Vascular Injuries Due to Missile Wounds

Ateşli Silahlara Bağlı Batın İçi Damar Yaralanmaları

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ABSTRACT

Objective: Although abdominal vascular injuries due to missile bullets are less common compared to other injuries, they are of great importance because of the high mortality rate. There are many factors affecting the mortality rate such as; transportation time, type of injury, visceral organ damages, amount of blood loss and surgical experience of the medical and surgical team. The aim of this study is to assess the mortality rate of abdominal vascular injury caused by the bullets of rifles when visceral organs injury is associated with vascular injury.

Methods: Between 1993-2008, registries in surgery department of the hospitals affiliated to Başkent University were scanned and 27 abdominal vascular injuries of a total of 212 abdominal wound cases were detected. The mean age was 24±12 years (22 men and 5 women). Ages ranged from 12 to 58 years. The cause of injury was a mine explosion and firearm in one patient, and firearms in the others. All cases had vascular injuries. 16 cases had major venous injuries, 6 had major arterial injuries and the remaining 5 cases have major arterial and venous injuries.

Results: Fifty-four abdominal organ injuries were determined. Twenty-seven of these 54 patients had abdominal vascular injuries. Only one patient's systolic blood pressure was higher than 50 mmHg in the preoperative period. The remaining patients had lower systolic blood pressures. In addition, the blood pressure of ten patients could not be determined during admission to the emergency department. Major venous injuries had the worst preoperative hemodynamics. Twenty-three of 54 patients had liver injury (42.59%), stomach injury in 14 patients (25.92%), right kidney injury in 7 patients (12.96), left kidney injury in 5 patients (9.25%) and multiple organ injuries in 2 patients (3.7%). Eight patients underwent vascular ligation, primary repair was done in 12 patients and graft interposition was done in 7 patients. However, 5 cases died before surgical intervention. Out of 5 deaths, one patient died because of sepsis (postoperative 2nd day), one patient died from VCI laceration, sepsis occurred in one, 1 died from renal venous trauma, 1 from vena porta injury and one from cerebral hemorrhage associated with abdominal vascular injury. The management of inferior caval vein injuries, which are responsible for 60% of all deaths, were the most challenging.

Conclusion: Vascular traumas within the abdominal area are fatal clinical conditions and complications. Abdominal aortic injuries have a higher fatality rate than venous injuries. Outcomes in abdominal vascular injuries due to missile wounds still depend on transportation time and coincident inferior caval vein and abdominal organ injuries. *(JAREM 2014; 1: 25-7)*

Key Words: Abdominal, vascular injuries, missile wounds

ÖZET

Amaç: Bu çalışmanın amacı ateşli silahlara bağlı kurşun yaralanmaları sonucunda gelişen karın içi damar yaralanmalarının eşlik ettiği organ yaralanmalarına bağlı mortalite oranlarını değerlendirmektir.

Yöntemler: 1993-2008 yılları arasında batına isabet eden kurşun yaralanmalı toplam 212 hasta Başkent Üniversitesi'ne bağlı hastanelerin cerrahi departmanlarına müracaat etmiş olup bu hastaların 27'sinde batın içi damar yaralanması mevcuttu. Toplam 27 hastanın (22 erkek ve 5 bayan) ortalama yaşları 24±12 idi (12-58 yaş). Bir hastada yaralanma mayın patlaması ve ateşli silah yaralanması sonucu oluşmuştu, diğer hastalarda yaralanma ateşli silah yaralanmasına bağlı idi. Hastaların hepsinde ateşli silah yaralanmasına bağlı damar hasarı mevcuttu. Vakaların 16 sında büyük ven yaralanması, 6'sında büyük arter yaralanması ve diğer 5 vakada ise hem büyük arter hemde büyük ven yaralanması mevcuttu.

Bulgular: İkiyüz on iki hastanın 54 ünde batın içi organ yaralanması mevcuttu. Elli dört hastanın 27 sinde organ yaralanmasına ilave olarak damar yaralanması vardı. Hastaların 23'ünde karaciğer yaralanması (%42,59), 14'ünde mide yaralanması (%25,92), 7'sinde sağ böbrek (%12,96), 5'inde sol böbrek (%9,25), 2'sinde multiple organ (%3,7) yaralanması vardı. Sekiz hastada damar ligasyonu, 12'sinde primer tamir operasyonu, 7'sinde ise greft interpozisyonu uygulandı. Cerrahi girişimi takiben 5 hasta hayatını kaybetti. Beş hastanın 1 tanesi sepsisden (Postop. 2. gün) ölürken geri kalan 4 hasta aşırı kanamaya bağlı olarak kaybedildi. Ölümlerin %60'ına neden olan vena kava inferior yaralanmaları en çok dikkat edilmesi gereken yaralanmalardır.

Sonuç: Abdominal bölgede oluşan damar yaralanmaları komplikasyonlarla ve ölümcül olaylarla sonuçlanabilir. Abdominal aort yaralanmaları venöz yaralanmalara göre daha yüksek mortaliteye sahiptir. Abdominal damar yaralanmalarında sonuçlar hala hastanın nakil süresine ilave vena cava inferior ve ilave organ yaralanmasına bağlı olarak değişmektedir. *(JAREM 2014; 1: 25-7)*

Anahtar Sözcükler: Batın, damar yaralanmaları, ateşli silah yaralanmaları

INTRODUCTION

Although abdominal vascular injuries due to missile bullets are less common compared to other injuries, they have a high mortality rate (1-5). Due to the difficulties in managing the treatment of such events, most surgeons fear facing a missile wound causing vascular injury in the abdomen (3-7). They frequently occur with serious associated injuries (2). Abdominal vascular injuries are serious clinical problems in emergency, general and vascular surgery departments. There are many factors affecting mortality rates such as; transportation time, type of injury, visceral organ damage, amount of blood loss and surgical experience of the medical and surgical teams (1-3). The success in management depends on the control of bleeding following rapid exposure and establishing revascularization using appropriate surgical techniques (4-8). This article will be focused on the factors affect-

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Table 1. Major venous injury

	Place of injury	Number of cases
Major venous injuries	Inferior caval vein	7
	Portal vein	3
	External iliac vein	3
	Renal vein	2
	Splenic vein	1
	Total	16

Table 2. Major arterial injury

Place of injury	Number of cases
External iliac artery	2
Internal iliac artery	2
Splenic artery	1
Gastroduodenal artery	1
Total	6

ing the outcomes of abdominal vascular injuries and its coincidence with visceral organ damage.

METHODS

We retrospectively investigated the three Surgical Hospital registries, between 1993 and 2008. 27 of a total of 212 abdominally injured patients had vascular injuries, were inpatients and underwent urgent laparotomy. The mean age of the patients was 24±12 year (22 men and 5 women). Ages ranged between 12 and 58years. The cause of injury was a mine explosion in one patient, and firearms in the others. In our series, the average time between the onset of trauma and arrival to the emergency room is 37±16 minutes. If the sources are available, patient care consists of endotracheal intubation, intravenous fluid administration and compression to control bleeding in the field. With missile wounds, nearly all patients were transported to the emergency department by helicopter or ambulance in order to avoid time wasting. In the emergency room, patients were evaluated by a group of surgeons including a general surgeon, a thoracic surgeon and a cardiovascular surgeon. According to their hemodynamic status, all patients were taken directly to the operating room without detailed examination. Soon after, they underwent laparotomy to explore bleeding vessels and organ dysfunction.

RESULTS

Twenty-seven vascular injury cases were recorded. 16 patients had major venous injuries, 6 had major arterial injuries, and the remaining 5 cases had both arterial and venous injuries (Table 1-3). Associated injuries were observed mostly over the stomach and, to a lesser extent, over the duodenum and liver. Table 4 shows the associated visceral organ injuries. Only one patient's systolic blood pressure was higher than 50 mmHg in the preoperative period. The remaining patients had a systolic blood pressure lower than 50 mmHg. In addition, the blood pressure of ten patients could not be determined during admission to the emergency department. Major venous injuries had the worst preoperative hemodynamics. Operative management concerning vascular injuries included vessel ligation in 8 case, primary repair in 12 cases, and saphenous vein interposition in 7 cases. Five perioperative deaths occurred as shown in Table 5. One of the patients died due to VCI laceration, 1 of renal venous trauma, 1 ofvena porta injury perioperatively and one of cerebral hemorrhage associated with abdominal vascular injury and sepsis in the remaining as shown in Table 6.

Table 3. Major arterial and venous injury

	Place of injury	Number of cases
Major arterial and venous injuries	a.v.* renalis	1
	a.v. iliac externa	1
	a.v. colica media	1
	a.v. splenica	1
	a.v. mesenterica superior	1
	Total	5
*a.v.: artery and vein		

Table 4. Associated visceral injuries (Primarily involved)

Visceral organ injury	The number of cases
Stomach	9
Duodenum	5
Jejunum	2
Ileum	2
Colon	10
Rectum	1
Gall bladder	1
Choledochus	1
Liver	7
Pancreas	4
Ureter	2
Urinary bladder	2
Spleen	6
Kidney	2

DISCUSSION

During World War I, missile wounds had trained surgeons how to treat patients efficiently and rapidly The time interval between injury and intervention decreased from 12.5 hours in World War II to 1.6 hours in the Vietnam War (1). Arrival in time and faster transport allows patients to reach emergency departments alive. Therefore, mortality depends not only on time lost in transportation but also on the surgical team's knowledge and performance.

