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Özgün Makaleler

Tibia Mekanik Aksı ve Uzunluğunun Tibia Platosundan Alınan Ölçümlerle Korelasyonunun Değerlendirilmesi / Sayfalar : 1-4
Deniz ŞENOL, Furkan ARPACI, Ayşegül KISAOĞLU, Furkan ÇEVİRGEN, Nesibe YILMAZ, Mustafa CANBOLAT, Davut ÖZBAĞ

Comparison of The Efficiency of Eswt And Eswt+Kinesio Taping Treatments in Lateral Epicondylitis / Sayfalar : 15-21
Muhammed Furkan ARPACI, Aymelek ÇETİN, Gülsen AYKOL, Deniz ŞENOL, Davut ÖZBAĞ

Diş Hekimliğinin Konsültasyondaki Yeri ve Önemi / Sayfalar : 22-27
İrem YILMAZ

Akut İnme Hastalarında Omuz Subluksasyonunun Önlenmesinde Kinezyo Bantlama Etkinliğinin Elektrik Stimülasyonu İle Karşılaştırılması / Sayfalar : 28-33
Egemen KIZILAY, Bekir DURMUŞ, Fatma KIZILAY, Şeyma TOY

The Effect of Dıfferent Amounts of Soluble-Insoluble Fibre Consumptıon on Colonıc Transit Tıme in Adults / Sayfalar : 5-14
Merve SAVICI, Esen KARACA

Vaka Takdimi

Gull Pancreas: A Case Report / Sayfalar : 34-36
Deniz ŞENOL, Furkan ÇEVİRGEN, Leyla KARACA, Mustafa CANBOLAT, Davut ÖZBAĞ

Derleme

Yaşlı Popülasyonda Somatotip Karakter Analizi - Kısa Derleme / Sayfalar : 37-40
Fatma KIZILAY, Şeyma TOY

MEDICAL RECORDS-International Medical Journal

Araştırma Makalesi / Research Article

Tibia mekanik aksı ve uzunluğunun tibia platosundan alınan ölçümlerle korelasyonunun değerlendirilmesi

Evaluation of the correlation of tibial mechanical axis and length with measurements taken from tibia plateau

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Oz

Amaç: Bu çalışmada; tibia platosundan alınan ölçümlerle, tibia mekanik aksı ve uzunluğu arasında bir korelasyon olup olmadığının belirlenmesi amaçladı.

Materyal ve Metod: Çalışma kapsamında İnönü Üniversitesi Tıp Fakültesi Anatomi Anabilim Dalı kemik laboratuvarlarında bulunan 38 tibia'nın ölçümleri alınarak kemiklerin morfolojik analizi yapıldı. Tibia mekanik aksı (TMA), tibia uzunluğu (TU), tuberculum intercondylare laterale yüksekliği (TICL), tuberculum intercondylare mediale yüksekliği (TICM), tuberculum intercondylare laterale-mediale arası mesafe (TICL-TICM), tibia platosunun genişliği (TPG), tibia platosunun kalınlığı (TPK) ölçümleri alındı. TMA ve TU ölçümü için fotograf çekildi ve Digimizer image analysis software programı kullanılarak yapıldı. Diğer ölçümler Astor dijital kumpas ile yapıldı. Ölçümler sadece bir araştırmacı tarafından 3'er tekrarlı, ölçümler arasında zaman aralığı bırakılacak şekilde yapıldı ve sonrasında bilgisayar ortamına aktarıldı.

Bulgular: Verilerin normal dağılıma uygunluğu için Kolmogorov Smirnov testi kullanıldı. Korelasyon için Spearman Rho Korelasyon analizi kullanıldı. $p<0.05$ değerleri anlamlı olarak kabul edildi. Analizlerde SPSS 22.0 paket program kullanıldı.

Sonuç: Yapılan korelasyon analizi sonucuna göre TMA ve TU'nun TICL ve TPG ile pozitif yönlü orta kuvvetli korelasyona sahip olduğu belirlendi.

Keywords: Tibia, mechanical axis, tibial plateau, morphometry

Abstract

Aim: In this study; it was aimed to determine whether with the measurements taken from the tibial plateau were correlated the mechanical axis and length of the tibia.

Material and Methods: In the scope of the study, morphological analysis of the bones was performed by taking measurements on 38 tibia found in bone laboratories of İnönü University Faculty of Medicine Anatomy Department. Tibial mechanical axis (TMA), tibia length (TL), lateral height of tuberculum intercondylare (TICL), medial height to tuberculum intercondylare (TICM), distance between lateral to medial tuberculum intercondylare (TICL-TICM), tibial plateau width (TPW), plateau thickness of tibia (TPC) measurements were taken. The photographies was taken for measurement of TMA and TL and the Digimizer image analysis software program was used. Measurements were performed by only one researcher with three replicates, allowing time intervals between measurements and then transferred to the computer.

Result: The conformity of the data to the normal distribution was used by Kolmogorov Smirnov test. Spearman Rho Correlation analysis was used for correlation. $p<0.05$ was considered significant. SPSS 22.0 package program was used in the analyzes.

Conclusion: According to the results of correlation analysis, it was determined that TMA and TL had moderate positive correlation with TICL and TPW.

Keywords: Tibia, mechanical axis, tibial plateau, morphometry

GİRİŞ

Tibia cerrahisi günümüzde tibia kırıkları tedavisi, tibial osteotomi ve artroplastik tedavilerde kullanılır. Cerrahi işlemin başarısı uygun ebatta komponent seçimine, işlem sırasında alınan ölçümlerin ve kesilerin hatasız yapılmasına bağlıdır. Tibia cerrahisinde yapılan kesi, şekil ve büyüklük açısından protez yüzeyine uyumlu olmalı ve birbiri üzerine örtüşmeyen yüzey veya kaplama alanında taşma olmamalıdır. Antropometrik ölçümler bu konuda protez tasarlarken yol göstericidir.

Diz eklemine bakıldığında konveks yüzünü femur kondilleri oluştururken konkav yüzü tibianın üst ucu

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oluşturmaktadır (1). Tibianın eklem yüzleri menisküs adı verilen kıkırdak yapılarla eklem yaptığı femurun kondilleri için daha uygun yüzeyler haline gelir (2). Tibia platosunun posterior kısımları yaklaşık olarak 7-10º lik bir eğim göstermektedir(3). Tibia medial platosu daha büyük, konkav ve sağlamdır, lateral platosu ise konveks, mediale göre daha küçük ve yüksektir. Medial ve lateral plato eminentia interkondilare ile birbirinden ayrılır (4). Area intercondylaris anterior'a sagittal planda bakılacak olursa arkadan öne doğru sırası ile meniscus lateralis ön boynuzunun yapışma yeri, lig.cruciatum anterior ve meniscus medialis ön boynuzu bulunur.. Area intercondylaris posterior'da yine sagittal planda arkadan öne doğru lig.cruciatum posterior'un yapışma yeri, meniscus lateralis arka boynuzu ve meniscus medialis arka boynuzu yer almaktadır. Extremitas proksimalisin ön yüzünde patellar tendonun yapışma yeri olan tuberositas tibia bulunur (5).

Tibia platosu ölçümlerini dikkate alarak tasarlanan protezler ve çalışmalar; 1950'lerin başında femur ve tibia cismine uzanan sapları olan menteşeli protezler ortaya çıkmıştır (6). 1958 de Macintosh çalışmasında dizin ağrılı valgus ve varus deformitelerinde problemli tarafta yer alan tibiaya uygulama yapıp deformiteyi düzeltip ağrıyı gidermiş ve sonuç olarak da akrilik tibial plato ilaveli hemiartroplastiyi tanımlamıştır (7). McKeever de benzer şekilde tibial platoyu kapsayan bir protez geliştirmiş ve bu protez romatoit artritli hastalarda etkili ve yaygın olarak kullanılmıştır. 1973'te Imperial College London Hospital'da (ICLH) Freeman ve Swanson kondillerin plato üzerinde yuvarlanma prensibine dayanan ICLH protezini geliştirmişlerdir (8).

Biz bu çalışmamızda tibia platosundan alınan ölçümlerle, tibia mekanik aksı ve uzunluğu arasında bir korelasyon olup olmadığını belirlemeyi amaçladık.

MATERYAL ve METOT

Bu çalışmada İnönü Üniversitesi Tıp Fakültesi Anatomi Anabilim Dalı kemik laboratuarlarında bulunan 38 tibia'nın ölçümleri alınarak kemiklerin morfolojik analizi yapıldı. Alınan ölçümler; Tibia mekanik aksı (TMA), tibia uzunluğu (TU), tuberculum intercondylare laterale yüksekliği (TICL), tuberculum intercondylare mediale yüksekliği (TICM), tuberculum intercondylare laterale-mediale arası mesafe (TICL- TICM), tibia platosunun genişliği (TPG), tibia platosunun kalınlığı (TPK).

TMA: Tibia'nın orta noktası ile ayak bileği orta noktası arasına çizilen çizgi digimizer programıyla ölçüldü.

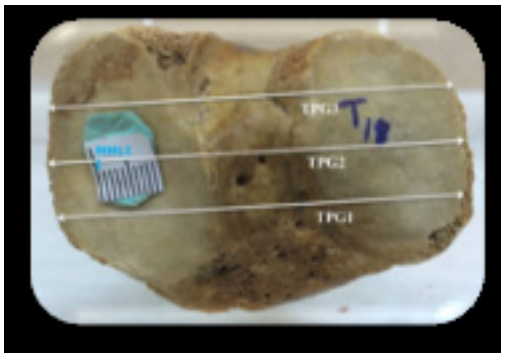
TU: Epicondylus lateralis ile malleolus medialis arasında çapraz uzanan uzunluk TU olarak ölçüldü.

TICL, TICM, TICL-TICM: Tibia'nın proksimal ucunun posterior konumundan digital kumpas ile ölçüm yapıldı.

TPG: Tuberculum intercondylare'lerden orta noktasından tibia platosunun medio-lateral yüzeyine paralel olarak en geniş uzunluk digital kumpas ile ölçüldü. Bu uzunluğun 1 cm ön ve arkasından birer ölçüm daha yapıldı ve ortalama değer TPG olarak kaydedildi.

Şekil 1. TMA ve TU ölçümleri

Şekil 2. TICL-TICM, TICL-TICM ölçümleri



Şekil 3. TPG ölçümü

TPK: Tibia'nın proksimal ucundan anterior yüzden anteromedial, median, anteroateral hatlarda 3 ölçüm, lateral yüzden medial ve lateral olmak üzere 2 ölçüm, posterior yüzden posteromedial, median, posterolateral hattan 3 ölçüm yapılarak ortalama değer tibia plato yüksekliği olarak değerlendirildi.

TMA ve TU ölçümü için fotograf çekildi ve Digimizer image analysis software programı kullanılarak yapıldı. Diğer ölçümler Astor dijital kumpas ile yapıldı. Ölçümler sadece bir araştırmacı tarafından 3'er tekrarlı, ölçümler arasında zaman aralığı bırakılacak şekilde yapıldı ve sonrasında bilgisayar ortamına aktarıldı.

İstatistiksel Analiz

Verilerin normal dağılıma uygunluğu için Kolmogorov Smirnov testi kullanıldı ve verilerin normal dağılama uymadığı tespit edildi. Normal dağılım göstermeyen verilerin medyan ile minimum (min) ve maksimum (mak) değerleri verildi. Korelasyon için Spearman Rho Korelasyon analizi kullanıldı. $p<0.05$ değerleri anlamlı olarak kabul edildi. Analizlerde SPSS 22.0 paket program kullanıldı.

BULGULAR

TMA'nın medyan değeri 350,7 mm, TU'nun medyan değeri 358,1 mm olarak ölçüldü. TICL yüksekliğinin medyan değeri 11,5 mm, TICM yüksekliğinin medyan değeri 16,5 mm, TICM-TICL arası mesafenin median değeri 12,2 mm, TPG 67,7 mm, TPK 28,2 mm olarak hesaplandı. Yapılan korelasyon analizine göre TMA'nın TICL yüksekliği ve TPG arasında pozitif yönlü korelasyon olduğu belirlendi (Tablo 1).

TMA ve TU ile TICL, TICM, TICM-TICL, TPG ve TPK arasındaki korelasyonun değerlendirilmesi için verilere Spearman Rho korelasyon analizi uygulandı. Analiz sonucuna göre TMA ve TU ile TICL ve TPG arasında pozitif yönlü orta kuvvetli bir korelasyon olduğu belirlendi (Tablo 2).

TARTIŞMA

Aksiyal kompresyon kuvvetinin varus ve valgus stresi ile diz eklemine stres uygulaması sonucunda diz ekleminin fonksiyonu bozularak tibial plato fraktürleri oluşmaktadır (9). Kadavra dizlerini aksiyel yükle varus ve valgus kuvvetlerine maruz bırakan Kennedy ve Bailey aksiyel yüklenmeyle oluşan tibial plato kırıklarını çalışmalarında gözlemlediler. Tibia platosu kırıkları yüksek enerji ve düşük enerji sonucu oluşurken yüksekten düşme vakaları, spor yaralanmaları ve trafik kazalarında sıkça görülmektedir (10).

Diz eklemini oluşturan kemiklerin, implantla temas edecek yüzeyleri arasında sağlanan uyum, gerek pro tez yapımında, gerek cerrahi olarak uygulamalarda önemli bir unsurdur.

Tablo 1. Tibia'dan alınan ölçümlerin milimetre cinsinden medyan, min ve mak değerleri

İstatistik	TMA	TU	TICL	TICM	TICM-TICL	TPG	TPK
Medyan	350,7	358,1	11,5	16,5	12,2	67,7	28,2
Min	278,4	293,3	8,2	11,9	8,4	53,0	16,3
Mak	399,0	422,8	21,3	23,6	17,7	88,1	35,0

Tablo 2. TMA ve TU ile TICL, TICM, TICM-TICL,TPG ve TPK arasındaki korelasyonun değerlendirilmesi

Parametre	İstatistik	TICL	TICM	TICM-TICL	TPG	TPK
TMA	r	,464	,188	,117	,464	-,183
	p	,004	,265	,502	,005	,293
TU	r	,471	,153	,108	,481	-,250
	p	,005	,388	,563	,006	,175

Bu durum göz önünde bulundurularak üretilen ve takılan protezler ile kemikler arasında daha iyi bir uyum sağlanacaktır (11).Yaptığımız bu çalışma tibia platosu hakkında değerli ve önemli bilgiler içermektedir, uygun ebatta komponent seçilip operasyon sırasında alınan ölçümler ve kesiler hatasız yapıldığı taktirde total diz artroplastleri daha etkili ve başarılı olmaktadır. Hatalı kesiler sonucu oluşabilecek malaligment, komponentlerde eşit olmayan yüklenmeye sebep olacaktır (7).

Bu çalışmada 38 tibia'nın doğrusal ve açısal ölçümleri alınıp kemiklerin morfolojik analizleri yapıldı. Elde edilen veriler benzer çalışmalarda elde edilen veriler ile karşılaştırıldı.

Uslu (2011), TMA'yı 35 cm olarak bulmuştur (1). Bu çalışmada bulunan TMA uzunluğunun medyan değeri 350,78 mm'dir.

Yuki Yoshioka ve arkadaşları (1989), yapmış olduğu çalışmada TU'yu 353 mm bulmuşlardır (12).

Uslu (2011), yaptığı çalışmada TU'nu 360,12 mm olarak bulmuştur (1). Bu çalışmada bulunan TU'nun medyan değeri 358,16 mm olarak ölçüldü.

TICL yüksekliği literatürdeki bir çalışmada ortalama 4,64 mm olarak bulunmuştur (1). Bu çalışmada TICL yüksekliğinin medyan değeri 11,57 mm olarak ölçüldü.

Uslu (2011), TICM yüksekliğini ortalama 6,3 mm olarak bulmuştur (1). Bu çalışmada TICM yüksekliğinin medyan değeri 16,58 mm olarak ölçüldü.

Uslu (2011), TICL-TICM arası mesafeyi ortalama 6,89 mm olarak bulmuştur (1). Bu çalışmada TICL- TICM arası mesafenin medyan değeri 12,27 mm olarak bulundu.

Kwak ve arkadaşlarının (2007), yapmış olduğu antropometrik ölçümlerde tibia platosunun medial-lateral genişliği 67,6 mm olarak bulmuşlardır (13). Cemil (2016), yaptığı çalışmada tibia uzunluğu medial-lateral genişliği 70,2 mm olarak bulmuştur (14). Bu çalışmada bulunan tibia plato genişliği 67,75 mm olarak tespit edildi.

Uslu (2011), tibia platosunun medial-lateral genişliğini 70,81 mm ölçmüştür (1). Cheng (1999), tibia platosunun medial-lateral genişliğini 67,1 ölçmüştür (15). Hussain (2010), tibia platosunun medial-lateral genişliğini 72,6 mm ölçmüşlerdir (16). Uehara (2002), tibia platosunun medial-

lateral genişliğini 74,3 ölçmüşlerdir (17).

Elde ettiğimiz sonuçların diz protezi tasarımı yapan uzmanlar ve ortopedik cerrahlar için implant kalitesini arttırmada daha etkili olacağı düşünülmektedir.

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Araştırma Makalesi / Research Article

The effect of different amounts of soluble-insoluble fibre consumption on colonic transit time in adults

Yetişkin Bireylerde Farklı Miktarda Çözünür-Çözünmez Posa Tüketiminin Kolonik Geçiş Hızı Üzerine Etkisi

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Abstract

Aim: The aim of this study is to search for the effect of different amounts of soluble-insoluble fibre consumption on colonic transit time in adults and to increase the variety of dietary fibre consumption revealing how colonic transit time changes in accordance with fibre types.
Material and Methods: The study was applied on 381 adults who were 19-65 years old and applied to Private Alanya Life Hospital, Bahar Diet Nutrition Consultation Center and Alanyaşam Nutrition Consultation Center. Socio-demographic features, anthropometric features, nutrition habits, exercise habits, dietary fibre knowledge level, frequency of dietary fibre consumption, amounts of water soluble and insoluble fibre and total fibre and the Bristol stool scale chart for determining colonic transit time of people were questioned.
Result: Average amount of daily total fibre consumption of men (24.8±14.0 g) is higher than women (21.7±9.1 g). The Average amount of daily water soluble fibre consumption of men (8.8±5.7 g) is higher than women (7.023±3.3 g). It is found that the Bristol stool score is significantly higher in groups consuming spinach more frequently then when we compare the high Bristol score with normal Bristol score (p=0.025). As a result of The One Way Anova Test to determine whether daily average fibre consumption of women according to the Bristol scale variance, we saw that there is no significant differences between groups (p=0.785). As a result of analysis to determine whether daily average fibre consumption of men according to the Bristol scale variance, we saw that there is no significant differences between groups (p=0.711). Space in the study, daily water soluble and insoluble fibre amounts and total fibre amount were compared with Bristol stool form scales; but there was no significant relationship between the amount of fibre and the scores (p>0,05).
Conclusion: When we compare Bristol stool scores between groups considering fibre types, we saw that spinach, which is a significant source of insoluble fibre type, is consumed more frequently by people having high Bristol score compared with those having normal Bristol score.

Keywords: Fibre type, fibre amount, colonic transit time, fibre consumption

Oz

Amaç: Yetişkin bireylerde farklı miktarda çözünür-çözünmez posa tüketiminin kolonik geçiş hızı üzerine etkisini araştırmak, posanın kolonik geçiş hızı üzerinde olumlu etkilerinin olduğu bilgisinin ötesine geçerek posanın türlerine göre kolonik geçiş hızının nasıl değiştiğini ortaya koyarak posa tüketiminde çeşitliliği artırmak bu çalışmanın amacıdır.
Materyal Metod: Çalışma Özel Alanya Yaşam Hastanesi, Bahar Diyeti Beslenme Danışmanlığı Merkezi ve Alanyaşam Beslenme Danışmanlığı Merkezi'ne başvuran 19-65 yaş arası sağlıklı bireyler üzerinde uygulanmıştır. Bireylerin sosyo-demografik özellikleri, antropometrik ölçümleri, beslenme alışkanlıkları, egzersiz alışkanlıkları, posa bilgi düzeyleri, posa türleri tüketim sıklığı ve günlük suda çözünebilir posa, çözünmez posa ve toplam posa tüketimi miktarları, kolonik transit hızın belirlenmesi için Bristol dışkı formu skalaları sorgulanmıştır.
Bulgular: Erkeklerin günlük ortalama posa tüketimi ortalamaları (24.8±14.0 g), kadınların günlük ortalama posa tüketimi ortalamalarından (21.7±9.1 g) yüksek bulunmuştur. Erkeklerin suda çözünür posa tüketimi ortalamaları (8.8±5.7 g), kadınların suda çözünür posa tüketimi ortalamalarından (7.023±3.3g) yüksek bulunmuştur. Bristol skoru yüksek ve normal bireyleri kıyasladığımızda ıspanağı daha sık tüketen grupta Bristol skorları anlamlı derecede daha yüksek bulunmuştur (p=0.025). Kadın bireylerin günlük ortalama lif tüketimi ortalamalarının bristol skorlar değişkenine göre anlamlı bir farklılık gösterip göstermediğini belirlemek amacıyla yapılan tek yönlü varyans analizi (Anova) sonucunda grup ortalamaları arasındaki fark istatistiksel açıdan anlamlı bulunmamıştır (p=0.785). Erkek bireylerin günlük posa tüketim ortalamalarının bristol skorlar değişkenine göre anlamlı bir farklılık gösterip göstermediğini belirlemek amacıyla yapılan analizler sonucunda grup ortalamaları arasındaki fark istatistiksel açıdan anlamlı bulunmamıştır (p=0.711). Çalışmada günlük suda çözünen ve çözünmeyen posa miktarları ve toplam posa miktarı ile Bristol dışkı formu skalaları karşılaştırılmış; posa miktarı ve skorlar arasında anlamlı ilişki bulunmamıştır (p>0.05).
Sonuç: Posa türlerine göre Bristol skalalaları karşılaştırıldığında ise önemli bir çözünmez posa kaynağı olan ıspanağın Bristol skoru yüksek olan bireyler tarafından normal olan bireylere göre daha sık tüketildiği görülmüştür.

Anahtar Kelimeler: Posa türü, posa miktarı, kolonik geçiş hızı, posa tüketimi

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INTRODUCTION

Dietary fibre is the edible part of plants and carbohydrate anologs that resist digestion and absorbtion and are fermentable partially or completely in small bowel. The classification of dietary fibre in view of physiological effects can be made in two ways: soluble fibre (water soluble) and insoluble (water insoluble). Foods contain a mixture of both where a food that is a good source of soluble fibre can also contain a little insoluble fibre. For example, fruits and vegetables contain pectin (a soluble type of fibre) and cellulose (an insoluble type of fibre) . Fruits mostly contain pectin, vegetables mostly contain cellulose (1,2). Soluble fibre is in apple, sitrus fruits, carrot, oat and psyllium etc. When it contacts with water, it makes up a gel-like substancethat decreases LDL cholosterol, regulates blood sugar level and shows other benefitsof whole grains, beans, and nuts. This type of fibre provides stool transportation throughout intestine and increases stool weight. Insoluble fibre decreases diarrhea and constipation prevalance and helps weight loss and management (3). The older the peoplethe more fiber they need. 5 g fibre a day is enough for children who are older than 2 years. Adults who are older than 20 years need 25-30g fibre a day. This amount should be increased in older adults. Excessive fibre consumption doesn't provide an advantage. 35 g and more fibre consumption a day can cause a defect of other nutrients absorbtion and then deficiencies (4). Dietary fibre affectsthe whole gastrointestinal tract from mouth to anus. High fibre foods generally have less energy density and are consumed in longer time. Soluble fibre delays gastric discharge and acts as a slower passing of food materials throughout the small intestine. On the other hand, insoluble fibre creates intestinal speed (5).

Functional gastrointestinal diseases and functional defects of colon are frequently seen in society. Constipation is the second frequent gastrointestinal symptom that has ever been reported and its frequencyratio changes between 2% and 28% because of different-definitions about it. In Turkey, this frequency ratio changes between 29% and 40%. Constipation is more frequent in females and older adults in Turkey (6). Most common causes of constipation are situations like malnourishment, irritable bowel syndrome, weak bowel movements, pseudo-constipation, travelling, pregnancy, medications, colonic motility diseases, cracks and hemmoroids (7).

Colonic transit time states how long foods transit in bowel. The truest technical term is oro-cecal transit time for transit time. It is an important term, because the ratio of all foods passing in the intestinal tract determines how nutrients are absorbed effectively. The ratio of all foods passing in the intestinal tractaffects fermentation that is connected with a healthy bowel flora (8). Bristol stool scale is the gradation of stool density as visual. This scala is evaluated as an indicator of gastrointestinal transit time. It is used by Europe Clinical Microbiology and Clostridium Difficile Infection Disease Society for dierrhea definition (9). Type 1 shows that stool stays in the bowel the longest time while type 7 shows the shortest time (Figure 1). A normal stool must be like type 3 or type 4. Normal transit time depends on normal bowel habits of peoples and in normal transit time there is a defecationonce a day or at least 3 times a week (10).

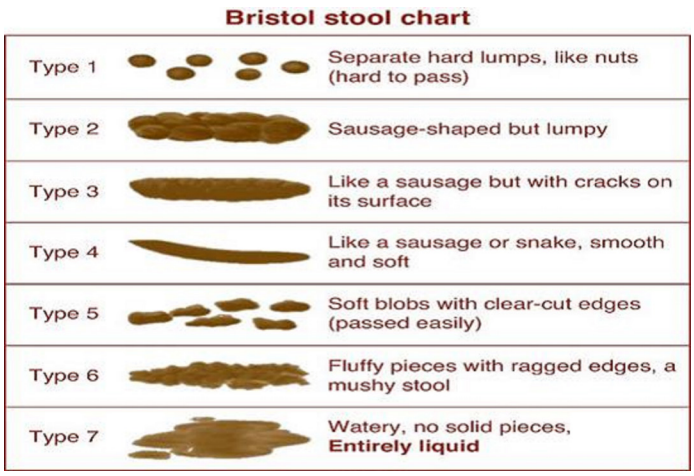

Figure 1. Bristol stool scale chart (10)

MATERIAL and METHODS

This study was performed on381 healthy people 220 of whom were women and 161 of whom were men. The 381 healthy people whoapplied to Alanya Life Hospital, Bahar Diet Nutrition Consultation Center and Alanyaşam Nutrition Consultation Center between 2016 and 2017. People in this study didn't haveany chronical diseases diagnose (heartdiseases, liver diseases, kidney diseases, diabetes, people with any gastrointestinal conditions which were needed to take antidiarrheal or constipation drugs, inflamatuary bowel disease (chrone, ulcerative colitis, spastic colon, diverticuler colon diseases), weren't in pregnancy term, didn't useany antibotic drugs for the last two months, didn't take any vitamin or mineral supplements, weren't a vegeterian, didn't use any prebiotic or probiotic drugs.

Data collection tools

Study datas were collected-byquestionnaire form which contained 37 questions on the purpose of determiningsocio -demographic properties, nutrition habits and bowel movements. The questionnaire form contained demograpghic properties (age, education status, social assurance etc.), nutritional habits, defecation habits, exercise habits, fibre information levels, stool consistence scale (bristol stool scale chart), the status of whether people consume different fibre types and consumption frequencies of fibre types and 3 days food consumption register.

Ethical committee

Permission that was needed for carrying out the study was taken from Acıbadem University Ethical Committee.

Statistical Analysis

While the findings were assesed obtained from the study,SPSS 24.0 Statistic Packet Programme was used. While the study datas were assesed, descriptive statistical methods (frequency, percentage, mean, standart deviation)

were used. Pearson Chisquare Test and Fisher Exact Test were used in comparison of categorical datas. Test and ANOVA were used in parameters between groups. Results were assesed in 95 % confidence interval.

RESULTS

The people's sociodemographic properties were given in Table 1. 42.3 % of them were 29 years and below, 36.2 % were 30-39 years, 14.2 % of them are 40-49 and 7.3 % of them were 50 years and over. 57.7 % of people were female, 42.3% of them were male. The people's averages of the anthropometric measures to sex was shown in Table 2. 51.4% of females were normal, 43.5% of males were overweight. This difference in body mass index was found significant in terms of statistical (p=0.000). The average fat percentage of female (28.8 %) washigher than male (21.1%). This difference between males and females was found significant (p=0,000).

Bristol stool scale of people to food consumption frequencies were shown in Table 3 and Table 4. It was compared consumption frequency of some foods with bristol stool scales. In the table, in 49% of people having a low Bristol score,spinach (is a source of insoluble fibre) consumption frequency was 1-2 times a week. In 57% of people having a middle Bristol score and 42% of people having a high Bristol scores, spinach consumption frequency was 1-2 times a week. When it was compared people having normal Bristol scores and low Bristol scores, it was shown that, in both groups, spinach consumption was the most frequent in 1-2 times a week.

Table 1. Sociodemographic properties of people

	Sociodemographic properties	n	%
	29 yearsand below	161	42.3
	30-39 years	138	36.2
Mean of age group	40-49 years	54	14.2
	50 years and over	28	7.3
	Total	381	100.0
	Female	220	57.7
Sex	Male	161	42.3
	Total	381	100.0
	Illiterate	3	0.8
	Literate	3	0.8
	Primary school graduate	50	13.1
Education level	Secondary shcool graduate	31	8.1
	High school graduate	148	38.8
	University or college graduate	146	38.3
	Total	381	100.0
	Not working/housewife	73	19.2
	Student	48	12.6
	Retired	7	1.8
	Worker	126	33.1
	Officer	40	10.5
Job	Self-employement	50	13.1
	Engineer	9	2.4
	Tourism professional	13	3.4
	Trainer	2	0.5
	Doctor/Dietitian/Physiotherapist	11	2.9
	Total	2	0.5

Table 2. Averages of the anthropometric measures to sex

Anthropometric measures		Female n(%)	Male n(%)	p
	<25	129(58.6%)	69(42.9%)	
Body mass index (kg/m2)	≥25	91(41.4%)	92 (57.1%)	0.002
	Total	220(100%)	161 (100%)	
	Weak (<18,5 kg/m2)	16(7.3%)	2(1.2%)	
	Normal (18,5-25 kg/m2)	113 (51.3%)	67 (41.6%)	0.000
Body mass index (kg/m2)	Overweight (25-30 kg/m2)	57(25.9%)	70 (43.5%)	
	Obese(>30 kg/m2)	34(15.5%)	22 (13.7%)	
	Total	220(100%)	161(100%)	
	<80	91 (41.4%)	<94 73 (82.0)	
Waist circumference (cm)	>80	129(58.6%)	>94 88 (54.7%)	
	Total	220(100%)	381(100%)	
	<0.8	93(42.3%)	<1 132(82.0%)	
Waist/hip ratio	>0.8	127(57.7%)	>1 29(18.0%)	
	Total	220(100%)	161(100%)	
	<0.4	4(1.7%)	0(0.0%)	
	0.4-0.5	103(47.0%)	55(34.2%)	0.006
Waist/height ratio	>0.5	112(51.3%)	106(65.8%)	
	Total	220(100%)	161(100%)	
Fat percentage mean (%)		28.8±9.1	21.2±7.7	0.000
Fat mass mean (g)		20.0±9.6	17.8±8.5	0.021
Fat free mass mean (g)		45.3±5.9	62.7±7.8	0.000
Body water mean(g)		33.5±19.4	43.7±6.2	0.000

Table 3a. Bristol stool scale of people to food consumption frequency I

Food consumption frequency		Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High sco- res(5-7)-Quick transit and impaired rectal sensivity		p
		n	%	n	%	n	%	
Rye bread	Everyday	13	44.8%	41	34.2%	6	33.3%	.953
	1-2 times a week	8	27.6%	34	28.3%	7	38.9%	
	3-4 times a week	2	6.9%	14	11.7%	2	11.1%	
	1 time in15 days	2	6.9%	12	10.0%	1	5.6%	
	1 time a month and less frequent	4	13.8%	19	15.8%	2	11.1%	
Wheat bread	Everyday	12	36.4%	41	30.4%	7	31.8%	991
	1-2 times a week	10	30.3%	46	34.1%	8	36.4%	
	3-4 times a week	4	12.1%	13	9.6%	1	4.5%	
	1 time in 15 days	2	6.1%	11	8.1%	2	9.1%	
	1 time a month and less frequent	5	15.2%	24	17.8%	4	18.2%	
Bulgur	Everyday	5	9.1%	12	5.7%	2	4.9%	.547
	1-2 times a week	31	56.4%	131	62.1%	26	63.4%	
	3-4 times a week	7	12.7%	35	16.6%	8	19.5%	
	1 time in 15 days	6	10.9%	21	10.0%	5	12.2%	
	1 time a month and less frequent	6	10.9%	12	5.7%	0	0.0%	
Cabbage	Everyday	6	11.8%	17	8.6%	4	11.4%	.697
	1-2 times a week	27	52.9%	84	42.4%	15	42.9%	
	3-4 times a week	5	9.8%	21	10.6%	4	11.4%	
	1 time in 15 days	2	3.9%	34	17.2%	6	17.1%	
		11	21.6%	41	20.7%	6	17.1%	