In case of major abdominal injury, time is a precious treasure not to be wasted by the patient's clinical evaluation. Surgeons need an exact management algorithm for diagnosis. Indeed, in these types of injuries, the presence of shock and bullet entrance shows that the diagnosis can be properly made following laparotomy. A long midline incision is the quickest access and gives us most extensive exposure. The main problem is when some patients do not appear to be so critically injured. A more complete evaluation and preparation should be made. Although the hos-

Table 5. Operative procedures for vascular injury

Surgical procedures	Number
Primary repair	8
Vessel ligation	12
Repaired by using graft (saphenous vein)	7
Total	27

pitals near the skirmish region may not be sufficiently qualified for further evaluation or intervention; if possible, patients should be stabilized before being transported to the next step. In case of any signs of deterioration in the patient's hemodynamics during stabilization, surgical intervention should be implemented as soon as possible (6-8). In our patients, because of the hemodynamic disturbance, laparotomy was inevitable and vascular injury diagnosis was made only during operation.

All penetrating abdominal traumas resulting in retroperitoneal hematomas should be explored in order to pinpoint the location of major vascular injury. Ignorance of this concept may lead us to confront more complicated hemodynamics, such as rupture of the hematoma or massive blood loss during follow up. Any findings of a palpable thrill with a hematoma are an indication of an AV fistula (9). We have not seen any postoperative AV fistulas in our patients.

In our series, most of the deaths from great veins that occurred prior to laparotomy and just after anesthetic induction, which indicates that, after anesthesia, perivascular connective tissues and abdominal wall which help in restricting the hematoma become flaccid and cause the patient to bleed to death. We recommend that all preparations for exploration should be finished before anesthesia has begun.

Because we believe that the synthetic grafts are more vulnerable to graft infection, the injured vessels were mostly ligated or primarily restored in our patient group. After arterial reconstruction we followed the distal flow by pulse examination. However, some authors recommend evaluation with postoperative arteriography or venography (8-10). Vascular traumas within the abdominal area are fatal clinical conditions. Abdominal aortic injuries are more fatal than venous injuries, the rate ranging between 21-74% (2-5). Although better anesthetic and operative techniques for critically ill patients have been developed, mortality rates for abdominal vascular injuries are still 54-70% (10-16).

In conclusion, the mortality and morbidity of the patients depend on various factors, including the location and mechanism of injury, presence of shock at admission, associated major vascular and visceral organ injuries, delay in treatment, surgeon's knowledge and experience, and adequate postoperative care.

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Table 6. Injured vessels causing mortality

Vessel injury	Number
VCI	1
Renal Vein	1
Mesenteric Vessels	1
Portal vein	1
Cerebral Hemorrhage	1
Total	5

Etik Komite Onayı: Çalışmanın retrospektif tasarımından dolayı etik komite onayı alınmamıştır.

Hasta Onamı: Çalışmanın retrospektif tasarımından dolayı hasta onamı alınmamıştır.

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Nöro-Behçet Hastalığına Bağlı Gelişen Nörojen Mesane: Olgu Sunumu

Neurogenic Bladder Due to Neuro-Behcet Disease: A Case Report

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ÖZET

Behçet hastalığı tekrarlayan oral aftöz ülserler, deri döküntüleri, göz tutulumu (hipopiyonlu iridosiklit) ve genital ülserler ile seyreden etiyolojisi bilinmeyen sistemik, vaskülitik bir hastalık olarak tanımlanmaktadır. Nöro-behçet hastalığında mesane tutulumu oldukça nadir görülüp yaklaşık insidansını %0,07 olarak bildirilmiştir. Olgumuzda son 20 yıldır Behçet hastalığı ve son 2 yıldır olan üriner inkontinansın eşlik ettiği alt üriner sistem şikayetleri mevcuttu. Yapılan ürodinamik değerlendirmeyi takiben antikolinerjik tedavi başlandı. Bu olgu nöro-behçet hastalığına bağlı gelişen mesane tutulumunda tanı koymanın önemini vurgulamak amacıyla sunulmuştur. *(JAREM 2014; 1: 28-30)*

Anahtar Sözcükler: Nörojen mesane, nöro-Behçet Hastalığı

ABSTRACT

Behcet's disease is defined as a systemic vasculitis that has unknown etiology and characterized by recurrent oral aphthous ulcers, skin rashes, eye involvement (iridocyclitis with hypopyon), and genital ulcers. Involvement of the bladder in neuro-Behcet disease is quite rare, and its incidence has been reported as approximately 0.07%. Our case had Behcet disease for 20 years and lower urinary tract symptoms with urinary incontinence for 2 years. Anti-cholinergic treatment was initiated after the urodynamic examination. This case report has been presented to emphasize the importance of diagnosis in Neuro-Behcet disease with bladder involvement. *(JAREM 2014; 1: 28-30)*

Key Words: Neurogenic bladder, neuro-Behcet disease

GİRİŞ

Behçet hastalığı (BH) ilk olarak 1937 yılında Prof. Dr. Hulusi Behçet tarafından tarif edilmiştir (1). BH oral ve/veya genital ülserasyonlar, deri lezyonları ve iltihabi göz bulgularının ön planda olduğu ancak pek çok sistemi tutabilen, kronik, tekrarlayan ataklarla seyreden, etiyolojisi bilinmeyen sistemik, vaskülitik bir hastalık olarak tanımlanmaktadır (2).

Genel olarak merkezi sinir sistemi ile kardiyovasküler, gastrointestinal, solunum sistemlerini etkilemektedir. Genital ülserlerin haricinde BH'da ürolojik tutulum nadirdir. Genellikle epididimit ve steril üretrit olarak karşımıza çıkmaktadır (3). BH'na bağlı mesane tutulumu oldukça nadirdir ve genelde detrüsör hiperrefleksi olarak görülmektedir (4, 5).

Bu olgu sunumunda amaç BH'nın mesane disfonksiyonuna yol açabileceği ve üroloğlar tarafından ayırıcı tanıda akılda tutulması gerektiğini vurgulamaktır.

OLGU SUNUMU

Elli yaşında erkek hasta, son 2 yıldır devam eden idrar yaparken zorlanma, gündüz ve gece sık idrara çıkma ve sıkışma tarzında idrar kaçırma şikayetleri ile kliniğimize başvurdu. Hastanın 20 yıldır BH tanısı mevcut olduğu ve son 3 yıldır Nöro-Behçet hastalığı tanısı ile nöroloji kliniği tarafından takip edildiği öğrenildi. Hastanın özgeçmişinde, son 6 aydan beri diabetes mellitus tanısı ile oral antidiabetik ilaç kullanmakta ve kan şekeri düzeylerinin regüle seyretmekte olduğu öğrenildi. Hasta BH tedavisine yönelik kolşisin 3x1, azatioprin 50 mg 3x1, metilprednizolon 4 mg 1x1 kullanmakta idi. Hastanın şikayetleri sorgulandığında Uluslararası prostat semptom skoru (IPSS) 24 (yüksek semptomatik) idi. Yapılan digital rektal muayenede, benin karakterde 1 pozitif prostat palpe edildi. Anal sfinkter tonusu ve bulbokavernoz refleks normal, nörolojik muayenesinde sol hemihiperestezisi ve görme kaybı bulunmakta idi. Hastada genital ülser ve epididimit bulgusu yoktu.

Laboratuar incelemelerinde; total PSA: 0,6 ng/mL, kan biyokimya, tam idrar tetkik ve kültürü normal idi. Yapılan üriner sistem ultrasonografide patoloji izlenmedi. Hastanın yapılan transrektal ultrasonografisinde prostat hacmi 20cc, prostat homojen görünümde idi.

Ürodinamik incelemede; maksimal sistometrik kapasite: 127 mL, ilk his 87 mL, normal sıkışma 103 mL, çok sıkışma 124 mL, maksimal vezikal basınç 63 cmH^20 olarak saptandı. Maksimum kapasitede; 127 mL'de kaçırma oldu (Şekil 1). Bu sonuçlara göre; hiperrefleks, duyusu kısmen korunmuş, hipokomplian, yüksek basınçlı sinerjik mesane olarak değerlendirildi. Basınç-akım çalışmasında (BAÇ): maksimum akımda detrusör basıncı 61 cm H2O iken maksimal idrar akım hızı 13 mL/sn ve işenen hacim 170 cc olarak ölçüldü. Sonuç olarak mesane çıkım obstrüksiyonu izlenmedi.