Table 3b. Bristol stool scale of people to food consumption frequency I

Food consumption frequency		Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High sco- res(5-7)-Quick transit and impaired rectal sensivity		p
		n	%	n	%	n	%	
Broccoli	Everyday	1	2.3%	5	2.7%	3	10.3%	.153
	1-2 times a week	24	54.5%	95	51.6%	12	41.4%	
	3-4 times a week	8	18.2%	16	8.7%	3	10.3%	
	1 time in15 days	3	6.8%	27	14.7%	2	6.9%	
	1 time a month and less frequent	8	18.2%	41	22.3%	9	31.0%	
Cauliflower	Everyday	1	2.1%	5	2.8%	2	5.9%	575
	1-2 times a week	27	56.2%	88	49.4%	17	50.0%	
	3-4 times a week	3	6.2%	15	8.4%	2	5.9%	
	1 time in 15 days	3	6.2%	33	18.5%	5	14.7%	
	1 time a month and less frequent	14	29.2%	37	20.8%	8	23.5%	
Spinach	Everyday	5	9.4%	3	1.5%	1	2.6%	.025
	1-2 times a week	26	49.1%	117	57.6%	16	42.1%	
	3-4 times a week	7	13.2%	16	7.9%	6	15.8%	
	1 time in 15 days	10	18.9%	31	15.3%	10	26.3%	
	1 time a month and less frequent	5	9.4%	36	17.7%	5	13.2%	
Banana	Everyday	11	17.2%	51	22.0%	11	24.4%	.830
	1-2 times a week	38	59.4%	108	46.6%	19	42.2%	
	3-4 times a week	7	10.9%	31	13.4%	6	13.3%	
	1 time in 15 days	4	6.2%	19	8.2%	4	8.9%	
	1 time a month and less frequent	4	6.2%	23	9.9%	5	11.1%	

Table 4a. Bristol stool scale of people to food consumption frequency II

Food consumption frequency		Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High sco- res(5-7)-Quick transit and impaired rectal sensivity		p
		n	%	n	%	n	%	
Apple	Everyday	17	27.0%	95	41.1%	20	44.4%	.401
	1-2 times a week	31	49.2%	79	34.2%	15	33.3%	
	3-4 times a week	10	15.9%	29	12.6%	4	8.9%	
	1 time in15 days	2	3.2%	11	4.8%	3	6.7%	
	1 time a month and less frequent	3	4.8%	17	7.4%	3	6.7%	
Pear	Everyday	6	10.2%	22	11.0%	6	16.7%	.661
	1-2 times a week	34	57.6%	98	49.0%	20	55.6%	
	3-4 times a week	6	10.2%	25	12.5%	5	13.9%	
	1 time in 15 days	2	3.4%	17	8.5%	2	5.6%	
	1 time a month and less frequent	11	18.6%	38	19.0%	3	8.3%	
Avacado	Everyday	10	20.4%	44	22.0%	5	13.9%	.529
	1-2 times a week	21	42.9%	75	37.5%	17	47.2%	
	3-4 times a week	8	16.3%	24	12.0%	6	16.7%	
	1 time in 15 days	5	10.2%	15	7.5%	4	11.1%	
	1 time a month and less frequent	5	10.2%	42	21.0%	4	11.1%	
Carrot	Everyday	12	20.3%	36	17.0%	11	25.0%	.410
	1-2 times a week	34	57.6%	101	47.6%	15	34.1%	
	3-4 times a week	5	8.5%	39	18.4%	9	20.5%	
	1 time in 15 days	3	5.1%	11	5.2%	3	6,8%	
	1 time a month and less frequent	5	8.5%	25	11.8%	6	13.6%	

Table 4b. Bristol stool scale of people to food consumption frequency II

Food consumption frequency		Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High sco- res(5-7)-Quick transit and impaired rectal sensivity		p
		n	%	n	%	n	%	
Orange	Everyday	14	24.1%	74	33.3%	11	26.2%	.555
	1-2 times a week	33	56.9%	94	42.3%	17	40.5%	
	3-4 times a week	6	10.3%	30	13.5%	8	19.0%	
	1 time in15 days	3	5.2%	10	4.5%	2	4.8%	
	1 time a month and less frequent	2	3.4%	14	6.3%	4	9.5%	
Peach	Everyday	11	19.3%	49	24.9%	10	25.6%	.771
	1-2 times a week	27	47.4%	82	41.6%	19	48.7%	
	3-4 times a week	8	14.0%	26	13.2%	5	12.8%	
	1 time in 15 days	5	8.8%	12	6.1%	0	0.0%	
	1 time a month and less frequent	6	10.5%	28	14.2%	5	12.8%	
Apricot	Everyday	12	25.5%	35	20.6%	13	36.1%	.310
	1-2 times a week	17	36.2%	60	35.3%	12	33.3%	
	3-4 times a week	8	17.0%	25	14.7%	3	8.3%	
	1 time in 15 days	5	10.6%	10	5.9%	3	8.3%	
	1 time a month and less frequent	5	10.6%	40	23.5%	5	13.9%	
Haricot bean	Everyday	3	4.5%	7	3.0%	0	0.0%	.739
	1-2 times a week	37	55.2%	111	47.4%	22	48.9%	
	3-4 times a week	5	7.5%	12	5.1%	3	6.7%	
	1 time in 15 days	15	22.4%	77	32.9%	14	31.1%	
	1 time a month and less frequent	7	10.4%	27	11.5%	6	13.3%	

Table 4c. Bristol stool scale of people to food consumption frequency II

Food consumption frequency		Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High sco- res(5-7)-Quick transit and impaired rectal sensivity		p
		n	%	n	%	n	%	
Lentil	Everyday	2	3.1%	18	7.6%	3	6.7%	.571
	1-2 times a week	37	57.8%	112	47.5%	24	53.3%	
	3-4 times a week	6	9.4%	23	9.7%	7	15.6%	
	1 time in15 days	12	18.8%	53	22.5%	9	20.0%	
	1 time a month and less frequent	7	10.9%	30	12.7%	2	4,4%	
Walnut	Everyday	29	42.6%	93	39.2%	19	44.2%	.345
	1-2 times a week	23	33.8%	86	36.3%	13	30.2%	
	3-4 times a week	4	5.9%	23	9.7%	6	14.0%	
	1 time in 15 days	8	11.8%	16	6.8%	0	0.0%	
	1 time a month and less frequent	4	5.9%	19	8.0%	5	11.6%	
Almond	Everyday	18	29.0%	59	28.6%	11	26.2%	.936
	1-2 times a week	27	43.5%	82	39.8%	17	40.5%	
	3-4 times a week	5	8.1%	23	11.2%	7	16.7%	
	1 time in 15 days	7	11.3%	19	9.2%	4	9.5%	
	1 time a month and less frequent	5	8.1%	23	11.2%	3	7.1%	

When the other frequency status were examined, it was shown that 19% of people having slow bristol score consumed spinach 1 time in 15 days, 17% of people having normal Bristol score consumed spinach 1 time a month or less. When it was compared, people having normal and high Bristol scores in both group, spinach consumption was 1-2 times a week mostly. When we examine the next majority of frequences, 17% of people having normal Bristol score consumed spinach 1 time a week, 26% of people having high bristol score consumed spinach 1 time in 15 days. Difference between groups found significant in terms of statistical (p=0.025).

Comparison of male' and female's bristol scores to status of fibre consumption sufficiency was shown in Table 5. It was shown that the comparison of male,and female's bristol scores status of fibre consumption sufficiency. While 21% female people consuming insufficient amount of fibre had low bristol scores, 19% of female people consuming sufficient amount offibre had low bristol score. This difference between groups wasn't significant statistically (p=0.824).

5% of male consuming sufficient amount fibre had low bristol score, while 17% of insufficient amount fibre had low bristol score. This difference wasn't found significant statistically p=0.426).

Comparing daily average total, insoluble and soluble fibre amounts and bristol scores by grouping temper to people's boy mass index were shown in Table 6 and Table 7.

The daily average fibre consumption of people whose body mass index was 25 kg/m^2 and over (25.4 g±12.47585) was found significantly higher than people whose body mass index was 25 kg/m^2 (20.6 g±10.10302) below (p=0.01).

Table 5. Comparison of male' and female's bristol scores to status of fibre consumption sufficiency

FEMALES		25 g and below		25 g and over		p
		n	%	n	%	
Bristol Scores	Low scores (1,2)-slow transit	33	21.0%	12	19.0%	.24
	Middle scores (3,4)-normal transit	103	65.6%	44	69.8%	
	High scores(5-7)-High sco-res(5-7)-Quick transit and impaired rectal sensivity	21	13.4%	7	11.1%	
		38 g and below		38 g and over		p
		n	%	n	%	
Bristol Scores	Low scores (1,2)-slow transit	25	17.5%	1	5.6%	.426
	Middle scores (3,4)-normal transit	99	69.2%	14	7.8%	
	High scores(5-7)-High sco-res(5-7)-Quick transit and impaired rectal sensivity	19	13.3%	3	1.7%	

The average insoluble fibre consumption of people whose body mass index was 25 kg/m^2 and over (15.2 g±8.10010) was significantly higher than the average insoluble fibre of people whose body mass index was 25 kg/m2 below (11.5 g±5.80687) (p=0.001).

Comparison of whole people's Bristol scores temper to their total, soluble and insoluble fibre amount was shown in Table 8. Differences of total, soluble and insoluble fibre amount between groups temper to Bristol scores variable weren't found significant (p>0.05).

Table 6. Comparing daily average total, insoluble and soluble fibre amounts and bristol scores by grouping temper to people's boy mass index I

	Bristol scores	BMI group	Average	Sd.	n	p
Daily average total fibre (g)	Low scores (1,2)-slow transit	25 kg/m² below	19.4217	6.47714	41	
		25 kg/m² and over	25.9770	17.67542	30	
		Total	22.1915	12.80779	71	
	Middle scores (3,4)-normal transit	25 kg/m² below	20.8160	10.73253	136	
		25 kg/m² and over	26.1876	11.62804	124	.199
		Total	23.3778	11.46638	260	
	High scores(5-7)-Hi- gh scores(5-7)-Quick transit and impaired rectal sensivity	25 kg/m² below	22.3252	11.73735	21	
		25 kg/m² and over	21.8497	8.83355	29	
		Total	22.0494	10.04373	50	
	Total	25 kg/m² below	20.6874	10,10302	198	
		25 kg/m² and over	25.4656	12.47585	183	01
		Total	22.9824	11.54021	381	

Table 7. Comparing daily average total, insoluble and soluble fibre amounts and bristol scores by grouping temper to people's boy mass index II

		BMI group	Average	Sd.	n	p
Daily average total fibre (g)	Low scores (1,2)-slow transit	25 kg/m² below	11.0629	4.00712	41	
		25 kg/m² and over	16.1963	9.58503	30	
		Total	13.2320	7.33204	71	
	Middle scores (3,4)-normal transit	25 kg/m² below	11.5211	5.95121	136	
		25 kg/m² and over	15.5474	8.09508	124	.199
		Total	13.4413	7.32400	260	
	High scores(5-7)-High scores(5-7)-Quick transit and impaired rectal sensivity	25 kg/m² below	13.1286	7.60757	21	
		25 kg/m² and over	13.0200	6.07898	29	
		Total	13.0656	6.68895	50	
	Total	25 kg/m² below	11.5967	5.80687	198	
		25 kg/m² and over	15.2533	8.10010	183	01
		Total	13.3530	7.22854	381	
	Bristol scores	**BMI group**	**Average**	**Sd.**	**n**	**p**
Daily average total fibre (g)	Low scores (1,2)-slow transit	25 kg/m² below	6.4117	2.61960	41	
		25 kg/m² and over	8.2737	6.22822	30	
		Total	7.1985	4.56615	71	
	Middle scores (3,4)-normal transit	25 kg/m² below	7.3650	4.91639	136	
		25 kg/m² and over	8.5099	3.97023	124	.324
		Total	7.9110	4.51805	260	
	High scores(5-7)-High scores(5-7)-Quick transit and impaired rectal sensivity	25 kg/m² below	8.1100	4.87814	21	
		25 kg/m² and over	7,4834	4.57532	29	
		Total	7.7466	4.66609	50	
	Total	25 kg/m² below	7.2466	4.53952	198	
		25 kg/m² and over	8.3085	4.49340	183	.182
			7.7567	4.54265	381	

Table 8. Comparison of whole people's bristol scores temper to their total, soluble and insoluble fibre amount

Bristol scores	Low scores (1,2)-slow transit		Middle scores (3,4)-normal transit		High scores(5-7)-Quick transit and impaired rectal sensivity		F	P
	Average	Sd.	Average	Sd.	Average	Sd.		
Daily average total fibre (g)	23.043	17.982	25.369	13.410	23.872	12.112	0.342	0.711
Daily average insoluble fibre (g)	13.417	9.621	13.976	7.917	13.006	7.979	0.154	0.857
Daily average soluble fibre (g)	8.057	6.414	8.865	5.542	9.041	5.877	0.241	0.786

DISCUSSION

The aim of this study is to determine the effect of different amounts of soluble-insoluble fibre consumption on colonic transit time in adults, beyond dietary fibre positive effects on colonic transit time and to increase the variety of dietary fibre consumption revealing how colonic transit time changes in accordance with fibre types. In studies performing about colonic transit time, foods quering to determine of which fibre types are consumed is restricted. In our study, foods were questioned in detail. In our study, the relations- hip between soluble-insoluble and total fibre amount and colonic transit speed was also questioned.

In a study that was a randomise cross-sectional performing by Lybus et al. (1983), they wanted to anaylise the effects of dietary pectin (12 g/day), cellulose (15 g /day) and lignin (12 g/day) on stool properties. Consequences of the study; it was shown that, pectin didn't show any effect on average stool pH, transit time and 24 hour wet stool mass; cellulose decreased average stool pH from 6.38 to 6.25, it decrased transit time 27% and increased wet stool mass 57%; lignin decreased stool pH from 6.34 to 6.25, it decrased stool transit time 20% and increased wet stool mass 27%, but these changes weren't significant statistically (13). In our study, it was compared insoluble fibre sources containing much cellulose with Bristol scores. When people having normal and high Bristol scores were compared, in both groups, spinach (contains high cellulose) consumption frequency was mostly seen in 1-2 times a week. When we examine the other majorities, it was shown that 17% of people having normal Bristol scores consumed spinach 1 time or less a month, 26% of people having high Bristol scores consumed spinach 1 time in 15 days. This difference between groups was found significant statistically. In view of this consequence, when it was compared, people having high and normal Bristol scores, in groups consuming spinach more frequent, Bristol scores were significantly higher. When it was compared, people having normal and high colonic transit time, it can be stated that colonictransit speed increases by increasing insoluble fibre consumption. Meier et al. (1993), had a study that they wanted to see the effects of the liquid diet that was added soluble and insoluble fibre on intestinal transit and cholecystokinin releasing in. According to the result of this study, adding 21g soluble fibre to a liquid diet didn't affect orocecal transit time. In addition, when fibre added diet compared with liquid diet (39 hours) and normal diet (30 hours) , colonic transit time was prolonged (55 hours) and stool frequency and consistency weren't affected in fibre added diet (14). In our study, Bristol scores of people whose consumption of soluble fibre most were found higher (9 g±5.8). This situation was shown that soluble fibre increases colonic transit time. However this result wasn't found statistically significant. This result may be based on people's error statement of foods consumption amounts, or may be based on wrong or deficient answers to the bristol scores. It is known that bristol stool scale isn'tonly the factor determining colonic speed. So, the result may also be nonsignificant for this reason. Cummings et al., (1976) performed a study they wanted to observe changes on fecal composition and colonic function in view of grain fibre consumption in. As a result, they reported that increasing dietary fibre from 17 g/day to 45 g/day increased fecal weight and decreased transit time (15). In our study, it was compared toseveral foods that contain grain with Bristol scores and it was found, there wasn't any differences between the groups. Sung IK et al. (2000), performed a study that they aimed to evolute the effects of dietary fibre on normal bowel habit and transit time in healthy people. The result of the study was that, decreasing dietary fibre consumption was related toincreased transit time and the result was statistically siginficant (16). In our study, it examined the effects of total, soluble and insoluble dietary fibre amounts andeffects of the dietary fibre types on colonic transit time.

As a result, it was seen that people consumed the most amount of total fibre had normal Bristol score. This result wasn't statistically significant. If there was a significant result, we could say,the more people consume total fibre, the more they had colonic transit time.

It is seen that studies about the effect of fibre type and amount on colonic transit speed are limited. Additionally, foods quering in studies were limited also. In our study, consumption frequency of foods containing soluble and insoluble fibre was widely queried with “Food Frequency Quesitonnaire”. The amount of soluble and insoluble fibre consumption was obtained with 3 days food consumption registered.