Augmentasyon sistoplasti operasyonu önerilen hasta cerrahi girişimi kabul etmedi. Mesane kompliyansının arttırılması amacıyla medikal tedavi olarak tolterodin 4 mg 1x1 ve doksazosin 4 mg tb

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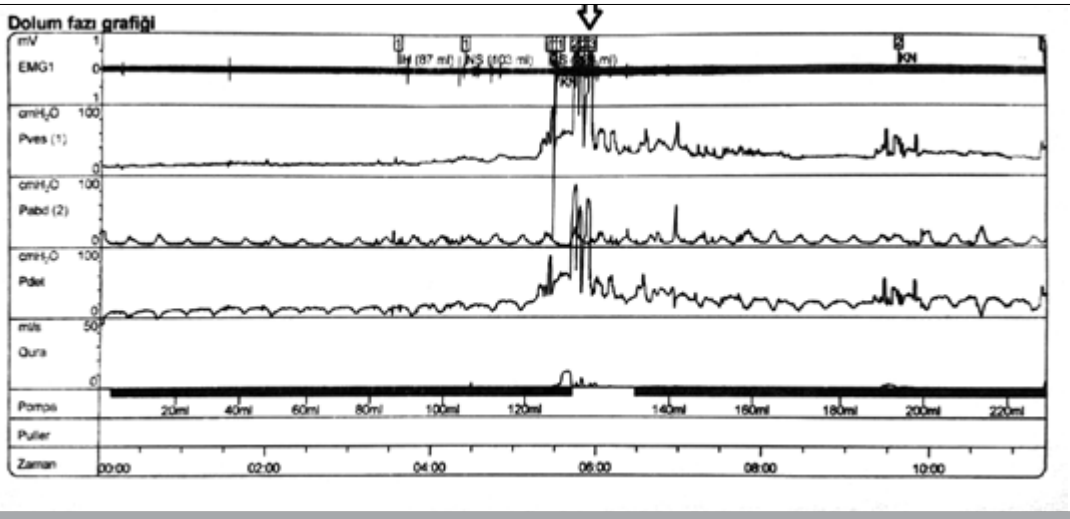

Şekil 1. Ürodinamik değerlendirmede uninhibe kontraksiyonlar görülmektedir

1x1 başlandı. Hastanın 3. ay takibinde şikayetlerinin kısmen düzeldiği IPSS:21, Qmax:15 mL/sn, işenen hacim ise 200 cc olarak saptandı. Hastanın takibi halen devam etmektedir. Çalışmayla ilgili hastanın onamı alınmıştır.

TARTIŞMA

Behçet hastalığında birçok sistemle ilgili semptom ve bulgular olmakla beraber ilk başvuru nedeni genel olarak ürogenital ülserlerdir. Hastalığın tanısında majör kriterler olarak tekrarlayan oral aftöz ülserler, deri döküntüleri, göz tutulumu (hipopiyonlu iridosiklit) ve genital ülserler kullanılırken; minör kriterler olarak gastrointestinal, artriküler, santral sinir sistemi tutulumu kullanılmaktadır. Genellikle genç-orta yaşlı erkeklerde görülmektedir (4, 6).

Mishima ve ark. (7) Behçet hastalığı olan 2031 hastanın değerlendirildiği çalışmasında erkek hastaların %76'sında ve kadın hastaların %83,8 genital ülserasyonlar saptanmıştır. Epididimit ikinci en sık görülen ürogenital bulgu olup yapılan çalışmalarda %6-22 oranında bildirilmektedir (3). Olgumuzda genital muayenede ülserasyon veya epididimit bulguları yoktu. BH nörolojik tutulum %5-%10 arasında bildirilmiş olup genelde tutulum derecesine göre serebral felçler, meningial irritasyon belirtileri, transvers myelit olarak ortaya çıkabilir (6, 8). Nörolojik tutulumu olan hastaların %5'inde işeme semptomları gözlendiği bildirilmiştir (4, 5). Çetinel ve ark. (4) mesane tutulumunun nöro-behçet tanısından 1-10 yıl sonrasında belirginleştiğini belirtmiş ve mesane tutulumunun yaklaşık insidansını %0,07 olarak bildirmişlerdir. Olgumuzda son 20 yıldan beri BH tanısı mevcut olup son 3 yıldır nöro-behçet tanısı ile takip edilmekte ve alt üriner sistem semptomları yaklaşık 2 yıldır mevcuttu. Nöro-behçet hastalarında alt üriner sistem semptomlarıyla birlikte urgency ve frequency semptomları pontin işeme merkezinin vaskülitik tutulumu sonrasında görülebilir (9). Mesanenin direkt tutulumu ise ülserasyonlar, nodüller veya tekrarlayan sistitler şeklinde olabilir. Bu hastalarda artmış gündüz işleme sıklığı, noktüri, sıkışma ve idrar kaçırma gibi şikayetler ön plandadır (4). Hastamızda da artmış işeme sıklığıyla beraber noktüri ve idrar kaçırma şikayetleri mevcuttu.

Erdoğru ve ark. (6) 24 hastanın değerlendirildiği bir çalışmada %50 oranında üriner inkontinans bildirmişlerdir. İnkontinans şikayeti olan 12 hasta ve olmayan 12 nöro-behçet hastası karşılaştırılmıştır. Bu çalışmada yazarlar ürodinamik incelemeler sonucunda; ilk his, mesane kapasitesi ve detrusör kompliyanslarında her iki grup arasında anlamlı derecede fark olduğunu bildirmişlerdir.

Porru ve ark. (8) sundukları bir olguda ise ürodinamik değerlendirmede arefleks, duyusu azalmış mesane saptamışlardır.

Nöro-behçet hastalarında ürodinamik incelemede: tek başına detrüsör aşırı aktivitesi veya bozulmuş kasılma ile birlikte, azalmış mesane kompliyansı veya kapasitesi, mesane hipersensitivitesi, hiposensitivite ya da tek başına akontraktilite ve artan rezidüel idrar gibi değişik bulgular görülebilmektedir (4, 6, 8).

Nöro-Behçet hastalarında alt üriner sistem semptomlarının (AÜSS) tedavisi hastanın şikayetlerine göre yapılan ürodinamik değerlendirme sonrası belirlenir. Yüksek rezidüel idrarı bulunan, boşaltım semptomları ön planda olan hastalara, alfa blokerler veya temiz aralıklı kateterizasyon uygulanabilir. Düşük mesane kapasiteli, dolum semptomları olan hastalarda antikolinerjik ajanlar verilebilir. Tedavi başarısızlığında ise augmentasyon sistoplasti önerilmektedir (10). Biz de olgumuzda yaptığımız incelemeler sonucunda augmentasyon sistoplasti operasyonu planladık. Ancak olası komplikasyonları ve komorbiditeleri kabul etmeyen hastaya antikolinerjik (tolterodin 4 mg) tedavi başlandı.

Olgumuzda Behçet hastalığına bağlı gelişen nörojen mesanenin tanı ve tedavisi sunulmuştur. Hastanın pollakürisi ön planda olup diabetes melitus'e (DM) bağlı poliüri/polidipsi ayrımı açısından yapılan ürodinamisinde; hipokomplian düşük kapasiteli (127 mL) mesane olarak değerlendirilmiştir. Bulgularımızın aksine literatürde DM'a bağlı nörojen mesane tablosunda ürodinamide flask ve duyusu bozulmuş yüksek kapasiteli mesane olgularının ön planda olduğu bildirilmektedir (11). Bu bulgular ışığında BH'nın DM'a göre mesane fonksiyonlarının bozulmasında daha kötü bir etki yarattığı söylenebilir. Yine hastanın AÜSS/obstüktif patoloji ekartasyon amaçlı yapılmış olan BAÇ hastanın maksimum akımda detrüsör basıncı 61 cmH_2O iken maksimal idrar akım hızı 13 mL/sn olarak ölçülmüş. BAÇ'da sonuçta hastanın yaşından dolayı olabilecek BPH tanısından uzaklaştırmıştır. Bu değerlendirmelerden sonra hastada literatürde de nadir rastlanılan BH'na bağlı mesane tutulumu tespit edilmiştir.

SONUÇ

Alt üriner sistem semptomlarıyla üroloji polikliniğine başvuran Behçet hastalarında nadirde olsa Behçet hastalığına bağlı mesane tutulumunun gelişebileceği göz ardı edilmemelidir. BH tanısı ile alt üriner sistem semptomlarının eşlik ettiği hastalarda ürodinamik değerlendirmeler ilk planda düşünülmelidir.

Hasta Onamı: Yazılı hasta onamı bu olguya katılan hastadan alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir - M.K., Ö.G.; Tasarım - M.K., A.E.E., R.S.; Denetleme - S.A., A.B.; Kaynaklar - M.K, R.S.; Malzemeler - A.E.E, S.A.; Veri toplanması ve/veya işlemesi - Ö.G., A.B.; Analiz ve/veya yorum - M.K., Ö.G.; Literatür taraması - R.S., A.E.E.; Yazıyı yazan - M.K., Ö.G.; Eleştirel İnceleme - S.A., A.B.