When a normal Bristol score and a low Bristol score were compared, spinach consumption was the most frequent in 1-2 times a week. Therefore, performing the comparison with the other frequency status' and it was shown that 19% of people havinga low Bristol score consumed

spinach 1 time in 15 days, 17% of people having a normal Bristol score consumed spinach 1 time a month or less. When it was compared people having a normal and a high Bristol score in both groups, spinach consumption was 1-2 times a week mostly. When the next majority of frequencies were examined, it was shown that 17% of people having normal Bristol scores consumed spinach 1 time a week, 26% of people having a high Bristol score consumed spinach 1 time in 15 days. Difference between the groups was found significantly in terms of statistical. With reference to this result, when it was compared people having high and normal Bristol scores, the Bristol scores were statistically higher in groups that consumed spinach more frequently.

In other words, we can say the more frequent consumption of insoluble fibre the faster colonic transit time it causes, when we compare people having normal and high colonic transit speed, we can say the more insoluble fibre consumption the more colonic transit speed it causes for spinach (a source of insoluble fibre).

In the study, foods like rye and whole wheat bread, bulgur, banana, apple, orange, apricot, pear, avacado, carrot, haricot, cabbage, cauliflower, broccoli, asparagus, almond, walnut,lentil were compared with Bristol scores but the results weren't found satistically significant. One of the most important causes of limited significant datacould be the difficulty oftheir amount and frequency of their food consumption when they have completed the food consumption record and food frequency questionnaire. In addition, the next missing aspect of the study is that the amount of foods were not asked in a day on food frequency questionnaire. For this reason, taking frequency as a criteria only is also one of a missing aspect of the study.

One of the hypothesis of the study was "the more it is consumed variety fibre, colonic transit speed shows variety too". The second hypothesis was "the more it is consumed, amount fibre,the faster colonic transit consists". When the findings are studied, colonic transit speed changes depending on fibre variety but the results aren't statisticially significant (Table 3 and Table 4). The second hypothesis' findings are seen in Table 6. In the table, the more it is consumed total daily fibre amount, not the more it hasn't been colonic transit speed. It was seen that people having maximum daily total fibre consumption didn't have a high bristol score (5,7), they had a normal Bristol score (3,4). This result indicates the fibre makes normal colonic transit speed. As specified in the literature, fibre increases slow colonic transit; and it normalises fast colonic transit (17).

It is known that effects of dietary fibre on people health. Prospective cohort studies about fibre show that high levels fibre consumption decreases especially type 2 diabetes and coroner hearth disease risk. Similar epidemiological evidences also show that dietary fibre is protective against gastrointestinal diseases depending on effects of fibre on bowel transit time, stool weight, bile acid metabolism, intraluminal pressure and fermentation by colonic microflora (18).

Even though fibre divides to species as soluble and insoluble, both have partner contributions to metabolism. It is difficult to say soluble-insoluble fibre benefits seperately by looking only fibre amounts of foods. For increasing wastable of this useful functional food, it must be awareness studies.It was performed that useful effects of fibre differ key to its types with studies. This study remarks that in addition to fibre consumption amount, it must also be cared fibre types beyond dietary fibre is just a useful functional food.

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Araştırma Makalesi / Research Article

Comparison of The Efficiency of ESWT and ESWT with Kinesio Taping Treatments in Lateral Epicondylitis

Lateral Epikondilitte ESWT ve ESWT ile Kinesio Bantlama Tedavilerinin Etkinliğinin Karşılaştırılması

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Abstract

Aim: To determine the effect of only ESWT(Extracorporeal shock wave theraphy) method to the combined use of ESWT method with kinesio taping method on lateral epicondylitis and determine the superiority of these methods.

Material and Methods: 96 patients (69 females, 27 males) between 27-65 age diagnosed with lateral epicondylitis were included in the study. The patients were divied in two groups. In Method 1 group, ESWT was applied on lateral epicondyle in each of the three sessions. Following this, kinesio taping was applied to the forearm of the patient. In Method 2 group applied only ESWT on lateral epicondyle.VAS (Visual analogue scale) was used to assessment of pain with rest, resistant wrist extension, and palpation. HAQ (health assessment questionnaire) was used for the assessment of general health condition.

Results: Method 1 showed that the reduction of pain in the wrist extension was more effective in the treatment of male patients compared to method 2 and also there was a significant difference in the evaluation of pain with palpation in the treatment of female patients compared to method 2. Significant healing was found in all other parameters however, no statistically significant difference was found.

Conclusion: The result of the effects of taping method with ESWT technique in increasing proprioceptive healing in females and decreasing pain with resistant wrist extension in males, was concluded that "the combined use of kinesio taping method with ESWT method is effective than using only ESWT method".

Keywords: Lateral epicondylitis, tennis elbow, ESWT, kinesio taping

Oz

Amaç: Fizik tedavi uygulamalarında sıkça kullanılan sadece ESWT yönteminin lateral epikondilitte etkisi ile kinesio bantlama yöntemiyle kombine kullanılmasının etkisini ve bu yöntemlerin birbirlerine üstünlüğünü belirlemektir.

Materyal ve Metod: Çalışmaya lateral epikondilit tanılı 27-65 yaş arası 96 hasta (69 kadın, 27 erkek) dahil edildi. Has- talar iki gruba ayrıldı. Grup 1 grubunda lateral epikondil'e ESWT(Ekstracorporeal şok dalga tedavisi) ile her üç seansta uygulandı. Ardından hastanın önkol bölgesine, kinesio bantlama uygulandı. Sadece ESWT uygulanan grup 2 grubunda, lateral epikondile ESWT uygulandı. Hastaların tümüne istirahat halinde, dirençli elbileği ekstansiyonu, palpasyon ile ağrı değerlendirmelerinde VAS (visuel analog scala), genel sağlık durumu değerlendirmesinde HAQ (health assessment questionnaire) değerlendirmeleri uygulandı.

Bulgular: Grup 1 ile erkek hastaların tedavisinde, dirençli elbileği ekstansiyonda ağrı azalmasının grup 2'ye göre daha etkili olduğu belirlendi. Aynı zamanda Grup 1 ile kadın hastaların tedavisinde palpasyon ile ağrı azalması değerlendir- mesinde, grup 2'ye göre anlamlı fark olduğu belirlendi. Diğer tüm parametrelerde anlamlı iyileşmeler belirlendi fakat istatiksel olarak anlamlı bir fark tespit edilemedi.

Sonuç: Lateral epikondilitte yaygın olarak kullanılan ESWT yöntemi iyileşmede etkili bulundu. Bantlama yönteminin de kadınlarda proprioseptif iyileşmeyi arttırma etkisi ve erkeklerde dirençli elbileği ekstansiyonu ile ağrıyı azaltması sonucu, bu yöntemin ESWT yöntemiyle birlikte destekleyici bir tedavi olarak uygulanmasının etkili olacağını göstermektedir.

Anahtar Kelimeler: Lateral epikondilit, tenisçi dirseği, ESWT, Kinesyo bantlama

INTRODUCTION

Lateral epicondylitis is a syndrome defined with pain in extensor muscles in the region of the lateral epicondyle and its pathogenesis is still not known completely (1). Its etiology includes regional injury, mechanical imbalance, aging, vascular and hereditary functions (2). Inflammatory changes occur in the acute phase and studies conducted

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with ultrasonography (USG) tendinitis, peridentinitis, bursitis and inflammatory hematoma have been defined in the extensor region. Experts diagnose lateral epicondylitis with pain with wrist extension, pain with palpation to extensor region and with diagnostic provocative tests. Recurrent uses should also be looked for in the history (3). Lateral epicondylitis is 4 times more widespread in the fourth decade of life; however, it is also seen in other decades of life, too (4). Although this problem is called tennis elbow, it is seen in people who are not tennis players with a rate of 95% (5). Although it is not easy to diagnose lateral epicondylitis, it does not have a standard protocol and more than 40 treatment methods have been defined. Conservative, medical and surgical procedures are applied in the treatment. Conservative treatment is the most preferred type of treatment and the purpose is to decrease the pain and increase the function (6). Experts use progressive strengthening technique the most, also ultrasound (US), manipulation, cyrax, lateral glide, extracorporeal shock wave therapy (ESWT), splinting, resting, hot-cold, electrotherapy and massage are applied (3).

Eisenmenger defined the physical characteristics of ESWT waves in 1959 for the first time and stated that high intensity sound waves were applied in the treatment method (7). Shock waves were first applied in 1980s to break kidney stones. While breaking lower ureteral stones, studies started in bone tissues also as a result of realizing the changes in ilium. Since 1990, studies have been conducted about the use of this method in orthopedic diseases (8). ESWT method has also begun to be used in the locomotor system since the acute impedence value of the bone tissue is close to the urinary system stones. In orthopedics, it is primarily used in non-uniting fractures, lateral humeral epicondylitis, plantar fascillitis, shoulder calcified tendinitis and revision plasty (9, 10).

Kinesio tape is an elastic tape found by Dr. KenzoKase in 1973. Kinesio tape's general effect is to stimulate the subdermal lymph and blood circulation and enable the tissue to work easily physically by sticking to the upper layer of the skin and collecting together the elastic fibers here (11). Kinesio tape is also very effective on joints. The idea that taping method decreases the protection mechanism of the muscles and eases the tendon and ligament movement by developing the biomechanics and line of the joint is at the forefront (12). The opinion that the tension in these tissues can be decreased with inhibition and an increase can be seen in proprioception by relieving the pressure on structures such as muscle, tendon, nerve and ligaments is also supported (13-16).

We aimed to compare the use of kinesio taping in combination with ESWT in the treatment of lateral epicondylitis with using only ESWT method in this study.

MATERIAL and METHODS

This study was conductedon a total of 96 volunteer patients 69 females (71.8%) and 27 males (28.2%) between the ages of 27 and 65 who referred to Private Sevgi Medical Center Physiotherapy outpatient clinic and who were diagnosed with lateral epicondylitis as a result of clinical assessment between the dates 01.03.2015 and 30.10.2015. The average age of the patients was 47±8. While the average age of the female patients was 47±9, the average age of the male patients was 46±6. While the average age of the male patients treated with Method 1 (11 patients) was 49±7, the average age of the male patients treated with Method 2 (16 patients) was 44±6. While the average age of the female patients treated with Method 1 (37 patients) was 45±8, the average age of the female patients treated with Method 2 (32 patients) was 49±10. This study was conducted with the 2015/90 numbered permission of Malatya Clinical Researches Ethical Board.

A total of 96 patients (69 women (71.8%) and 27 men (28.2%)) were treated and evaluated for at least 1 month of conservative treatment (splint, analgesic, resting, antiinflammatory, ice, us, electrotherapy) due to complaints of at least 1 lateral epicondylitis.

The patients who had bilateral symptom, tendon rupture and tumoral disease, those who had undergone wrist joint operation, patients with neurogenic activation, the pregnant and those who did not cooperate as a result of cognitive disorder were not included in the study.

Treatment

1st group: ESWT with Kinesio taping with Method 1

2nd group: Only ESWT with method 2

In our first group, kinesio taping method was applied with ESWT. ESWT technique was applied with 2000 shock wave 2.0 bar pressure with a speed of 8-10 br. by EMS Swiss Dolorcast ESWT device to the target area with the help of gel in a vertical and circular way. Following the ESWT application, the first taping was applied to the forearm of the patient by clinicians with inhibition technique, which is the commonly used taping method in lateral epicondylitis, with a stretch of 15-25%, when the wrist was in full flexion and the elbow was in extension, in a longitudinal direction, ending past the lateral epicondyle (Figure 1-A),

Figure1. A-Longitudinal taping,B-oblique taping.

Later, the second taping was applied when the wrist was again in full flexion and the elbow was in extension, with a stretch of 15-25%, crossing the lateral epicondyle and the first tape in oblique direction from ulna 1/3 proximal and ending at humerus lateral supracondylar region (Figure 1-B).

We explained the patient that the tape's property was water resistance and the tape had to stay until the next treatment.This taping method was applied after the first session, after the second session and after the third session, the tape was taken off 4 days after the third session and the patient was informed about avoiding activities that forced the elbow until the control session. Only control session was performed 4 weeks later. The same assessments in the first three sessions were performed in the control session; however, ESWT and taping technique were not applied. In the second group, 2000 shock wave was applied with 2.0 bar pressure with a speed of 8-0 unit with EMS Swiss Dolorcast ESWT device to the target area with the help of gel in a vertical and circular way to the patients. The sessions were performed once every four days. The patient was informed about avoiding activities that forced the elbow. The same assessments in the first three sessions were performed but ESWT technique was not applied in control session. Assessment of Pain: Visual Analog Scale (VAS) was used to assess pain. The patient was informed that 0 showed that there was no pain, 5 showed that there was mild pain, 10 showed that there was unbearable pain and the values in-between; in each session, the patients were told about the value they got in the previous session and as a conclusion, they were questioned precisely how their pain changed in relation to the previous pain. VAS assessment method was used in the assessment of pain with resistant wrist extension, palpation of lateral epicondyle and resting time. HAQ: This questionnaire which includes a large scale general health assessment includes 8 categories about disability index. Each category has 2 or 3 questions and each question is scored between 0 and 3, there are a total of 20 questions. With these questionnaire, self-care and dressing oneself, eating, sitting, walking, hygiene, laying down and other activities were assessed in each session (once every four days) and 4 weeks after the sessions ended. During statistical assessment, total scores were divided in 8 and assessed like the original text of the questionnaire.

Statistical Analysis

The data were given in median (minimum-maxi-mum), average (standard deviation) and number (percentage). Shapiro-Wilk test was conducted for normality assumption. Mann-Whitney U test, independent samples t test, Wilcoxon test and Friedman test were used for statistical analyses. $p<0.05$ value was considered as statistically significant. IBM SPSS Statistics 22.0 program was used for analyses.

RESULTS

This study consists of two groups as ESWT with kinesio taping (Method 1) and only ESWT (Method 2). There are 48 patients in each group (11 males and 37 females in group method 1 and 16 males and 32 females in method 2). In both groups before treatment, before the second session, before the third session and a month later after the sessions ended, pain while resting (VAS), pain with resistant wrist extension (VAS), pain with lateral epicondyle palpation (VAS) and HAQ were assessed.

In the assessment of pain while resting with VAS, it was found that the median values in the VAS changes of male patients during rest in Method 1 were 4 points in the first session, 2 points in the second session and 0 in the third and control sessions (<0.001). The VAS changes of male patients during rest in Method 2 were 4.5 points in the first session, 3.5 points in the second session, 3 points in the third session and 1.5 in the control session ($p=0.041$) (Table 1).

The VAS changes of female patients during rest in Method 1 were 5 points in the first session, 4 points in the second session, 4 points in the third session and 1 point in the control session ($p<0.001$). The VAS changes of female patients during rest in Method 2 were 5 points in the first session, 5 points in the second session, 4 points in the third session and 3 in the control session ($p=0.001$) (Table 1).

Friedman analysis was conducted to find out whether there was statistically significant difference between the first, second, third and control sessions. Friedman analysis results showed significant difference between the scores of males and females in the Method 1 and Method 2 groups ($p<0.05$) (Table 1).

In the assessment of pain with resistant wrist extension with VAS, it was found that the median values in the VAS changes of male patients in resistant wrist extension test in Method 1 were 5 points in the first session, 2 points in the second session, 1 point in the third session and 0 in the control session ($p=0.004$). The median values in the VAS changes of male patients in resistant wrist extension test in Method 2 were 4.5 points in the first session, 4 points in the second session, 4.5 points in the third session and 2 points in the control sessions ($p=0.204$) (Table 1).

The median values in the VAS changes of female patients in resistant wrist extension test in Method 1 were 6 points in the first session, 4 points in the second session, 2 points in the third session and 1 point in the control session ($p<0.001$). The median values in the VAS changes of female patients in resistant wrist extension test in Method 2 were 4.5 points in the first session, 4 points in the second session, 4 points in the third session and 1.5 in the control session ($p <0.001$) (Table 1).

Friedman analysis was conducted to find out whether there was statistically significant difference between the first, second, third and control sessions. While significant difference was found in the scores of males and females between sessions in resistant wrist extension test with Method 1, significant difference was found only in the

scores of females between sessions with Method 2 ($p<0.05$) (Table 1).

In the assessment of pain with palpation with VAS, it was found that the median values in the VAS changes of male patients in pain with palpation in Method 1 were 5 points in the first session, 3 points in the second session, 1 point in the third session and 0 in the control session ($p=0.005$).

The median values in the VAS changes of male ptients in pain with palpation in Method 2 were 5 points in the first session, 4.5 points in the second session, 4.5 points in the third session and 2.5 in the control session ($p=0.021$) (Table 1).

The median values in the VAS changes of female patients in pain with palpation in Method 1 were 6 points in the first session, 5 points in the second session, 4 points in the third session and 2 points in the control session ($p<0.001$). The median values in the VAS changes of female patients in pain with palpation in Method 2 were 5 points in the first session, 4 points in the second session, 3 points in the third session and 2 points in the control session ($p<0.001$) (Table 1).

Friedman analysis was conducted to find out whether there was statistically significant difference between the first, second, third and control sessions. Friedman analysis results showed significant difference between the scores of males and females in the Method 1 and Method 2 groups ($p<0.05$) (Table 1).

In HAQ score changes, the median values of male patients in Method 1 were 0.75 points in the first session, 0.38 points in the second session, 0.25 points in the third session and 0.13 points in the control session ($p<0.001$). The median values of HAQ changes of male patients in Method 2 were 0.88 points in the first session, 0.75 points in the second session, 0.69 points in the third session and 0.38 points in the control session ($p=0.005$) (Table 1).

The median values of HAQ changes of female patients in Method 1 were 1.5 points in the first session, 1.25 points in the second session, 1 point in the third session and 0.63 points in the control session ($p<0.001$). The median values of HAQ changes of female patients in Method 2 were 1.44 points in the first session, 1.25 points in the second session, 1.19 points in the third session and 0.81 points in the control session ($p<0.001$) (Table 1).

Friedman analysis was conducted to find out whether there was statistically significant difference between the first, second, third and control sessions. Friedman

Table 2. Median, minimum and maximum and p values of VAS during rest, VAS with resistant wrist extension (RAE), VAS in pain with palpation and change in HAQ scores of the first, second, third and control sessions of male and female patients in Method 1 and Method 2 groups

VAS	Session	Male		Female	
		Method 1	Method 2	Method 1	Method 2
Rest	First	4 (0-7)	4.5 (0-8)	5 (0-10)	5 (0-9)
	Second	2 (0-6)	3.5 (0-7)	4 (0-9)	5 (0-9)
	Third	0 (0-5)	3 (0-7)	4 (0-10)	4 (0-10)
	Control	0 (0-5)	1.5 (0-8)	1 (0-10)	3 (0-10)
	p	<0.001	0.041	<0.001	0.001
Palpation	First	5 (0-10)	5 (2-8)	6 (2-10)	5 (0-9)
	Second	3 (0-5)	4.5 (0-8)	5 (0-10)	4 (0-9)
	Third	1 (0-6)	4.5 (0-8)	4 (0-10)	3 (0-10)
	Control	0 (0-5)	2.5 (0-8)	2 (0-10)	2 (0-10)
	p	0.005	0.021	<0.001	<0.001
RAE	First	5 (0-10)	4.5 (0-8)	6 (0-10)	4.5 (0-9)
	Second	2 (0-8)	4 (0-8)	4 (0-10)	4 (0-9)
	Third	1 (0-8)	4.5 (0-8)	2 (0-10)	4 (0-9)
	Control	0 (0-8)	2 (0-8)	1 (0-10)	1.5 (0-8)
	p	0.004	0.204	<0.001	<0.001
HAQ scores	First	0.75 (0.38-1.25)	0.88 (0-2.38)	1.5 (0.25-2.63)	1.44 (0.38-2.5)
	Second	0.38 (0-1.13)	0.75 (0-2.13)	1.25 (0-2.38)	1.25 (0.38-2.38)
	Third	0.25 (0-1.13)	0.69 (0-1.75)	1 (0-2.38)	1.19 (0-2.63)
	Control	0.13 (0-1)	0.38 (0-1.50)	0.63 (0-2)	0.81 (0-2.38)
		<0.001	0.005	<0.001	<0.001

analysis results showed significant difference between the scores of males and females in the Method 1 and Method 2 groups (p<0.05) (Table 1).

To compare Method 1 and 2 in terms of VAS during rest, independent samples t test was conducted for male patients, while Mann-Whitney U Analysis was conducted for female patients. According to the analysis results, no statistically significant difference was found between Method 1 and 2 in male and fema- le patients (p>0.05), (Table 2).

Since statistically significant differences were found between Method 1 and 2 in resistant wrist extension of male patients, method 1 was found to be effective and superiority differences were compared only between male patients. Independent samples t test was applied on the data to compare Method 1 and 2 in female patients. According to the results of independent samples t test analysis, no statistically significant difference was found in female patients between these two methods (p>0.05), (Table 2).

In order to compare Method 1 and 2 in female and male patients in terms of VAS change in pain with palpation, independent samples t test was used in male patients, while Mann-Whitney U test Analysis was used in female patients.

While statistically significant difference was found between Method 1 and 2 in female patients (p<0.05), no statistically significant difference was found between Method 1 and 2 in male patients (p>0.05), (Table 2).Independent samples t test was used to compare Method 1 and 2 in female and male patients in terms of HAQ assessment. No statistically significant difference was found between Method 1 and 2 in male and female patients according to independent samples t test analysis results (p>0.05), (Table 2).

While Method 1 was found to be more effective when compared with Method 2 in resistant wrist extension in male patients and more effective pain with palpation in female patients with method 1, both methods were found to be significant in VAS change with pain during rest and HAQ assessment; however, these methods are not superior to each other statistically.

Table 2. Median, minimum and maximum and p values of VAS during rest, VAS with resistant wrist extension (RAE), VAS in pain with palpation and change in HAQ scores of the first, second, third and control sessions of male and female patients in Method 1 and Method 2 groups

VAS	Method	Male		Female	
		Med (Min-Max)	p	Med (Min-Max)	p
Rest	1	4 (0-5)	0.17	1 (0-8)	0.797
	2	2 ((-3)-6)		2 ((-5)-8)	
Palpation	1	5 (0-9)	0.112	4 (0-9)	0.003
	2	1.5 ((-1)-7)		2 ((-6)-8)	
RAE	1	-	-	2 ((-5) - 8)	0.596
	2	-		2 ((-5) - 7)	
HAQ scores	1	0.38 (0-1.13)	0.67	0.63 ((-0.25)-2.25)	0.278
	2	0.38 ((-0.38)-1.38)		0.44 ((-0.75)-1.38)	

DISCUSSION

The results of our study showed that the combined use of the kinesio taping method with ESWT in the clinics was effective in the treatment of lateral epicondylitis in the scientific sense. Wang and Chen applied 1000 shock wave ESWT to 57 patients with an average age of 46 for 12 months and concluded that using shock waves in the treatment of patients with lateral epicondyle was a relative and effective modality (2). Lebrun compared active ESWT once a week as 3 weeks 2000 beats with placebo ESWT and concluded that active ESWT was effective in middle aged patients in terms of the assessment of increasing life quality and decreasing the pain (17). The studies of Wang and Lebrun support the result that the ESWT method reported in our study is effective and the application of 2000 beat frequency and 3 sessions in Lebrun's study were applied in our study too (p<0.05).

sixth and twelfth months. ESWT technique and the number of sessions were found to be effective similar our study (18).

Chung and Wiley conducted on 60 patients, applied active ESWT (2000 beats) and stretching exercises on one group and placebo ESWT and stretching exercises on the other group; they assessed rest with VAS as a result of 3 week and 12 month applications and found no difference in 8-weel-long period and reported that ESWT was not an effective treatment (19). Unlike the results of these studies, it was found in our study that active ESWT method and VAS assessment during rest were found to be effective in both groups. (p=0.041(male), p=0.001(female))

Pettrone et al. compared ESWT application with placebo group in lateral epicondylitis in patients with an average age of 47 and found that the active group which received treatment for 3 weeks with 2000 beats had significant recovery when compared with the placebo group in weeks 1, 4, 8 and 12 in terms of decrease in pain with palpation with VAS (21). Haupt et al. applied active ESWT to 61 patients with lateral epicondylitis and placebo ESWT to 55 randomized patients in weeks 1, 4 and 12. At the end of assessment 52 weeks later, it was found that active ESWT application was obviously superior in pain with palpation and resting pain (22).

Radwan et al. applied 1500 beat high energy ESWT to one group and widespread extensor tendon tenotomy to another group and assessed resting pain, pain and pain with palpation and reported that both groups showed significant progress in weeks 3, 6 and 12 and in month 12 (23). The results in Pettrone, Haupt and Radwan's studies that the decrease in VAS values in pain with palpation with ESWT application was significant(p=0.021(male), p<0.001(female)) and the result that resting pain with VAS were significant as in our study (p=0.041(male), p=0.001(female)) and it was found that these studies supported the results of our study.

Our ESWT (method 2) result on male patients are VAS during rest(p=0.041), VAS in pain with palpation (p=0.021), VAS with RAE(p=0.204), Change in HAQ scores(p=0.005).

Our ESWT (method 2) result on female patients are VAS during rest (p=0.001), VAS in pain with palpation (p<0.001).VAS with RAE (p<0.001), Change in HAQ scores(p<0.001). So all the result of ESWT method(except resistant elbow extension on male) on male and female patients are significantly effective.

Coonrad and Hooper reported that lateral epicondylitis was 4 times more common in the fourth decade of life, while it was also seen in other decades of life (4). Garg et al. reported that the risk of lateral epicondylitis increased linearly until the age of 47 and the risk of lateral epicondylitis increased with age (24). In our study, the average age of male patients was found as 46±6, while the average age of female patients was found as 47±9 and as a conclusion, Coonrad and Garg's view support our study about age average.

In their study they defined different treatment modalities and researched these methods, Luk et al. made VAS assessment and mentioned 40 treatment methods. They also reported that ESWT was accepted by national drug and food institutions only in plantar fascilitis and lateral epicondylitis and was not found to be effective by some studies, the use of taping was contradictive in lateral epicondylitis and no clear results were found so far, palpation with pressure was found to be effective; however, no other uses were found. In our study, taping was found to be effective in female patients on palpation with pressure (p<0.001) (25). In their study Gonzalez et al. reported that kinesio taping increased local circulation and facilitated muscles and inhibitory mechanism (26). Similarly, it was shown in our study that taping which was applied longitudinally inhibited the extreme movement of muscles and was effective inhibitory mechanism. Liu et al. made observations with tape and without tape in kinesio taping application in patients with lateral epicondylitis and reported that kinesio taping method had magnifying effect, which in turn developed muscle movement (13). In our study, significant increase was found in resistance to wrist extension in male patients and it was concluded that taping cont ributed to the development of movement in muscles (p=0.004).

In a study conducted on 16 patients, Vicenzino assessed pain with palpation before treatment, right after treatment and 30 minutes after treatment and treatment group was found to be significantly effective when compared with the placebo and control group, decrease was found in pain with palpation, which was not found to be statistically significant. As a conclusion, it was recorded that taping had a therapeutical effect and could be used as a supplement to treatment (27). In another study in which kinesio taping method was used for the treatment of patients with lateral epicondylitis, 31 patients with lateral epicondylitis were included and taping was performed twice a week for two weeks. Resting pain and pain with palpation were assessed with VAS and functional assessment questionnaire were made in weeks 2 and 6. Lateral epicondylitis recovered significantly after taping and it was concluded that this method was effective in decreasing pain and functional recovery in lateral epicondylitis (28). Studies by Vicenzo and Dilek support the results of our study that taping method is effective in female patients in VAS decrease in pain with palpation (p<0.001).

In Shamsoddini's study in which taping technique was applied, VAS scale was applied in 30 patients in minutes 5 and 10 after taping. Significant recovery was seen in the affected wrist extension and VAS scale assessments and it was concluded that taping had an increasing effect on wrist extension and decreased pain. The fact that these results were found significant and taping method was found effective supports the results of our study on wrist extension (p=0.004(male), p<0.001(female)) (29).

Our kinesio taping with ESWT(method 1) result on male patients are VAS during rest (p<0.001), VAS in pain with palpation(p=0.005), VAS with RAE(p=0.004), Change in HAQ scores(p<0.001).

Our kinesio taping with ESWT (method 1) result on female patients areVAS during rest (p<0.001), VAS in pain with palpation (p<0.001).VAS with RAE (p<0.001), change in HAQ scores(p<0.001). So all the result of kinesio taping with ESWT method on male and female patients are significantly effective.

This study shows the effects of ESWT and kinesio taping application in male and female patients with lateral epicondylitis on the recovery process of the disease.

The results that taping method increased proprioceptive recovery in female patients, decreased pain in resistant wrist extension in male patients, increased muscle function and helped regional recovery in lateral epicondylitis show that the application of this method as a supportive treatment with ESWT method will be more effective than application only ESWT method. We believe that our study will be a resource for future studies and will form a new perspective for clinicians working in this area.

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MEDICAL RECORDS-International Medical Journal

Araştırma Makalesi / Research Article

The Place and Importance of Dentistry in Consultation

Diş Hekimliğinin Konsültasyondaki Yeri ve Önemi

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Abstract

Aim: The aim of this study is to provide the opinions, professional problems and expectations of the dentists with respect to the consultation.

Material and Methods: In the study, a qualitative research method is followed, and the standardized open-ended interview technique is used during the process of data collection. The working group of the study is consisted of 14 dentists. In this regard, the focus point of the study includes the situations encountered during the examinations of the patients, the level of consultation between the medical doctors and dentists, situations which might be caused by the insufficiency of the consultation.

Result: As a result of this study, the facts have been obtained such as the facts that the dentists are more active in referring their patients to the medical doctors or establishing direct contact with them, however, the medical doctors do not consult to the dentists in the sufficient level; the patients are subjected to wrong diagnosis and applied wrong treatments because of the insufficient level of consultation;

Conclusion: Despite the increased level of communication among the dentists in the recent years, the communications between the dentists and the medical doctors is still not sufficient.

Keywords: Dentistry, medical practice, consultation, diagnosis, treatment

Oz

Amaç: Bu çalışmanın amacı, diş hekimlerinin konsültasyona yönelik görüşlerini, mesleki sorun ve beklentilerini ortaya koymaktır.

Materyal ve Metod: Çalışmada, nitel bir araştırma yöntemi izlenmiş olup, veri toplama sürecinde standartlaştırılmış açık uçlu görüşme tekniği kullanılmıştır. Araştırmanın çalışma grubunu, 14 diş hekimi oluşturmaktadır. Bu kapsamda hastaların muayeneleri sırasında karşılaşılan durumlar, tıp ve diş hekimleri arasındaki konsültasyonun düzeyi, konsültasyon yetersizliğinin neden olabileceği durumların ortaya konulması çalışmanın odak noktasını oluşturmaktadır. Yapılan çalışmada, diş hekimlerinin hastalarını tıp hekimlerine yönlendirme veya direk iletişim kurma konusunda daha aktif oldukları, ancak tıp hekimlerinin diş hekimlerine yeterli düzeyde danışmadıkları; konsültasyon yetersizliği nedeniyle hastalara yanlış tanı ve tedaviler uygulandığı belirtildi.

Sonuç: Son yıllarda diş hekimleri arasındaki iletişim düzeyi artmış olsa da genel olarak diş hekimleri ve tıp hekimlerinin iletişimlerinin yetersiz olduğu yönünde bulgular elde edilmiştir.

Anahtar Kelimeler: Diş hekimliği, tıp hekimliği, konsültasyon, tanı, tedavi

INTRODUCTION

Consultation is the exchange of opinions by more than one medical doctors for diagnosing or treating a disease (1). Söyüncü (2) addresses that consultation is one of the elements of the medical practice. The dentist is competent and authorised with practicing any professional activity, with respect to human health, in relation with protection of the health of the teeth, gums and mouth, as well as gingival tissue in direct relation with these, and diagnosis and detection, treatment and rehabilitation of the diseases and irregularities (3). The dentist is required to carry out all required proceedings, in accordance with the professional ethics, for preventing the patients from suffering and for their interests. Therefore, the dentist may request the consultation from the related units, if deemed necessary, with regard to the diagnosis, treatment and follow-up of the patient (4). The rules for consultations are laid down in Medical Deontology Regulation (5). Besides, the professional rules and rules of ethics, with which the practitioners requesting and conducting the consultation comply, are specified under the Declaration

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on Ethics of Medicine Profession issued by Turkish Medical Association.

The consultation between the dentist and the medical doctor might be in two form such as medical and dental consultation. The dentist might request medical consultation for medical evaluation or treatment of his patient, for laboratory tests or blood examination, for the need to change on the medical treatment of his patient, for suspecting a systematic disease on his patient or for being unable to take the sufficient and correct medical history from his patient. The medical doctor, as well, may request dental consultation from the dentist for treating the dental complaint of his patient, for preventing the complications which may arise following the treatments such as operations, radiotherapy, bone marrow transplantation or for detecting the odontogenic focuses on a patient who is considered to have focal infection (6). In the literature, the studies on the medical consultations of the dentists are more than the studies on the dental consultations of the medical doctors.

In this study, it is aimed, by addressing the necessity of mutual consultations of the medical doctors and dentists for the right diagnosis and specifying the treatment, to observe how the consultation is understood in the practice from the perspectives of the dentists and what the deficiencies of the consultation are.

MATERIAL and METHODS

While collecting data for the study, the standardized open-ended interview technique is used. In the standardized open-ended interview technique, the same questions are asked to the participants in the same systematic sequence. Therefore, the subjectivity is removed. In this method, it is considered that the comparison and analysis of the obtained data is easier (7-9).