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Diagnosis and Laparoscopic Repair of Obturator Hernia with Intestinal Obstruction

İntestinal Obstrüksiyona Neden Olan Obturatuar Herninin Laparoskopik Tanı ve Tedavisi

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ABSTRACT

Obturator hernia is a very rare abdominal hernia that is located in the anterior pelvis. Patients apply to a hospital with a clinical intestinal obstruction table in this type of hernia. Prognosis in obturator hernia remains quite poor because of delayed diagnosis and surgical management. Nowadays, radiological techniques, especially computed tomography, are very advanced. Nevertheless, obturator hernia is a serious problem with its increased mortality, because it is detected quite hardly. We tried to offer an 82-year-old woman with acute abdomen that was considered on mechanic intestinal obstruction table for us in this article. Computed tomography is useful on these patients, just as it is useful in this article. For this reason, we scanned computed tomography and recognized a strangulated obturator hernia on the left. Afterwards, we planned a surgical operation and repaired the obturator hernia laparoscopically. The patient was transferred to the intensive care unit because of respiratory failure after the operation was finished. The patient, who was followed in the intensive care unit, died five days later because of acute respiratory failure. Obturator hernia is a rare cause of acute intestinal obstruction. Therefore, increased mortality rates should be remembered in elderly patients because of delayed diagnosis and accompanying chronic diseases. *(JAREM 2014; 1: 31-4)*

Key Words: Obturator hernia, laparoscopy, intestinal obstruction

ÖZET

Obturator herni çok ender rastlanan bir abdominal herni olup anterior pelvis yerleşimlidir. Bu herni tipinde hastalar klinik olarak mekanik intestinal obstrüksiyon tablosu ile hastaneye başvurabilmektedirler. Bu hastaların tanısındaki gecikme ve operasyona giden sürecin uzaması nedeniyle obturator herni de prognoz oldukça kötü seyretmektedir. Günümüzde radyolojik teknikler özelliklede bilgisayarlı tomografinin üstünlüğü çok gelişmiştir. Yine de obturator herni çok güç fark edilen ve bu nedenle de artan mortalite sebebiyle ciddi bir problemdir. Bu çalışmada acil servisimize akut batın ile başvuran ve intestinal obstrüksiyon ile ilişkili olduğunu düşündüğümüz 82 yaşındaki bir bayan hastayı sunmaya çalıştık. Bu çalışmada da olduğu gibi bilgisayarlı tomografi böyle hastalarda çok faydalı olmaktadır. Biz de bu nedenle bu hastada bilgisayarlı tomografi çektik ve tomografide sol strangule obturator herni varlığını farkedebildik. Daha sonra operasyon planlanan hastaya laparoskopik olarak herni onarımı yaptık. Hasta operasyondan sonra solunum yetersizliği nedeniyle yoğun bakım ünitesine transfer edildi. Beş gün sonra akut solunum yetersizliği nedeniyle yoğun bakımda takip edilen hasta vefat etti. Obturator herni akut intestinal obstrüksiyonun nadir sebeplerinden biridir. Bu nedenle yaşlı hastalarda tanının zorluğu ve eşlik eden kronik hastalıklarla birlikte artmış mortalite oranları her zaman akılda tutulmalıdır. *(JAREM 2014; 1: 31-4)*

Anahtar Sözcükler: Obturator herni, laparoskopi, intestinal obstrüksiyon

INTRODUCTION

Obturator hernia is a rare anterior pelvic floor hernia that occurs through the obturator canal, adjacent to the obturator vessels and nerve. It usually occurs in thin multiparous elderly women. People having chronically elevated intra-abdominal pressure are at high risk. Especially, two-thirds of the cases are in the seventh and eighth decades of life.

Characteristic complaints of these patients are often vague. Therefore, to diagnose and treat obturator hernia is quite arduous (1). Abdominal pain, vomiting, recurrent bouts of intestinal obstruction, Howship-Romberg sign, or a palpable upper thigh mass can be seen. However, symptoms are nonspecific in most cases. To diagnose obturator hernia, authors advocate different approaches. Some authors prefer early use of laparotomy, while others prefer preoperative non-invasive diagnostic methods, such as computed tomography (CT) or contrast radiographs (2).

We present a case of an elderly woman with an atypically symptomatic obturator hernia diagnosed and repaired laparoscopically.

CASE PRESENTATION

In December 2010, an 82-year-old female patient was admitted to the emergency room, having the complaints of abdominal pain with nausea and vomiting lasting for 3 days. By the physical examination, neither a palpable mass nor tenderness was noted on the lower abdominal quadrants. On laboratory results, we detected only a high white blood cell count, and there were no other abnormalities in biochemical parameters.

This case was presented as a poster at the 11th National Endoscopic Laparoscopic Surgery Congress, 2-6 October 2013, Bodrum/Muğla, Turkey.
Bu olgu, 11. Ulusal Endoskopik Laparoskopik Cerrahi Kongresi'nde poster olarak sunulmuştur, 2-6 Ekim 2013, Bodrum/Muğla, Türkiye.

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Radiologically, iv contrasted CT scan revealed that she had an obturator hernia, giving rise to mechanical obstruction of the small bowel.

Based on these clinical and radiological findings, laparoscopy was the procedure we have chosen. On laparoscopic exploration, a left strangulated obturator hernia involving an approximately 2 cm small bowel with its antimesenteric side was determined. Fortunately, there was no ischemia, necrosis, or perforation of the intestine. We relieved an entrapped segment of intestine and repaired the defect of the loose tissue on obturator foramen by intracorporeal primary sutures.

Soon after the operation, she was passed to our service department. Next day, she had flatus, and oral nutrition was started. Her vital signs were normal and had no complaints. Following an uneventful postoperative course of 3 days, the patient had an acute respiratory failure. Although there was no radiological confirmation of pulmonary embolism, administration of a low-molecular-weight heparin (enoxaparin 0.4 cc) was decided as a precaution. But, on the same day, the patient was transferred to the intensive care unit because of respiratory insufficiency and died on the 15th postoperative day with an aggravated pulmonary ventilation-perfusion mismatch.

DISCUSSION

To diagnose obturator hernia is quite tough because of its uncommon incidence, deep location, and infrequent specific signs and symptoms. The main cause of poor prognosis is delayed diagnosis in these patients. The obturator foramen is the hole created by the ischium and pubis bones of the pelvis through which nerves and blood vessels pass. The obturator canal is protected by femoral and pelvic muscles, accounting for the low incidence of herniation (3). It appears generally in debilitated elderly women, because they have a wide pelvic structure with large obturator canal, and they might lose their protective fat in the obturator canal (4, 5).

To diagnose obturator hernia is quite hard; on the other hand, it has some classical features. The first of them is a palpable mass in the groin when the patient is in supine position with the thighs are flexed, adducted, and rotated laterally. The second one is intestinal obstruction and previous attacks of bowel obstruction resolving spontaneously and the Howship-Romberg sign. The Howship-Romberg sign is reported to be present in 15%-50% of obturator hernia cases. The Howship-Romberg sign is characterized with medial thigh and hip pain, exacerbated by adduction and medial rotation of the thigh and relieved by flexion of the

Figure 1. Dilated intestinal segments

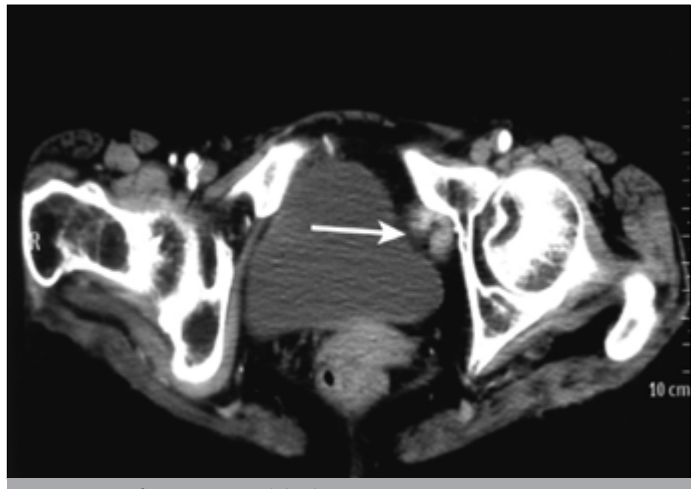

Figure 3. Left incarcerated ileal segment

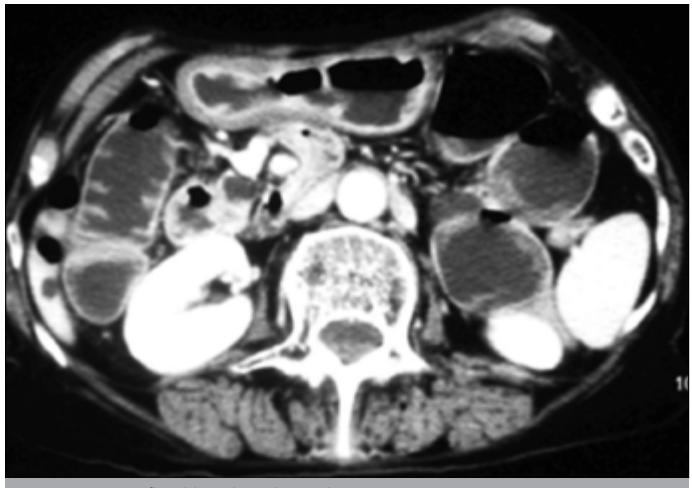

Figure 2. Air-fluid levels in bowels

Figure 4. Left obturator hernia defect

thigh. The patients are reported to present with intestinal obstruction. The characteristic clinical profile is known: emaciated old women with concomitant medical illness (6-9).