14 dentists (10 males, 4 females), from 26 to 57 years old (average 36.1), who work in various parts of Turkey participate in this study. Professional levels of the participants vary from 1 to 32 years (average 11.8). One person only works at a public institution, 4 persons work only in private sector and 9 persons work both in public institutions and in private sector. Firstly, the literature review is carried out in the development of the means for data collection. In line with the review, a form consisting of ten questions is drawn up. In the framework of this form, 14 dentists are reached on the social media and they are asked the questions of the standardized openended interview, therefore the data is collected. While the interview might be performed face to face, it may also be carried out through question forms answered on the phone or other communication means, through postal service or by himself/herself (7,8). In the study, the data is deciphered in the descriptive analysis technique. While the answers are examined, the common opinions are specified in the form of a chart accompanied with their frequency and percentage values (Table 1). Moreover, the participant opinions are quoted directly, and related findings are aimed to be explained in a comprehensive way. While quoting, special attention is paid to explain the common opinions and express the distinctive opinions and suggestions. The dentists participating in the study are coded from H1 to H14 and the reference is indicated in the direct quotes included in the study.

RESULTS

Eight main questions are directed to the dentists during the interview, as well as the questions relating to their personal data. The findings obtained in the scope of the answers given to those questions are considered.

Accordingly:

- Findings on existence of a systematic disease in the line with the complaints of the patients

13 of the dentists participating in the study have generally and the other one has sometimes suspected of a systematic disease. One of the participants gives an example concerning his evaluation on this subject as "I observe tartar problem, condensed on the incisors of lower jaw, on the patients who breath by mouth or have obstacles obstructing the breathing such as septum deviation. Likewise, erosions are typical on the patient who has reflux. Papillary atrophy on the old diabetic patients typically indicates the B12 deficiency." [H3]. Another participant provides example such as "According to the medical history of the patient, I consult to the subject matter specialists concerning the pre-diagnosis of the diseases such as heart diseases, arrhythmia, gastritis and reflux."

- Findings on opinion exchange with other dentists

All of the participant dentists (14 persons) state that, when they have trouble to diagnose, they consult to the other dentists.

- Findings on consulting to the specialist medical doctor when suspecting diseases except mouth and teeth problems

7 of the participant dentists state that they consult directly to the specialist medical doctor and explain the situation when they get suspicious of a disease except mouth and dental health. 6 of the participants report that they do not consult directly to the medical doctors, however they direct the patient to them. 1 dentist states that he rarely consults directly to the medical doctor.

- Findings on contact of medical doctors with dentists concerning the patient and consultation

4 of the participant dentists state that the medical doctors do not contact with and consult to dentists when required. 6 of the participants state that they are consulted rarely by primarily ear nose and throat specialists and 4 of them state that they are consulted really seldom.

"Unfortunately, it is so rare to call it never, however I have experienced it 2-3 times." [H11]

"We do not observe it on the same frequency. The patients are referred as a quick preoperative examination before the operation, however sufficient time for the treatment is never available." [H13]

- Findings on the cases where the medical doctors apply wrong diagnosis and treatment as they have not consulted to the dentists

9 of the participant dentists state that they have encountered cases where medical doctors apply wrong diagnosis and treatment as they have not consulted to the dentists. 5 of the participant dentists state that they have not encountered such a case. The statements of the dentists concerning some of the cases are as follows:

"Recently, they were about to conduct a biopsy on the heart disease patient, I prevented it on the last minute." [H1]

"They once referred a patient stating that his tooth was aching, however they had not seen the cancer formation on the tongue base. It was diagnosed on the early phase. I rereferred my patient, whom was told that he had ulcer and it would be healed if he had his teeth treated, because of metastasis on the area of pulling out in his mouth." [H2]

"The patient was consulted late for the submasseteric abscess caused by number 48. The patient had to take iv antibiotics for a long time." [H3]

"I came across with the treatment for months of extra oral fistula caused by lesion on the teeth No. 31 and 41. The fistula was removed after the treatment of 2 teeth." [H4]

"While the patient was about to undergo brain surgery operation, I detected that the reason of the headaches was upper 8, so saved the patient from the brain operation which has a disability possibility. We found this tooth on the operation which could not be observed in the oral examination however could not be included." [H5]

"While détartrage would be sufficient for my patient with gingival bleeding, he had undergone a whole range of treatments for weeks from the heart to the blood." [H6]

"I came across a few times that the patients who had ache caused by dental infection and went to Ear, Nose, Throat Policlinic were diagnosed with acute sinusitis and applied antibiotics and decongestants while they should have been applied root canal treatment." [H7] "We witness that they mistake the toothache with headaches." [H8]

"I experienced situations such as wrong antibiotic prophylaxis, nonselective drug usage, inability to take MR with implant." [H14]

- Findings on the sufficiency of mutual consultati- on between the medical doctors and dentists

TAll of the participants (14 persons) state that the mutual consultation of the medical doctors and the dentist is not sufficient. 6 out of 14 dentists state that, even though they consult to the medical doctors, they do not consult to the dentists. Some opinions of the dentists are as follows:

"As we are at the same building of the State Hospital, the consultation is conducted easily. If the consultant doctor is away, in general, before the patient explains his complaints to another dentist, he has his tooth pulled out." [H3]

"I do not consider that it is sufficient. I observe that the patients on whom the consultation is required is not consulted (by both the medical doctors and the dentists) because of insufficient medical history." [H8]

"Even though the dentist request consultation frequently, I think the medical doctors consult rarely." [H9] "The medical doctors do take the tooth seriously, so we experience the problem of 'nothing would come up from that'. Also, their consultation to us is scarcely any." [H11]

- Findings on the communication among the doc- tors in Turkey

All of the participant dentists (14 persons) consider the communication among the doctors insufficient. 3 out of 14 participants state that the communication among the dentists is much better compared to the past thanks to the effect of social media. Some of the participant dentists state that there are situations of thinking himself superior on matters such as age, speciality and field of work. Some opinions of the participant dentists are as follows:

"The dentists have started to communicate more among themselves especially after the popularisation of the social media, however, I think there is no communication between the medical doctors and dentists unless they are working under the roof of same hospital/centre/ policlinic." [H1], [H6]

"Terrible, everyone thinks that he knows the best. Old thinks he is better than the young, specialist is better than practitioner, medical doctor is better than dentist…" [H11]

"The dentist conduct communication much better among themselves compared to past, but I think it is still not enough. The communication between the medical doctor and the dentist is not in a good level. I believe that especially the specialist doctors do not consider the dentists as persons with more compre hensive knowledge." [H12]

- Findings on the relation between the gastroin- testinal system diseases and the mouth and dental health

While 13 out of 14 dentists think that gastrointestinal system diseases and the mouth and dental health absolutely affect each other, 1 dentist states that there might be some relation between them. Some of the cases encountered by the participants are as follows: "I encountered cases such as abnormal erosions, abnormal amount and fast tartar formation on the teeth of patients

with excessive reflux." [H1]

"Many of my patients had troubles because of missing teeth." [H2]

"Excessive tartar formation and abrasion on the teeth of the patient with reflux." [H4]

"Especially on the mouth mucosa of the patient with crohn disease" [H13]

"Such as crohn, celiac, gastritis-reflux" [H14]

Table 1. Findings of Interview

Findings of Interview	f (n=14)	%
Findings on existence of a systematic disease in the line with the complaints of the patients		
Suspecting generally of a systematic disease	13	92.8
Suspecting sometimes of a systematic disease	1	7.2
Findings on opinion exchange with other dentists		
Consulting to the other dentists when having difficulty in diagnosis	14	100
Findings on consulting to the specialist medical doctor when suspecting diseases except mouth and teeth problems		
Directly consulting to specialist medical doctors	7	50
Not directly consulting, but referring the patient	6	42.8
Rarely consulting	1	7.2
Findings on contact of medical doctors with dentists concerning the patient and consultation		
Does not contact/consult	4	28.6
Rarely consult	4	28.6
Rarely consult in general the specialists of Ear, Nose, Throat	6	42.8
Findings on the cases where the medical doctors apply wrong diagnosis and treatment as they have not consulted to the dentists		
Encountering cases of wrong diagnosis and treatment by medical doctors	9	64.3
Not encountering any cases	5	35.7
Findings on the sufficiency of mutual consultation between the medical doctors and dentists		
Finding insufficient	14	100
Reporting while dentists consult, medical doctors do not	6	42.8
Findings on the communication among the doctors in Turkey		
Finding insufficient	14	100
Reporting the communication among dentists is better compared to past	3	21.4
Findings on the relation between the gastrointestinal system diseases and the mouth and dental health		
They are absolutely related	13	92.8
They might be related	1	7.2

DISCUSSION

As a result of the study, it is understood that the patients who went to see the dentist for examination have also mostly systematic diseases. The similar results were provided on the study of Güngör-Hatipoğlu and Hatipoğlu (10) in which the consultation forms of 159 patients who applied to the dental clinic of a university hospital were evaluated retrospectively. As a result of the conducted study, it is observed that the consultation is requested mostly from the cardiology and internal diseases units. The ear-nose-throat, general surgery, dermatology, neurology, gynaecology and obstetrics and other departments come after. In 55.3% of the consultations, additional attempts and precautions before, after or during the routine treatments are suggested. These precautions include the issues such as regulating the dose of the medicine used by the patients, prophylactic antibiotic applications, regulating INR value and sedation.

The participant dentists have always resorted to opinion exchange with their colleagues where they had difficulty in diagnosing in relation with mouth and dental health. However, when they get suspicious about the diseases apart from the ones related with mouth and dental health, 50% of the dentists have contacted directly with the medical doctors, 7.2% have rarely contacted and 42% have not contacted, however preferred to refer the patient to the medical doctors.

According to Medical Deontology Regulation, the doctor requesting consultation is obliged to explain why he needs the consultation to the patient and his relatives and, if they accept it, to inform the consulted doctor about the reasons thereof in writing. The consulted doctor is required to provide his findings and opinions to the consulting doctor. Therefore, the consultation should be paid the required attention and it is not in compliance with the legislation to direct the patient only by phone to the acquaintance doctor or to the related department.

The doctors need exactly to know the current medical situation of the patient for the right diagnosis and treatment. The patient might not know sufficiently his medical situation or may not relate it with his systematic disease. According to the literature, reliable medical history concerning the systematic diseases may not always be obtained from the patients. Hatipoğlu and Demiralp (11) reported in one of their evaluation that 25% of the patients to undergo periodontal treatment and with cardiologic problems cannot specify their diseases or specify it deficient or wrong. Besides, Kömerik and Çadır (12) stated, on their study where they evaluated 76 consultation form which were filled up by the oral surgery department, that significant deficiencies and contradictions were available on the consultation forms for the detection of the situation and treatment. Therefore, it is required for the protection of the patients' health and a successful treatment not only to obtain the medical history of the patient, but also to initiate the consultation mechanism in case of even a slight suspicion and to contact with the other specialist doctors (10).

28.6% of the participants state that the medical doctors do not contact with /consult to the dentists, 28.6% state they are really rarely contacted and 42.8% state they are rarely consulted in general by the ear-nose-throat department. When the sufficiency of the mutual consultation is asked, all of the participant dentists state that they find the mutual consultation of the medical doctors and dentists insufficient. At this point, the percentage of the ones who state that medical doctors do not consult to the dentists arises to 42.8%. According to the procedure and principles to be complied with by the medical doctors during the consultation and the team work, in the case that the opinions and practices of other specialities are needed during the patient monitoring process, the doctor conducting the treatment should request consultation.

While, before 2007, the consultant practitioner was specified as "a specialist in his field of expertise with scientific and technical knowledge", following the amendments on the legislation, the requisition for the consultant practitioner to be a specialist has been abolished (4). However, according to the findings derived from the opinions of the participants, the practitioners are treated whether they have specialist competence during the communication and consultation among the practitioners. Under Second Chapter of Medical Deontology Regulation which governs the communication of the doctors with their patients, it is provided for that the medical doctor or the dentist is obliged to accept the request of the patient for consulting. The refore, the opinions of the patient are required to be taken into account and the practitioners should give the confidence to the patient. And this shall be provided by keeping an open mind on age, speciality and field or are in the exchange of opinions among the practitioners. 64.3% of the participants state that they have encountered cases which were applied wrong diagnosis and treatment as the medical doctors did not consult to the dentists. Among the examples of these cases are wrong medicine application, as well as, diagnosing cancer patients with toothache and ulcer, conducting plastic surgery practices while needing dental treatment and the attempt to take the patient under brain surgery operation or headache diagnosis while he needed dental operation.

Another result of the study is the opinion that the gastrointestinal system diseases and the mouth and dental health absolutely affect each other. Abnormal itching and abrasion on the gingiva of the patients with reflux, the cases of excessive and fast tartar formation on the teeth of patients, digestive system troubles because of missing teeth, crohn, celiac, gastritiseflux are among the most frequently encountered problems. The results of the study show that the social media has contributed in the recent years positively to the communication especially among the dentists, however the communication among the practitioners is not

sufficient in our country. The participant dentists state that this communication problem is resulted from considering someone better than other because of age, speciality, and field of expertise or the distance between the working locations.

Today, when it is possible to contact and communicate, even see each other in groups, a communication network among the practitioners might be established taking the advantage of technologies of this day and time. By providing the legal integration of this established network, the communication and consultation might be led away from the personal arbitrariness. This established communication network might be opened to the access of practitioners and the patients from the hospital, offices and even from the houses and the communication between the practitioner patient and practitioner might be recorded under less procedure and effort, so it might become more efficient.

Moreover, the curriculums of the universities may be regulated in order to ensure that the persons who study to become medical doctors and dentists are taken integrated professional ethics and communication classes starting from the first years of university. Similarly, Turkish Medical Association and Turkish Dental Association and the Ministry of Health and the hospital administrations might conduct joint activities and ensure that medical doctors and dentists are taken integrated professional ethics and communication classes starting from the first years of university.

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Araştırma Makalesi / Research Article

Akut İnme Hastalarında Omuz Subluksasyonunun Önlenmesinde Kinezyo Bantlama Etkinliğinin Elektrik Stimülasyonu İle Karşılaştırılması

Comparison of the Efficiency of Kinesio Taping and Electrical Stimulation to Prevention of Shoulder Subluxation in Acute Stroke Patients

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Oz

Amaç: Akut inme hastalarında, kinezyo bantlama uygulamasının glenohumeral subluksasyonu (GHS) engellemedeki etkisini elektrik stimülasyon (NMES) uygulamasıyla karşılaştırmaktır.

Materyal ve Metod: Akut inmeye bağlı hemipleji gelişmiş olan 44 hasta rastgele yöntemle bantlama (n=22) ve stimülasyon (n=22) gruplarına ayrıldı. Gruplara 3 haftalık tedavi sürecinde Bobath erken dönem egzersizleriyle birlikte bantlama grubunda omuza 3 günde bir Kinezyo bantlama, stimülasyon grubunda ise m. supraspinatus ve m. deltoideus'un arka parçasına NMES uygulandı. Omuz subluksasyonu, vertikal mesafe ölçümü ve total asimetrinin hesaplandığı yöntemlerle değerlendirildi. Ağrı değerlendirmesi Vizuel Analog Skala (VAS) ile, kas tonusu değerlendirmesi Modifiye Ashworth Skalası (MAS) ile, günlük yaşam aktivitesi (GYA) Barthell İndeksi (Bİ) ile ve üst ekstremite motor değerlendirmesi ise Brunnstrom evrelemesiyle yapıldı.

Bulgular: Tedavi öncesi gruplar arası demografik, radyolojik ve klinik değerlendirme parametrelerinde anlamlı fark yoktu (p>0,05). Tedavi sonrası gruplar arası radyolojik değerlendirmede stimülasyon grubunun total asimetri değerlerinde bantlama grubuna göre anlamlı azalma tespit edilirken (p<0,05). GYA değerlendirmesinde stimülasyon grubunda Bİ'de bantlama grubuna göre anlamlı iyileşme tespit edildi (p<0,05). VAS'ta tedavi öncesine göre grup içi ve gruplar arası değerlendirmede anlamlı fark bulunmadı (p>0,05). MAS'ta ise grup içi değerlendirmede tedavi öncesine göre bantlama grubunda anlamlı artış olurken (p<0,05), stimülasyon grubunda anlamlı fark oluşmadı. Gruplar arası değerlendirmede de tedavi sonrası anlamlı fark bulunamadı (p>0,05).

Sonuç: Akut inme hastalarında GHS'nin önlenmesi amacıyla tedavide Bobath yaklaşımı ve omuz koruma stratejilerine ek olarak NMES'in yer almasının GHS'yi önlemede etkili bir yöntem olduğu kanısına varıldı. Kinezyo bant uygulamasının ise tek başına GHS'yi engellemede yeterli olmadığı ancak uygulanan diğer tedavi yöntemlerine yardımcı olarak kullanılabileceği kanısına varıldı.