In our case, there was no clue about the pregnancies of this very thin and elderly woman. She had some abnormalities and some episodes of bowel obstruction with abdominal pain in her medical history. We detected this problem with physical examination and radioimaging techniques.

Rising intraabdominal pressure is used to describe obturator hernia. Some factors increase the pressure, such as constipation, kyphoscoliosis, pregnancy, and chronic lung disease. They might be the underlying reasons of herniation. The obturator hernia is rarely on the left side, because sigmoid colon tends to prevent the herniation (10). The diagnosis of the obturator hernia is often delayed until laparotomy, which is performed to treat the bowel obstruction or peritonitis. Diagnosis can be successfully achieved by barium enema fluoroscopy, herniography, or USG, but increasing evidence indicates that CT scanning has superior sensitivity and accuracy than the conventional methods in the preoperative diagnosis of obturator hernia. CT scanning could lead to rapid diagnosis and early surgical intervention, particularly in elderly patients presenting with intestinal obstruction of unknown origin (11, 12).

In our case, neither the Howship-Romberg sign nor an obviously inguinal palpable mass was noted, and the clinical presentation consisted solely of intestinal obstruction with acute abdomen CT imaging, allowing us to make a rapid and correct diagnosis and immediate operative intervention.

Surgical interventions, some of which can result with the resection of the intestine, are required in these cases. The obturator hernia may often occur with intestinal occlusion and strangulation (13). The surgical approach can be selected to diagnose. There are several ways to repair the obturator hernia. One of the surgical modalities is hernial sac ligation only; direct suture of the fascial defect is considered sufficient for small hernias with nonabsorbable sutures by using the periosteal fascia, bladder wall, or uterine fundus. The other technique is the mesh repair with laparoscopic method or laparotomy (14-16).

Our approach was laparoscopic repair. We relived a 2-cm-diameter entrapped small bowel in the obturator canal, because there was neither an intestinal occlusion nor strangulation. We set the entrapped segment back to the abdomen. Thereafter, simple closure of the pelvic orifice of the obturator canal with interrupted intracorporeal sutures was performed.

Elderly patients having many comorbid diseases are the main reason for the mortality of the obturator hernia. In our case, we made a laparoscopic repair, and the patient had been followed up in our service after surgery. Thereafter, on the third day of surgery, she was transferred to the intensive care unit because of respiratory failure, and she died on the 15th postoperative day because of pulmonary insufficiency.

CONCLUSION

The obturator hernia is a very rare pelvic hernia that usually occurs in elderly, thin, multiparous women, and symptoms are nonspecific in most of the cases. The laparoscopic approach for diagnosis and treatment of obturator hernia is an effective alternative to conventional methods. Appropriate patient selection, right surgical judgment, and adherence to established principles of laparoscopic repair of the pelvic floor are essential to success. Being elderly and having comorbidities are causes of mortality. Scrutiny, early diagnosis, and treatment can be life-saving for these patients with acute abdomen.

Informed Consent: Written informed consent was obtained from patient and her relatives in this case.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - E.S., F.G.; Design - E.S.; Supervision - F.G., S.Ç., K.P.; Funding - E.S.; Materials - E.S., F.G., S.Ç.; Data Collection and/or Processing - E.S., F.G.; Analysis and/or Interpretation - E.S., F.G., S.Ç., K.P.; Literature Review - E.S.; Writing - E.S., F.G.; Critical Review - E.S., F.G., S.Ç., K.P.

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Hasta Onamı: Yazılı hasta onamı bu olguya katılan hasta ve yakınlarından alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir - E.S., F.G.; Tasarım - E.S.; Denetleme - F.G., S.Ç., K.P.; Kaynaklar - E.S.; Malzemeler - E.S., F.G., S.Ç Veri toplanması ve/veya işlemesi - E.S., F.G.; Analiz ve/veya yorum - E.S., F.G., S.Ç., K.P.; Literatür taraması - E.S.; Yazıyı yazan - E.S., F.G.; Eleştirel İnceleme - E.S., F.G., S.Ç., K.P.

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Mesanenin Sarkomatoid ve Lenfoepitelyoma Benzeri Diferansiye Karsinomu: Parsiyel Sistektomi Olgu Sunumu

Sarcomatoid and Lymphoepithelioma Like Differentiated Carcinoma of the Urinary Bladder: Partial Cystectomy a Case Report

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ÖZET

Mesanede en sık rastlanan tümörler ürotelyal karsinomlar olmakla birlikte mesane kanserlerinin %10-20' sinde farklı diferansiyasyon gösteren tümörlerde bulunabilir. Bunlardan biride sarkomatoid ve lenfoepitelyoma benzeri diferansiyasyon gösteren ürotelyal karsinomdur. Daha çok erkeklerde ve ileri yaşta görülür. Tanı anında genelde ileri evredirler. Agresif neoplaziler olup sürvileri kötüdür. Literatürde çeşitli tedavi modaliteleri belirlenmiş olup kesin bir standart yoktur. Bu yazıda ender rastlanan sarkomatoid ve lenfoepitelyoma benzeri diferansiyasyon gösteren ürotelyal mesane karsinomu vakasına uyguladığımız parsiyel sistektominin sonucu literatür eşliğinde tartışılmıştır. *(JAREM 2014; 1: 35-7)*

Anahtar Sözcükler: Mesane, sarkomatoid, ürotelyal karsinom, parsiyel sistektomi

ABSTRACT

Urothelial carcinomas are the most common tumor types in urinary bladder; however, there may exist different differentiations in 10-20% of bladder cancer, one of which is urothelial carcinoma that has sarcomatoid- and/or lymphoepithelioma-like differentiation. It is usually seen in males in older age and diagnosed during later stages. They are aggressive malignancies and have low survival. Although there are various treatment models determined in the literature, no certain standard is identified. In this study, we report a case of sarcomatoid- and lymphoepithelioma-like differentiated urothelial carcinoma of the urinary bladder that was treated by partial cystectomy and its results in light of the literature. *(JAREM 2014; 1: 35-7)*

Key Words: Urinary bladder, sarcomatoid, urothelial carcinoma, partial cystectomy

GİRİŞ

Ürolojik kanserler içinde prostat kanserinden sonra ikinci sırada yer alan mesane tümörleri, erkeklerde görülen kanserler içinde dördüncü, kadınlarda ise sekizinci sırada yer almaktadır (1). Mesanede en sık %90-95 oranla ürotelyal hücreli kanser görülür, tanı sırasında yaklaşık %10-20'sinde farklı diferansiyasyon gösteren tümörlerde görülebilir (2). Sarkomatoid diferansiyasyon Torenbeek ve ark. (3) 4191 mesane kanserli hastayı inceledikleri çalışmasında %0.31 olarak bildirilmektedir (3). Erkek: Kadın oranı 4:1 olup pik insidans 7. dekattadır (4).

Biz, oldukça kötü prognoza sahip sarkomatoid ve lenfoepitelyoma benzeri diferansiyasyon gösteren ürotelyal karsinomun klinik, seyir, teşhis ve tedavi aşamalarıyla farklı bir vaka sunmayı amaçladık.

OLGU SUNUMU

Elli altı yaşında erkek hasta pıhtılı makroskopik hematüri şikayetleri ile kliniğimize başvurdu. Fizik muayenesi, serum biyokimyası ve kan sayımı normaldi. Üriner sistem ultrasonografide (USG) mesane posterior duvarda 50x45x35 mm boyutlarında kitle lezyon tespit edildi ve üst üriner sisteme ait patoloji izlenmedi (Resim 1).

Hastaya transüretral rezeksiyon (TUR) planlandı. Sistoskopi öncesi yapılan bimanuel muayenede ele gelen kitle ve fiksasyon yoktu. Mesane arka duvar kubbe bileşkesinde yaklaşık 5 cm çapında papillo-solid tümoral odak izlendi ve rezeksiyon yapıldı (TUR-MT), mesaneden multipl ve prostatik üretradan örnekleme yapıldı. Cerrahi şifa ile eksterne edilen hastanın TUR materyali patolojisi: High grade (HG) ürotelyal karsinom, sarkomatoid ve lenfoepitelyoma benzeri diferansiyasyon olarak raporlandı. Lamina propria ve muskularis propria invazyonu mevcuttu (pT2). Karsinoma insitu (CIS) yoktu. Lefovasküler invazyon, yaygın nekroz ve aktif lenfositik yanıt mevcuttu. Olgumuzda yaygın nekroz mevcudiyetinin yanı sıra, epiteloid alanlar pansitokeratin ile diffüz pozitif, sarkomatoid/lenfoepitelyoma diferansiye alanlar fokal pozitif, vimentin ile sarkomatoid/lenfoepitelyoma diferansiye alanlar fokal pozitif boyanmıştır aynı zamanda kondroid diferasiyasyon mevcuttu (Resim 2, 3). Prostatik üretra tutulumu ve diğer biyopsiler normal ürotelyal mukoza olarak sonuçlandı. TUR-MT sonrası tüm batın ve toraks bilgisayarlı tomografisi (BT) çekildi. Sonuçları normaldi. Hastaya invaziv mesane tümörlerinde standart yaklaşım olan radikal sistoprostatektomi ve üriner diversiyon operasyonu planlandı ancak hastanın operasyonu kabul etmemesi üzerine tümör lokalizasyonun ve boyutunun uygunluğu, tümörün soliter oluşu, eşlik eden CIS olmayışı ve hasta isteği göz önüne alınarak mesane koruyucu yaklaşım olarak parsiyel sistektomi ve bilateral pelvik lenf nodu diseksiyonu kararı alındı ve TUR sonrası 6. haftada hastaya uygulandı (Resim 4). Patoloji sonucu: pT1HG ürotelyal karsinom lenfovasküler invazyon ve yoğun lenfositik infiltrasyon, cerrahi sınır negatif, bilateral lenf nodu diseksiyonunda metastatik lenf

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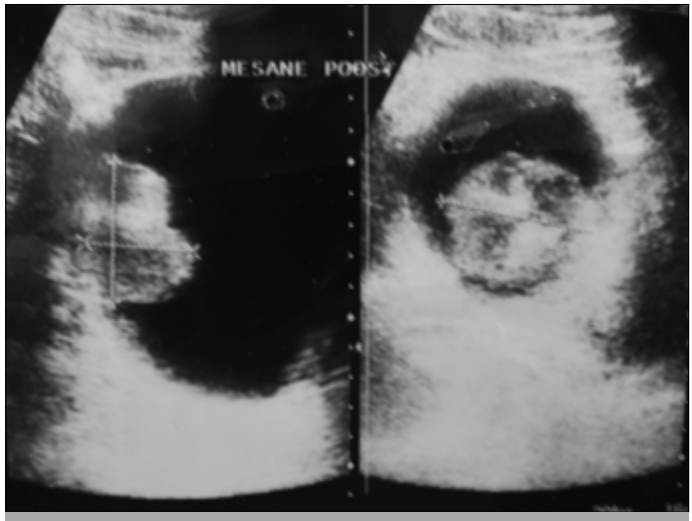
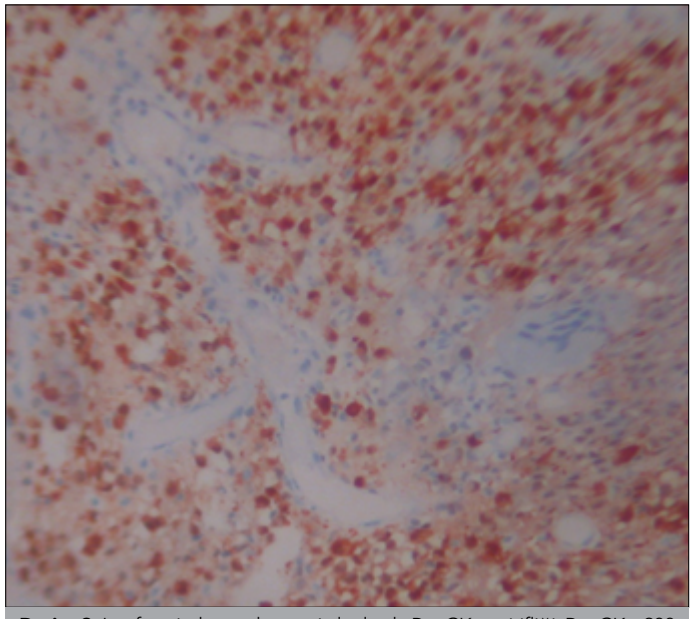
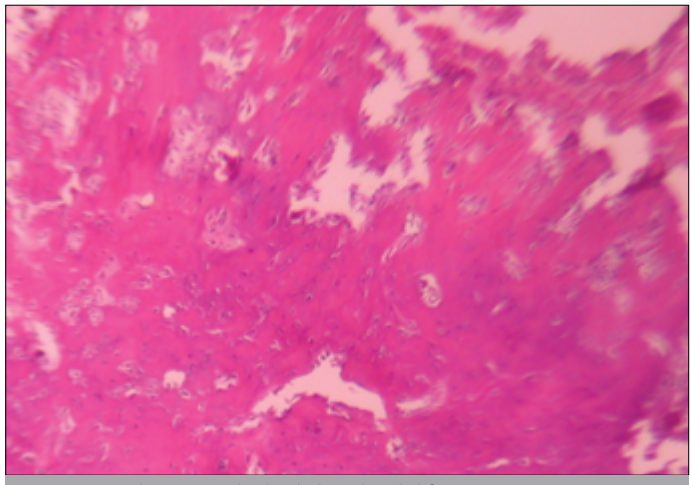


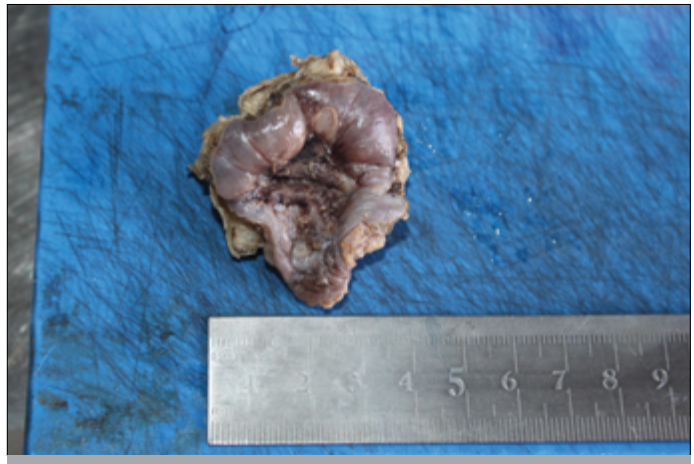
Resim 1. Mesane arka duvarda 5 cm lik kitle lezyon (USG)
USG: ultrasonografi



Resim 2. Lenfoepitelyoma benzeri alanlarda PanCK pozitifliği. PanCK x 200



Resim 3. Sarkomatöz alanlarda kondroid diferansiyasyon. H+E x 100



Resim 4. Parsiyel sistektomi piyesi

nodu yok şeklinde yorumlandı. Hasta cerrahi şifa ile taburcu edildi. Sonrasında hastaya herhangi bir ek tedavi hasta kabul etmediğinden uygulanmadı. Hastaya 3 aylık aralar ile kontrol sistoskopi, 6 ayda bir kesitsel görüntüleme (BT ve MR) ile takipleri 24 ay boyunca yapıldı ve herhangi bir nüks yada progresyona rastlanmadı. Hastamın takipler aynı şekilde devam etmektedir.

TARTIŞMA

Mesanenin izole skuamöz hücreli kanseri, adenokanseri ve sarkomları hakkında geniş bilgiler vardır fakat sarkomatoid diferansiyasyon gösteren ürotelyal hücreli tümörler hakkında oldukça sınırlı sayıda çalışma bulunmaktadır. Olgumuzda aynı zamanda aktif lenfositik yanıt olup lenfoepitelyoma benzeri diferansiyasyonda mevcuttu. Mesanenin lenfoepitelyoma benzeri karsinomu histolojik olarak yoğun lenfoid reaksiyon içeren indiferansiye malign epitelial lezyonlara benzer, kronik sistit ve malign lenfoma ile karıştırılabilmesi nedeniyle önemlidir (5). Sarkomatoid karsinom ürotelyal hücrelerden köken aldığı sarkomatoid kısmın iğsi hücreleri içerdiği ve epitelyal yapının pozitif olduğuna inanıldığı bifazik morfolojide tümörlerdir. Nekroz alanları sıklıkla görülebilir. Epitelyal elemanlar yüksek dereceli ürotelyal hücreli kanser, yassı hücreli kanser ya da adenokanser olabilir. Tanıda genellikle hemotoksilen eozin yeterli olmakla birlikte immünohistokimyasal çalışmalarda sitokeratin, desmin, vimentin, MSA, S-100, SMA, NSE ve kromogranin pozitif olarak saptanabilir. Mezenkimal elemanlar genellikle kondrosarkom, fibrosarkom, leiyomiyosarkom, osteosarkom ya da rabdomiyosarkomdur. (6, 7). Sarkomatoid tümörler lokasyon olarak daha çok mesane tabanı bunu takibende trigon ve lateral duvarlarda görülür. Bizim olgumuzda posterior duvar ile kubbe bileşkesinde idi. Genelde çoğu tümör tek, geniş polipoid kitle şeklinde, çap aralığı 1,5 cm ile 12 cm aradındadır. Polipoid, ülsere ve ilk tanıda muskuler tabakayıda invaze edecek şekilde ileri evrede olurlar (8), olgumuz soliter, 5 cm çapında, solid ve arka duvar kubbe bileşiminde yerleşimliydi. Tümörün agresif natürü, lokal rekürrense eğilimi nedeniyle sıklıkla cerrahi sonrası lokal rekürrens görülmesine rağmen radikal sistektomi ile adjuvan radyoterapi ve/veya kemoterapi kombinasyonu rehberlere net olarak gimemekle beraber önerilmektedir (9). Mesane sarkomatoid tümörü ortalama 17,2 ay gibi düşük sürviye sahiptir. Sarkomatoid diferensiyasyon gösteren mesane tümörlerinde tanıdan sonraki bir yıl içinde hastaların %66'sında metastaz geliştiği bildirilmekte-