Anahtar Kelimeler: İnme, glenohumeral subluksasyon, bobath, elektrik stimülasyonu, Kinezyo bantlama, rehabilitasyon

Abstract

Aim: The aim of this study was to compare the efficiency of Kinesio taping and electrical stimulation (NMES) in the treatment of shoulder subluxation in acute stroke patients.

Material and Method: A total of 44 hemiplegic patients due to acute stroke were included in the study. Patients were randomized into two groups, taping (n=22) and stimulation (n=22) group. Treatment in both of the groups was based on the Bobath approach and Kinesio taping was applied in taping group and NMES to the m.supraspinatus and m.deltoideus was applied in the stimulation group in 3-week treatment period. The degree of subluxation was determined by methods measuring vertical distance (measuring the shortest perpendicular distance (in milimeters) between tangents drawn through the inferior border of the acromion and the most superior aspect of the head of the humerus of the affected arm) and total asymmetry on the radiograph. Patients were assessed by Visual Analog Scale (VAS) for pain, The Modified Ashworth Scale (MAS) for muscle tonus, Barthel Index (BI) for activity of daily living scale and Brunnstrom scale for motor evaluation of the upper extremity.

Results: There was no statistically significant difference in demographic data, radiological findings and clinical evaluation parameters between two groups before treatment (p>0.05). While there was a statistically significant decrement in total asymmetry values of the stimulation group compared to taping group (p<0.05) in the radiological evaluation at the end of the treatment. In activity of daily living scale evaluation significant healing was detected in stimulation group compared to kinesiotape group (p<0.05). There was

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no significant difference in VAS in intragroup and intergroup evaluations (p>0,05). While there was a significant increment in MAS compared to prereatment period in taping group in intragroup evaluation (p<0,05), there was no significant difference in stimulation group. There was no significant difference after treatment in intergroup evaluation (p>0,05).
Conclusion: It's been concluded that NMES in addition to Bobath concept and shoulder protection strategies could be a very effective method for prevention of shoulder subluxation in patients with acute stroke. Kinesiotape was not enough alone for prevention of shoulder subluxation but it could be used in combination with other treatment methods.

Keywords: Stroke, shoulder subluxation, bobath, electrical stimulation, Kinesio tape, rehabilitation

GİRİŞ

İnme, dünyada en sık karşılaşılan nörolojik hastalık olup, ölümün ve kronik fonksiyonel yeti kaybının en önemli nedenlerindendir (1). Dünyada ve ülkemizde ortalama yaşam süresinin uzaması ve inme sonrası akut dönem tedavilerinde ki gelişmeler sonucunda, rehabilitasyona gereksinim gösteren inmeli hasta sayısı hızla artmaktadır. Uygulanan rehabilitasyonun amacı, bu kişilerin fiziksel, mental ve toplumsal işlevini en üst düzeye ulaştırmaktır (1-4).

İnme sonrası ortaya çıkan üst ekstremite bozuklukları, hastaların günlük yaşamdaki fonksiyonel bağımsızlık düzeyini ve kişisel iyilik halini belirgin düzeyde kısıtlamaktadır. Üst ekstremite rehabilitasyonunda hedef, beslenme, hijyen ve giyinme başta olmak üzere tüm günlük yaşam aktivitelerinde bağımsızlık için yeterli el ve üst ekstremite fonksiyonlarını sağlamaktır. Hedeflere yönelik farklı fizik tedavi yaklaşımları kullanılmaktadır (5). Üst ekstremite rehabilitasyonunu olumsuz etkileyen ve rehabilitasyon sürecini uzatan glenohumeral subluksasyon (GHS), hemiplejik hastaların %17-81'inde görülen en sık rastlanan komplikasyonlar arasındadır (2-4). Üst ekstremite rehabilitasyonunda konvansiyonel yöntemler, nörofizyolojik tedavi yöntemleri (Brunnstrom, Bobath, teknikleri vs.), nöromüsküler elektrik stimülasyonu (NMES), biofeedback, kontrollü olarak indüklenmiş hareket tedavisi ve ortezlerden faydalanılır (5).

NMES, nöromüsküler sistemin düşük voltajlı elektrik akımı ile uyarılmasıdır. NMES tedavileri inmeli hastalarda, GHS'nin engellenmesinde veya geliştiyse tedavisinde, omuz ağrısı tedavisinde, motor fonksiyonların geliştirilmesinde ve hareket açıklığının iyileştirilmesinde kullanılan yöntemlerden biridir (6-8). Kinezyo bant uygulaması; Kenzo Kase tarafından, hareketi kısıtlayan klasik bantlamaya alternatif olarak geliştirilen benzerlerinden farklı olarak esnek ve uzun süre cilt üzerinde kalabilen özel bantlar ve uygun teknikler ile farklı amaçlar doğrultusunda uygulanmaktadır. Son yıllarda fizyoterapide de sıklıkla kullanılmaya başlanmış olup enflamasyonu ve ağrıyı azaltarak hareket boyunca kası destekleyip perfor- mansı geliştirmeye yardım eder (9). İnmede omuz subluksasyonunun sık karşılaşılan bir komplikasyon olması sebebi ile alternatif tedavi seçenekleri önem kazanmaktadır. Bu noktadan yola çıkarak Kinezyo Bant uygulaması kolay uygulanabilen, non-invaziv bir yöntem olarak iyi bir tedavi alternatifi olabilir. Bu nedenle çalışma akut inmede omuz subluksasyonunun önlenmesinde kullanılacak kinezyo bant uygulamasının etkinliğini elektrik stimülasyonu ile karşılaştırarak literatürde bu alandaki açığı gidermeyi amaçlamıştır.

MATERYAL ve METOD

Araştırma Gruplarının Oluşturulması

Çalışmaya akut inmeye bağlı hemipleji gelişmiş olan ve çalışma kriterlerine uyan toplam 44 hasta dâhil edildi. Çalışmaya başlamak için yerel etik kurul onayı alındı (2012/115).

İlk kez serebrovasküler olay geçiren, başka bir nörolojik hastalığı bulunmayan, inme tarihinden itibaren en geç 14 gün içinde çalışmaya dahil olan, üst ekstremitede motor hareket bulunmayan, çekilen omuz grafisinde, akromiyonun alt kenarına teğet geçen doğru ile humeral başın en üst kısmı arasında kalan en kısa dik uzaklığın 9,5 mm'yi geçmeyen ve psikososyal uyum gösteren hastalar çalışmaya dahil edilirken; bilinç kaybı, inkâr, algılama bozukluğu ve demans varlığı, ciddi kalp hastalığı, epilepsi, ataksi, distoni ve diskinezisi bulunan hastalar çalışma dışında tutuldu. Hastalar, randomize olarak 22'şer kişilik kinezyo bantlama ve stimülasyon grubuna ayrıldı. Demografik verileri kaydedildi.

Çalışmada Uygulanan Değerlendirme Yöntemleri Çalışmaya alınan hastaların hemiplejik üst ekstremite ağrısı için vizüel analog skala (VAS), kas tonusunun değerlendirilmesi için Modifiye Ashworth Skalası (MAS), üst ekstremite ve elin nörofizyolojik iyileşmesini değerlendirmek için Brunnstrom evrelemesi ve günlük yaşam aktivitesi için Barthel İndeksi (Bİ) kullanıldı.

Radyolojik Yöntemle Omuz Eklem Aralığının Değerlendirilmesi

Olguların tedavi öncesi (TÖ) ve sonrasında (TS) omuz grafileri çekildi. Çalışmamızda iki farklı radyolojik ölçüm yöntemi kullanıldı. Bunlardan birincisin Hall ve arkadaşları tarafından kullanılan, akromiyonun alt kenarına teğet geçen doğru ile humeral başın en üst kısmı arasında kalan vertikal mesafenin milimetre cinsinden ölçüldüğü yöntemdi. GHS gelişme sınırı 9,5 mm. olarak kabul edildi, vertikal uzaklık tedavi öncesi ve tedavi sonrasında çekilen omuz grafilerinde değerlendirildi (10).

Kullandığımız 2. yöntemde aşağıdaki referans noktalar temel alınarak yapıldı. orta noktası; fossa glenoidalis'in yüksekliğini ve enini belirleyen çizgilerin kesiştiği nokta (G), humeral başın orta noktası; humerus başını ikiye bölen en uzun horizontal çizginin orta noktası (C), akromioklavikülar eklemin lateral yüzünde, akromiyonda en aşağı nokta olarak işaretlendi (A) (11).

Humerus başının merkezinden çizilen vertikal doğru ile glenoid fossanın santral noktası arasındaki ölçüm eklem aralığının horizontal mesafesi (H) olarak belirlendi. Daha sonra etkilenmemiş tarafta da aynı ölçümler yapılıp aradaki fark alınarak horizontal asimetri hesaplandı. Sonuçlar milimetre cinsinden kaydedildi (10,11).

Humerus başının merkezinden geçen horizontal doğru ile akromiyonun inferioru arasındaki ölçüm eklem aralığının vertikal mesafesi (V) olarak belirlendi. Daha sonra etkilenmemiş tarafta da aynı ölçümler yapılıp aradaki fark alınarak vertikal asimetri hesaplandı. Sonuçlar milimetre cinsinden kaydedildi (10,11). Total asimetri, vertikal ve horizontal asimetri değerlerinin her iki omuz için kareleri toplamının karekökü alınarak bulundu (Şekil 1) (10,11).

Çalışmada Uygulanan Tedavi Modaliteleri Bantlama ve stimülasyon olmak üzere her iki gruba da üst ekstremiteye yönelik Bobath Egzersizleri uygulandı (5,12). Çalışmamız olguların sadece hemiplejik üst ekstremitesine yönelik planlanmış olmasına rağmen, etik prensipler çerçevesinde tedavi hemiplejik alt ekstremiteyi de kapsadı.

Hastaların klinik durumları da göz önüne alınarak egzersizlerin tekrar sayısına karar verildi. Hastaya bakım hizmeti sunan hemşire, yardımcı personel ve ailesine hastayı hareket ettirirken hemiplejik taraf kolu korumaya yönelik eğitim verildi.

Bantlama grubundaki olguların plejik taraf omuzlarına 3 günde bir kinezyo bant uygulaması yapıldı. I şeklinde kesilen 3 banttan ilki m.supraspinatus fasilitasyonunu sağlamak, ikincisi akromiyoklavikular eklem mobilizasyonunu sağlamak ve üçüncüsü bant humerus proksimalinin anterior yüzüne stabilizasyon sağlamak amacı ile yapıştırıldı.

Stimülasyon grubundaki olgulara ise 3 hafta süresince günde 25 dakika m.supraspinatus ve m. deltoideus'un posterior parçasına NMES (bifazik simetrik dalga şeklinde, pulse frekansı 40 Hertz ve pulse genişliği 200 µsn olan akım) uygulandı.

İstatistiksel Yöntem

Verilerin normal dağılıma uygunluğu ShapiroWilk Testi ile incelendi. Nicel değişkenler ortanca (min-max), nitel değişkenler sayı ve yüzde olarak verildi. Gruplar arası farklılık Mann Whitney U testi ile yapıldı. Her bir grupta tedavi öncesi ve tedavi sonrası değişkenlerine ilişkin farklılıklar Wilcoxon Eşleştirilmiş İki Örnek Testi ile yapıldı. Tüm istatistiksel değerlendirmelerde p<0,05 değeri anlamlı olarak kabul edildi. Tüm veriler "SPSS 16 for Windows" istatistik yazılım programı ile analiz edildi.

BULGULAR

Gruplar arasında yaş ve hastalık süresi açısından anlamlı fark yoktu (p>0.05) (Tablo 1).

Tablo 2'de gruplar arası TÖ klinik ve radyolojik değerlendirme sonuçları görülmektedir. VAS, MAS, Brunns- trom ve Bİ skorlarında anlamlı fark yoktu (p>0,05). Vertikal mesafe ve total asimetri değerlerinde de anlamlı fark bulunmadı (p>0,05).

Tablo 1. Findings of Interview

	Bantlama Grubu (n:22) Ortanca (Min-Max)	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
Yaş	71,5 (32-86)	69,5 (38-82)	0,92
Hastalık Süresi	9,5 (5-14)	9,5 (3-14)	0,73

*:Mann-Whitney U Test

Tablo 2. Gruplar arası TÖ klinik ve radyolojik değerlendirme sonuçları

	Bantlama Grubu (n:22) Ortanca (Min-Max)	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
VAS	**0 (0-3)**	**0 (0-3)**	**0,47**
MAS			
Omuz	0 (0-0)	0 (0-0)	0,99
Dirsek	0 (0-0)	0 (0-0)	0,99
El	0 (0-1)	0 (0-0)	0,99
Bilek			
Brunnstrom			
Üst Ekstremite	1 (1-1)	1 (1-1)	0,99
El	1 (1-1)	1 (1-2)	0,99
Barthel İndeksi	5 (0-10)	5 (0-20)	0,28
Vertikal Mesafe	5,4 (3,2-9,2)	5, 5 (3,4-9,3)	0,19
Total Asimetri	4,95 (3,16-8,44)	5,06 (3,4-7,3)	0,55

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tablo 3'te gruplar arası TS klinik ve radyolojik değerlendirme sonuçları görülmektedir. VAS, MAS, Brunnstrom skorlarında TS gruplar arasında anlamlı fark bulunmazken (p>0,05), Bİ skorunda stimülasyon grubu lehine anlamlı fark bulundu (p<0,05).

Vertikal mesafe değerinde TS anlamlı fark bulunmazken total asimetri değerinde stimülasyon grubu lehine anlamlı fark bulundu (p<0,05). VAS değerlerinin grup içi karşılaştırılmasında her iki grupta tedavi sonrası istatistiksel olarak anlamlı bir farklılık saptanmadı (p>0,05). MAS'a göre omuz adduktör, dirsek fleksör ve el bilek fleksör spastisitesinin grup içi karşılaştırılmasında bantlama grubunda tedavi sonrası istatistiksel olarak anlamlı bir artış saptandı (p<0,05). Brunnstrom üst ekstremite ve el motor evrelemesi grup içi karşılaştırılmasında tedavi sonrası her iki grupta istatistiksel olarak anlamlı bir iyileşme saptandı (p<0,05). Bİ'nin grup içi karşılaştırmasında tedavi sonrası her iki grupta istatistiksel olarak anlamlı bir iyileşme saptandı (p<0,05), Tablo 4).

TÖ grupların 1. teknikle yapılan ölçüme göre radyolojik değerlendirme sonuçları Tablo 5'te sunulmuştur. Gruplar arasında TÖ vertikal mesafe ve total asimetri açısından anlamlı fark yoktu (p>0,05). Tablo 6'da grupların TS radyolojik değerlendirme sonuçları sunulmuştur. Vertikal mesafede gruplar arsında anlamlı fark bulunmazken (p>0,05), total asimetride stimülasyon grubu lehine TS anlamlı fark bulundu (p<0,05).

Tablo 3. Gruplar arası TS klinik ve radyolojik değerlendirme sonuçları

	Bantlama Grubu (n:22) Ortanca (Min-Max)	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
VAS	**0 (0-6)**	**0 (0-5)**	**0,82**
MAS			
Omuz	0 (0-2)	0 (0-2)	0,48
Dirsek	0 (0-3)	0 (0-1)	0,12
El Bilek	0 (0-2)	0 (0-1)	0,14
Brunnstrom			
Üst Ekstremite	4 (1-5)	4 (2-6)	0,52
El	3 (1-5)	4 (2-5)	0,35
Barthel İndeksi	35 (20-50)	45 (20-70)	0,04
Vertikal Mesafe	5,3 (2,1-20,3)	4,1 (2,1-12,5)	0,17
Total Asimetri	4,98 (1,43-18,91)	3,34 (2,14-11,02)	0,04

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tablo 4. Tedavi sonrası grup içi klinik ve radyolojik değerlendirme sonuçları

		Bantlama Grubu (n:22) Ortanca (Min-Max)	p *	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
VAS	T.Ö.	0 (0-3)	0,81	0 (0-3)	0,37
	T.S.	0 (0-6)		0 (0-5)	
MAS (Omuz)	T.Ö.	0 (0-0)	0,03	0 (0-0)	0,12
	T.S.	0 (0-2)		0 (0-2)	
MAS (Dirsek)	T.Ö.	0 (0-0)	0,008	0 (0-0)	0,12
	T.S.	0 (0-3)		0 (0-1)	
MAS (El bilek)	T.Ö.	0 (0-1)	0,008	0 (0-0)	0,12
	T.S.	0 (0-2)		0 (0-1)	
Brunnstrom Üst Ekstremite	T.Ö.	1 (1-1)	0,001	1 (1-1)	0,001
	T.S.	4 (1-5)		4 (2-6)	
Brunnstrom El	T.Ö.	1 (1-1)	0,001	1 (1-2)	0,001
	T.S.	3 (1-5)		4 (2-5)	
Barthel İndeksi	T.Ö.	5 (0-10)	0,001	5 (0-20)	0,001
	T.S.	35 (20-50)		45 (20-70)	
Vertikal Mesafe	T.Ö.	5,4 (3,2-9,2)	0,07	5, 5 (3,4-9,3)	0,02
		5,3 (2,1-20,3)		4,1 (2,1-12,5)	
Total Asimetri	T.Ö.	4,95 (3,16-8,44)	0,17	5,06 (3,4-7,3)	0,01
	T.S.	4,98 (1,43-18,91)		3,34 (2,14-11,02)	

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tablo 5. Grupların TÖ radyolojik değerlendirme sonuçları

	Bantlama Grubu (n:22) Ortanca (Min-Max)	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
Vertikal Mesafe	5,4 (3,2-9,2)	5, 5 (3,4-9,3)	0,19
Total Asimetri	4,95 (3,16-8,44)	5,06 (3,4-7,3)	0,55

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tablo 6. Grupların TS radyolojik değerlendirme sonuçları

	Bantlama Grubu (n:22) Ortanca (Min-Max)	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	p *
Vertikal Mesafe	5,3 (2,1-20,3)	4,1 (2,1-12,5)	0,17
Total Asimetri	4,98 (1,43-18,91)	3,34 (2,14-11,02)	0,04

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tedavi öncesi ve tedavi sonrası grup içi karşılaştırmada her iki gruptaki olguların vertikal mesafe ortanca değerlerinin tedavi öncesine göre azaldığı, bu azalmanın stimülasyon grubundaki olgularda istatistiksel olarak anlamlı olduğu saptandı (p<0,05). Stimülasyon grubunda tedavi sonrası total asimetri değerlerinde istatistiksel olarak anlamlı azalma saptandı (p<0,05) (Tablo 7).