dir. Lopez Beltran'ın çalışmasındaki 26 hastanın ortalama 10 aylık dönemde kaybedildiği görülmektedir (10). Olgumuz operasyon sonrası 2 yıl geçmiş olup bu süre içerisinde nüks olmaksızın yaşamını devem ettirmektedir. Parsiyel sistektominin yararına sadece özenle seçilmiş olgularda inanıldığı için mesane kanserli hastaların sadece %6-19'una bu yöntem uygulanmaktadır. Klasik olarak parsiyel sistektomi endikasyonu mesane kubbesinde yerleşen tümöre CISnun eşlik etmediği olgulardır. Olgumuzda hastanın üriner diversiyonu kabul etmemesi, mevcut tümörün görüntülemelerde yayılmış olmaması aynı zamanda tümörün lokalizasyonu, CIS olmayışı nedeniyle parsiyel sistektomi beraberinde pelvik lenfadenektomi uygulandı. Parsiyel sistektomi sırasında cerrahi sınırın pozitif olması, CIS varlığı ve çok sayıda tümör olması izlemde nüks olasılığını arttırmaktadır. CIS ve çok odak mevcudiyeti yüzeyel nükslerle olan ilişkisinin istatistiksel olarak anlamlı olduğu, lenf nodu tutulumu ve cerrahi sınır pozitifliğinin ise ileri nükslerle bağlantılı olduğu saptanmıştır (11). Olgumuzda hem CIS olmayışı, hemde lenf nodu metastazının olmayışı, operasyon öncesi ve sonrası takiplerinde mesane dışı yayılım olmaması gerek nüks, metastaz gerekse sürvi konusunda olumlu parametreler olsada tümörün natüride göz önüne alındığında sarkomatoid-lenfoepitelyoma diferansiye mesane tümörleri gibi agresif yapıda tümörler için parsiyel sistektominin sürvisi konusunda literatürdeki bilgilerde oldukça kısıtlıdır.

SONUÇ

Karsinosarkom ve sarkomatoid tümör nadir ancak kötü prognozlu ile hızla ilerleyen bir hastalıktır. Tanı alır almaz acil ve yoğun bir tedavi protokolü altına alınmalıdır. En uygun tedavi radikal sistektomi ve sonrasında kemoterapi ya da radyoterapidir. Ancak bu tedavi modellerinin de etkinliği tartışmalıdır. Progresyon açısından risk taşıyan bir tümörün radikal tedavisindeki gecikmenin bedeli hastanın yaşam süresinde kısalmayla sonuçlanabiliyorsa invaziv tümörlerde mesaneyi korumak için uygulanacak konservatif tedavilerin günlük pratikteki yeri son derece sınırlı olmalıdır. Günümüzde bizim vakamızda da olduğu gibi mesane koruyucu yaklaşım uygun vakalarda planlanılabilir, ancak bu konuyla ilgili daha fazla vaka ve deneyime ihtiyaç vardır.

Hasta Onamı: Yazılı hasta onamı bu olguya katılan hastadan alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir - A.Ö., F.O.K.; Tasarım - A.Ö., F.O.K.; Denetleme - B.N.; Kaynaklar - C.T.G., M.B.C.B., A.İ.H.; Malzemeler - C.T.G., A.İ.H.; Veri toplanması ve/veya işlemesi - A.İ.H., F.O.K.; Analiz ve/veya yorum - B.N., M.B.C.B.; Literatür taraması - C.T.G., A.Ö.; Yazıyı yazan - A.Ö.; Eleştirel İnceleme - B.N., M.B.C.B.

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Neurosyphilis, One Rarely Seen Cause of Neurogenic Bladder

Nörosifiliz, Nörojen Mesanenin Nadir Bir Sebebi

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ABSTRACT

With the exploration of penicillin, incidents of syphilis, which swept the Europe during the 16th century, decreased after 1940. Neurogen bladder arising from neurosyphilis was seen frequently before the penicillin period. We aimed to share a patient who has this rarely seen association. A 46-year-old male patient was admitted to a neurology clinic because of convulsion, dementia, and incontinence. No lesion determined in brain at magnetic resonance study. In the cerebrospinal fluid investigation, an increase in the number of leukocytes with lymphocytes and amount of protein was determined. Based on high positive treponema palladium hemagglutination assay (TPHA) test in the cerebrospinal fluid and blood, the presence of suspect sexual intercourse history, and occurrence of eruption on hands and feet that cleared up 10 years ago, a neurosyphilis diagnosis was made, and 6x4 M IU/d units iv penicillin treatment was applied for 21 days. After the completion of the patient's treatment in the neurology clinic, further examination was decided, because it was thought that neurogen bladder arising from neurosyphilis might develop because of the presence of urinary incontinence and pollakiuria complaints. At the beginning, uroflowmetry was worked to be done; however, the patient could not make enough (at least 150 mL) micturation. Thereupon, we decided to do filling cystometry and pressure-flow study. It was seen in the ultrasonography that bladder volume was 500 mL, thickness of the bladder wall was at normal level, prostate volume was 20 cc, and kidneys were bilaterally normal. It was seen that residual urine was approximately 400 cc after micturition. In filling cystometry, it was seen that maximum bladder capacity before the overflow incontinence was 490 mL. It was seen that the first urinary feeling occurred at 350 mL of volume and 26 cm H_2O of pressure; first urge to void feeling occurred at 460 mL volume and 35 cm pressure. It was seen that sense of bladder started to get damaged; however, the sense was not completely gone yet. It was seen that intra-vesicular pressure increased at 300 mL of volume and was more than 40 cm H_2O of pressure at end of study. It was decided that the bladder compliance was 12.4 mL/cm H_2O and that there was a medium-level loss of compliance. It was seen at the pressure- flow study that the patient who was encouraged to micturate for 2 minutes could only micturate by increasing intra-abdominal pressure, and detrusor pressure did not increase. As is, a hyposensitive and acontractile bladder diagnosis was made. It was thought that aseptic intermittent catheterization (AIC) and oral anticholinergic treatment were appropriate for the patient. Neurosyphilis is a rarely seen disease nowadays. Neurogen bladder arising from neurosyphilis is much rare in urology practices. When encountering a patient with this disease, urodynamic assessment should be done in order to have an idea about bladder functions; a choice should be made among bladder neck resection, urinary diversion and AIC. *(JAREM 2014; 1: 38-40)*

Key Words: Neurosyphilis, neurogenic bladder, urodynamic study in neurosyphilis

ÖZET

On altıncı yüzyılda Avrupa'yı kasıp kavuran sifilizin, penisilinin keşfiyle 1940 yılından sonra insidansı hızla düşmüştür. Penisilin çağından sonra nadir görülen sifilizin dördüncü evresi olan nörosifiliz ve nörojen mesane gelişmiş bir hastayı paylaşmayı amaçladık. Kırk altı yaşında erkek hasta unutkanlık, nöbet geçirme ve idrar kaçırma şikayetiyle eşi tarafından acil servise getirildi. Nöroloji kliniğine yatırılan hastada yapılan incelemede beyin omurilik sıvısı ve kanda treponema pallidum hemagglutination (TPHA) değerinin yüksek titrede pozitif olması üzerine nörosifiliz tanısı kondu. Yapılan dolum sistometrisinde taşma inkontinansından önceki maksimum mesane kapasitesinin 490 mL olduğu görüldü. İlk idrar hissinin 350 mL hacim ve 26 cm H_2O basınçta, idrara sıkışıklık hissinin 460 mL hacim 35 cm H_2O basınçta ancak oluştuğu görüldü. Mesanenin duyu hissinde hasar oluşmaya başladığı; ancak halen hissin tamamen kaybolmadığı görüldü. 300 mL hacimde mesane içi basıncın arttığı ve işlemin sonun doğru 40 cm H_2O basıncını geçtiği görüldü. Mesane kompliansının 12,4 mL/ cm H_2O olduğu ve orta düzeyde komplians kaybı olduğuna karar kılındı. Basınç akım çalışmasında 2 dakika boyunca miksiyon için teşvik edilen hastanın ancak karın içi basıncını artırarak miksiyon yapabildiği ve detrusör basınıcının hiç artmadığı görüldü. Bu haliyle hiposensitif ve akontraktil mesane tanısı kondu. Günde dört kez temiz aralıklı kateterizasyon (TAK) ve oral antikolinerjik tedavi başlandı. Nörosifiliz günümüzde nadir görülen bir hastalıktır. Nörosifilize bağlı gelişen nörojen mesaneyse üroloji pratiğinde çok daha nadir görülmektedir. Böyle bir hastayla karşılaşıldığında mesane fonksiyonları hakkında bilgi sahibi olunmak için ürodinamik değerlendirme yapılmalı; mesane boynu rezeksiyonu, üriner diversiyon ve TAK arasında bir seçim yapılmalıdır. *(JAREM 2014; 1: 38-40)*

Anahtar Sözcükler: Nörosifiliz, nörojen mesane, nörosifilizde ürodinami

INTRODUCTION

Despite Christopher Columbus's exploration of America, colonization and enslavement movement in the continent after exploration brought wealth to Europe; In return, this caused millions of people to die from a disease that came from the new world (1, 2).With the exploration of penicillin, incidents of syphilis, which swept Europe during the 16th century, decreased after 1940, and it is noted that 12 million people all over the world were affected by syphilis in 1999; more than 90% of these people were from developing countries. The prevalence in Turkey was similar to developed countries, less than 35/100.000 in a year (3-5).

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Approximately 4-25 years after the first infection, neurosyphilis occurs in 6.5% of patients who have non-treated primary syphilis. Balance disorder, burning pain, apathy, paralysis, dementia, and tabes dorsalis are seen in the lower extremity in patients (6, 7). Neurogen bladder arising from neurosyphilis was seen frequently before the penicillin period (8). We aimed to share a patient who has this rarely seen association.

CASE PRESENTATION

Fourty six years old male patient was admitted to the neurology clinic because of convulsion, dementia, and incontinence. No lesion determined in brain at magnetic resonance study. In the cerebrospinal fluid investigation, an increase in the number of leukocytes with lymphocytes and amount of protein was determined. Based on a high positive TPHA test in the cerebrospinal fluid and blood, the presence of suspect sexual intercourse history, and occurrence of eruption on hands and feet that cleared up 10 years ago, a neurosyphilis diagnosis was made, and 6x4 M IU/d iv penicillin treatment was applied for 21 days.

After completion of the patient's treatment in the neurology clinic, further examination was decided, because it was thought that neurogen bladder arising from neurosyphilis might have developed because of the presence of urinary incontinence and pollakiuria complaints. At the beginning, uroflowmetry was worked to be done; however, the patient could not make enough (at least 150 mL) micturation. Thereupon, we decided to do filling cystometry and pressure- flow study. Also, urinary ultrasonography was done in order to eliminate bladder outlet obstruction, which was caused by the patient's prostate hyperplasia.

It was seen in the ultrasonography that bladder volume was 500 mL, thickness of the bladder wall was at normal level, prostate volume was 20 cc, and kidneys were bilaterally normal. It was seen that residual urine was approximately 400 cc after micturition.

In the filling cystometry, it was seen that maximum bladder capacity before the overflow incontinence was 490 mL. It was seen that the first urinary feeling occurred at 350 mL of volume and 26 cm H_2O of pressure, first urge to void feeling occurred at 460 mL volume and 35 cm pressure. It was seen that sense of bladder started to get damaged; however, the sense was not completely lost yet. It was seen that intra-vesicular pressure increased at 300 mL of volume and was more than 40 cm H_2O of pressure at end of study. It was decided that the bladder compliance was 12.4 mL/cm H_2O and that there was a medium-level loss of compliance (Figure 1).

It was seen at the pressure- flow study that the patient, who was encouraged to micturate for 2 minutes, could only micturate by increasing intra-abdominal pressure, and detrusor pressure did not increase (Figure 2). As is, a hyposensitive and acontractile bladder diagnosis was made.

It was thought that aseptic intermittent catheterization (AIC) and oral anticholinergic treatment were appropriate for the patient. It was decided that the training would be provided to the patient's wife by anticipating that the patient could not be able to do the process alone. After the training, the patient was told to do AIC four times a day and we have begun oral anticholinergic treatment. We have received written consent from the patient's wife for publish this article.

DISCUSSION

Neurosyphilis has the following 3 patient group classifications, based on the dominant clinical manifestations. These are neuropsychiatric, meningovascular, and myelopathic (9). Six such diagnostic categories, as derived, could be outlined as follows: neuropsychiatric disorders, cerebrovascular accident, ocular, myelopathy, seizure, and brain stem/cranial nerves. Neurogenic bladder may seem all central nerve system involvement diseases (10).

Neurogenic bladder due to neurosyphilis is a rare clinical entity. We may be confused to do a differential diagnosis when we see these patients. Also, a neurology clinic may confuse this patient's diagnosis, and they can define it as Alzheimer disease. We do not know a lot of informations about neurogenic bladder due to neurosyphilis, because we have not seen it before in our clinical practice. So, we have explored the literature and worked to share this knowledge.

Hadori et al. (11) published a series, including 8 patients who had neurogen bladder arising from neurosyphilis. They stated that the bladder was extremely active in 5 of these patients, maximum cystometric capacity increased in 6 of these patients, high compliance occurred in only one patient, and detrusor sphincter dyssynergia occurred in 2 patients (11). Fowler conducted bladder neck resection in 3 patients who had neurogen bladder arising from neurosyphilis. The results indicated that recovery was only seen in one patient, and it did not take long (12).

Garber et al. (13) reported 3 patients who had neurogen bladder arising from neurosyphilis. They stated that hypocompliance detrusor hyperreflexia, detrusor- sphincter dyssynergia, and high residual urine occurred in all 3 patients. They treated one patient with bladder neck incision, another patient with intermittent catheterization, and the other patient with urinary diversion (13).

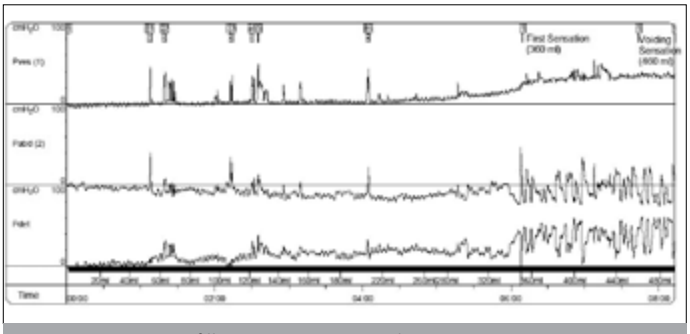

Figure 1. Patient's filling cystometry study

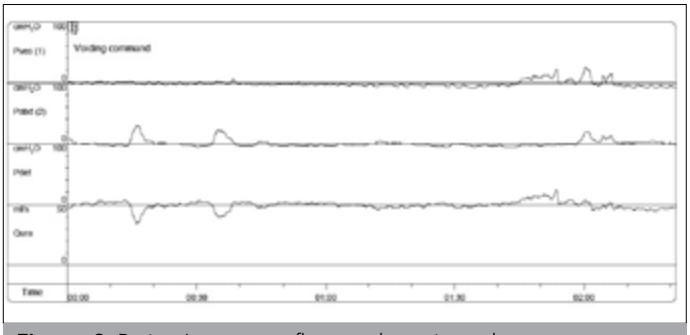

Figure 2. Patient's pressure- flow urodynamic study

Bogash et al. (14) examined 41 patients who had neurosyphilis and found that 18 of them had sense defect and residual urine, 9 had other bladder dysfunction symptoms without sense defect, and 14 had no bladder pathology. When they compared these 3 groups with each other, they stated that both neurogen bladder and neural system pathology and prognosis were worse among patients who had sense defect (14).

CONCLUSION

In light of the limited literature, we thought that the sense detect started to occur in our patient and that he would not benefit from bladder neck resection because of acontractile bladder. Even though bladder pressure reached 40 cm of pressure at the maximum capacity, because the level of creatinine was normal and there was no hydronephrosis in the bilateral kidneys, no surgical attempt was done in order to decrease bladder pressure; only oral anticholinergic treatment was initiated.

Neurosyphilis is a rarely seen disease nowadays. Neurogen bladder arising from neurosyphilis is much rare in urology practice. When encountering a patient with this disease, urodynamic assessment should be done in order to have an idea about bladder functions; a choice should be made among bladder neck resection, urinary diversion, and AIC.

Informed Consent: Written informed consent was obtained from patients' wife who participated in this case.

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