Çalışmamızın sonunda Hall ve arkadaşlarının (10) kullandığı, GHS gelişme sınırının 9,5 mm. olarak kabul edildiği yöntemi kullanarak yaptığımız değerlendirmede, bantlama grubundaki 5 (%22,7) hastada, stimülasyon grubunda ise 3 (%13,6) hastada subluksasyon geliştiği görüldü. İstatistiksel testler uygulandığında gruplar arasında GHS oluşumu açısından anlamlı bir fark elde edilmedi (p>0,05) (Tablo 8).

Tablo 7. TS grup içi radyolojik değerlendirme sonuçları

	Tedavi	Bantlama Grubu (n:22) Ortanca (Min-Max)	p *	Stimülasyon Grubu (n:22) Ortanca (Min-Max)	*p
Vertikal Mesafe	T.Ö.	5,4 (3,2-9,2)	0,07	5, 5 (3,4-9,3)	0,02
	T.S.	5,3 (2,1-20,3)		4,1 (2,1-12,5)	
Total Asimetri	T.Ö.	4,95 (3,16-8,44)	0,17	5,06 (3,4-7,3)	0,01
	T.S.	4,98 (1,43-18,91)		3,34 (2,14-11,02)	

*: Wilcoxon Eşleştirilmiş İki Örnek Testi

Tablo 8. Tedavi sonrası gruplar arasında GHS oranları

GHS	Bantlama Grubu n (%)	Stimülasyon Grubu n (%)	p *
Var	5 (22,7)	3 (13,6)	0,7
Yok	17 (77,3)	19 (86,4)	

*: Pearson Ki-Kare Testi

TARTIŞMA

İnme sonrası genellikle üst ekstremite alt ekstremiteye göre daha çok etkilenir ve motor iyileşme üst ekstremitede daha zayıftır. Sağ kalan inme hastalarının bağımsız olarak yürüyebilme şansı %82 iken, üst ekstremitelerini fonksiyonel olarak kullanabilme şansları %50' dir (4).

Bu bağlamda incelenen çalışmalarda, inme sonrası üst ekstremite iyileşmesinde geniş aralıkta iyileşme gösteren sonuçlar olduğu kanısı oluşmaktadır. Nakayama ve arkadaşları 421 inme hastasını 1 yıl boyunca haftalık takip etmiş ve üst ekstremite fonksiyonlarındaki düzelmenin en hızlı ilk 3 hafta içinde olduğunu, 11 haftadan sonra belirgin bir düzelme olmadığını bildirmişlerdir. Ayrıca üst ekstremitesinde hafif parezisi olan olguların %79'unda, ağır parezisi olan olguların ise %18'inde kendine bakım aktivitelerinde tam bağımsızlık kazandığını belirtmişlerdir (13). Kwakkel ve arkadaşlarının yapmış olduğu araştırmada inme sonrası ilk 16 haftalık zaman içinde üst ve alt ekstremite fonksiyonlarında gerçekleşen iyileşmeyi gözlemlemişlerdir. Çalışma sonucunda ilk 6-10 haftalık süreçte hastaların fonksiyonelliğinde ve aktivitelerinde %16-40 oranında gelişme saptamışlardır (14). Bu çalışmalara bakıldığında üst ekstremite iyileşmesinin farklı sürelerde gerçekleştiği belirtilmekle birlikte ortak nokta ilk haftadan 6 aya kadar iyileşmenin daha hızlı olduğudur. Çalışmamızda akut inme hastası olarak değerlendirilen 44 hasta inme geçirdikten sonraki ilk 2 hafta içinde tedaviye başlatıldı ve 3 hafta tedavi uygulandı.

Bu 5 haftalık süreç hastanın klinik tablosunun netleşmesi ve iyileşmenin başlaması açısından uygun bir süre dilimi olarak incelenen literatürle örtüşmektedir. İnmede fonksiyonel iyileşmeyi etkileyen birçok komplikasyon olmakla birlikte üst ekstremite iyileşmesini belirgin olarak etkileyen önemli bir komplikasyon da GHS' dir (15). Chaco ve Wolf yaptıkları bir çalışmada, inme hastalarında GHS' nin ilk üç hafta içinde daha sık oluştuğunu, bunun nedeninin de özellikle m.supraspinatusta olmak üzere omuz kuşağı kaslarında ki flastisite bağlı olduğunu bildirmişlerdir (16). Pop, inme sonrası hemipleji gelişen 182 hastayı dahil ettiği çalışmasında %25,3 oranında GHS saptamıştır (17). Çalışmamızda stimülasyon grubundaki hastaların supraspinatus ve deltoid kasının arka parçasına yapılan NMES uygulaması ile, üst ekstemite fonksiyonlarını arttırmaya, postüral bozuklukları düzeltmeye, kas tonusunu dengelemeye ve kas gücünü artırmaya yönelik kullandıklan kinezyo bantlama uygulaması karşılaştırıldı. Elde edilen verilere göre akut inmeli hastalarda omuz subluksasyonu gelişimini engellemek için kinezyo bantlama ve NMES'in her ikisinin de günlük yaşam aktivitelerini olumlu etkilediği kanısına varıldı. İnmede, motor fonksiyonları geliştirmede hem bantlama hem de stimülasyonun akut iyileşmeye olumlu katkı sağladığı tespit edildi.

Çalışmamızdan elde ettiğimiz verilere göre akut dönem inme hastalarında GHS' nin önlenmesi amacıyla tedavide Bobath yaklaşımı ve omuz koruma stratejilerine ek olarak NMES'in yer alması ve tedavinin erken başlatılmasının GHS' yi önlemede etkili bir yöntem olduğunu gösterildi. Kinezyo bant uygulamasının ise tek başına yeterli olmadığı ama uygulanan diğer yöntemlere destek olarak kullanılabileceği kanısına varıldı.

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MEDICAL RECORDS-International Medical Journal

Olgu Sunumu / Case Report

Gull Pancreas: A Case Report

Martı Pankreas: Bir Olgu Sunumu

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Abstract

The normal anatomical location of the pancreas behind the bursa omentalis, the stomach and transverse colon, starting from the curvature of the duodenum until the spleen extends transversely and upward. Lobulations considered to be variational in the pancreatic tail section were determined in a 67-year-old male patient coming to Inonu University Turgut Ozal Medical Center Urology Department with urinary burning complaint and diagnosed with benign prostatic hyperplasia. As a consequence pancreas likened to gull was named gull pancreas in the result of CT.

Keywords: Pancreas, gull, anomaly, radiology

Oz

Normal anatomik yerleşim olarak küçük periton boşluğu bursa omentalis, mide ile transvers kolon'un arkasında bulunan pankreas, duodenumun kavsinden başlayarak dalağa kadar transvers ve yukarı doğru uzanmaktadır. İnönü Üniversitesi Turgut Özal Tıp Merkezi Üroloji Polikliniği'ne idrarda yanma şikâyeti ile gelen ve kendisine benign prostat hiperplazisi ana tanısı konan 67 yaşında erkek bir hastada pankreas kuyruk kesimde varyasyonel olduğu düşünülen lobülasyonlar olduğu tespit edildi. Pankreasın şekli çekilen BT sonucunda martıya benzetildiği için martı pankreas olarak isimlendirildi.

Anahtar Kelimeler: Pankreas, martı, anomali, radyoloji

INTRODUCTION

Pancreas between the 4th and 7th weeks of the intrauterine period develops from the dorsal and ventral pancreas buds of endoderm cells on the inner face of the duodenum. The dorsal pancreas bud developing faster than the ventral pancreas bud is located in the cranial part of the hepatic diverticulum, whereas there is a ventral pancreas in the caudal area of the hepatic diverticulum (1, 2). The cranial part of the pancreas hood, corpus and caudal evolve out of the dorsal bud, while the inferior part of caput pancreas and processus uncinatus develops from the ventral bud (1, 3-5). The pancreas whose length is 12-15 cm if the cadaver is removed and 20 cm without fixation, which is at the level of the L1-L3 vertebrae in the vertebral column, is a secondary retroperitoneal organ (1, 2, 6-9). Pancreas soft, yellowish-slightly reddish in color, has approximately 15 cm thick and 1 cm wide as well as 80 g for women and 100 g for men. The pancreas has four sections including caput pancreatic, column pancreatic, corpus pancreatic and caudal pancreatic, in addition to processus uncinatus admitted being an accessory lop (10-12). In this study, a case of pancreas larger than normal will be presented. As a matter of fact that such a presentation was not found before.

Case Presentation

The case was detected in 2017 in a 67-year-old male patient coming to Inonu University Turgut Ozal Medical Center with the urinary burning complaint and diagnosed as benign prostatic hyperplasia. In the result of CT, it was revealed that his pancreas was larger than normal. It is observed than there were lobulations considered to be variational in the tail of the pancreas starting from the abdominal wall and forming a fold in the anterior part of the left renal veins and ending by creating lobulations. Ultimately, the shape of the pancreas resembling a gull was called to be a gull pancreas (Figure 1).

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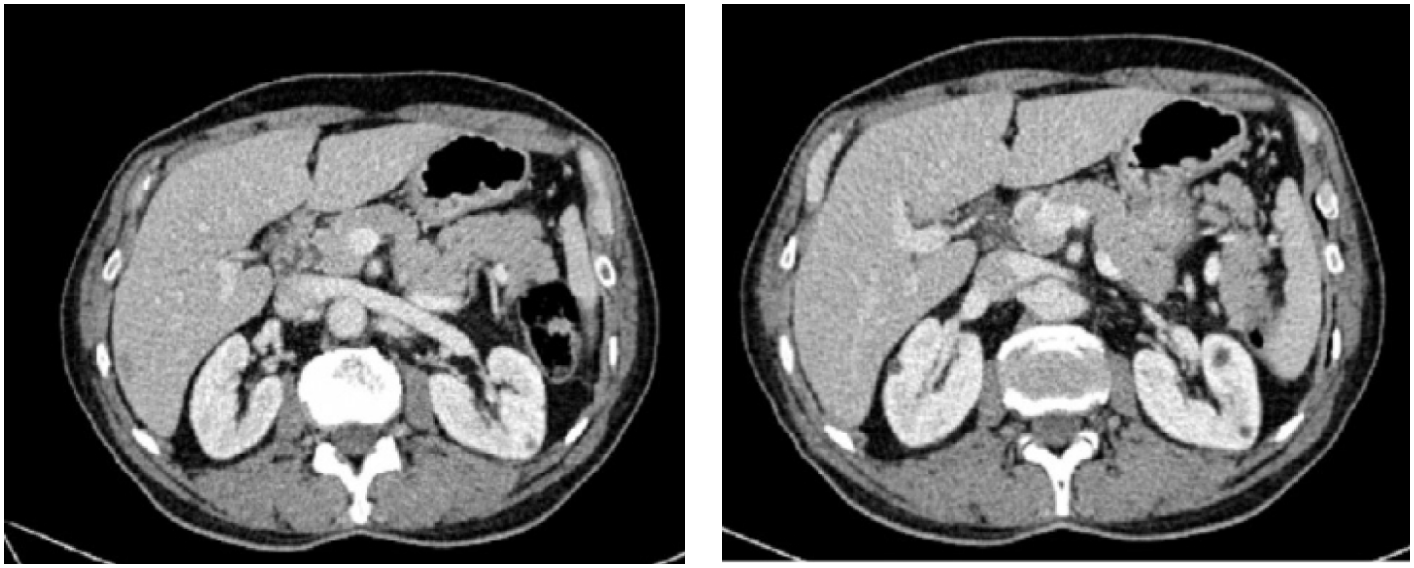

Figure 1. Gull-shaped pancreas in axial-contrast

DISCUSSION

There are many variations and anomalies for the pancreas. However, we rarely see anomalies encountered clinically and problematic. Ectopic pancreas, dorsal or ventral pancreas agenesis, pancreas divisum, annular pancreas, ductal anomalies are defined as congenital developmental anomalies of the pancreas. First of all, rotation and fusion in pancreatic buds are known as critical developments playing a role in the occurrence of anomalies in the embryological period (13,14). Firstly, the ectopic pancreatic tissue is usually seen in the lower mucosa of the gastric antrum (30%), in the proximal portion of the duodenum (30%), in the remaining duodenum (20%) or in other parts of the small intestine (20%) (15). Furthermore, the incidence of pancreas agenesis is low. The reason why it gives rise to severe delay is to lead to diabetes mellitus and malabsorption what is more cases usually result in death (16,17). Besides, pancreas divisum a paramount anatomic variation with the prevalence of 4%-10% appears as the opening of the dorsal and ventral ducts in the duodenum in different ways (18,19).

Also, annular pancreas occurring with the surrounding the second part of the duodenum starting from caput pancreatic is a congenital anomaly. It has been reported that annular process is associated with Down's syndrome, tracheo-esophageal fistula, cardiac anomalies and intestinal malrotation (20). As mentioned above, pancreas variation and anomaly are commonly seen. Yet, a gull-shaped variation has not been described previously. On top of that, in this case report, pancreatic rejection, which is not seen in the literature was presented and information about the location and dimensions of pancreas was given according to normal human anatomy. We believe that this study will be a resource for further studies as well as contributing to the physicians working on pancreas.

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MEDICAL RECORDS-International Medical Journal

Derleme / Review

Yaşlı Popülasyonda Somatotip Karakter Analizi - Kısa Derleme

Somatotype Character Analysis in Elderly Population - Short Review

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Oz

Çalışmanın amacı yaşlı bireylerde somatotip karakter analizinin konu edildiği çalışmaları derleyerek yaşlılıkta somatotip hakkında bir sonuç sunmaktır. Somatotip karakter analizi detaylı bir antropometrik ölçüm olup kişilerin vücut kompozisyonunu iyi analiz eden bir tekniktir. Derlemede somatotip karakter analizinin yaşlılarda konu edildiği çalışmalar incelenmiştir. Araştırma 2000-2019 yılları arasında yapılmış çalışmalar ile sınırlandırılmıştır. Araştırmada literatür Pubmed, Scholar Google, Medline, Scopus veritabanları üzerinden 'somatotip ve yaşlılık' arama terimleri ile taranmıştır. Bu çalışmada konu edilen çalışmalardan ortaya çıkan ortak sonuca göre ileri yaşlarda (60 yaş ve üzeri) erkek ve kadınlarda endomorfi oranının azaldığı, mezomorfi veya ektomorfi oranlarının daha sık görüldüğü söylenebilir. 60 yaş öncesinde orta yaş grubunda (31-60) ise mezomorfi ve endomorfi oranları daha yüksek görülmektedir. Genç ya grubunda ise (18-30) ileri yaş grubuna benzer şekilde daha az endomorfi görülmektedir.

Anahtar Kelimeler: Somatotype, elderly, karakter analizi

Abstract

The aim of this study is to present a conclusion about the somatotype in the elderly by compiling studies on the somatotype character analysis in elderly individuals. Somatotype character analysis is a detailed anthropometric measurement and it is a technique that analyzes the body composition of individuals. In this review, the studies on somatotype character analysis in the elderly were investigated. The research was limited to the studies conducted between 2000-2019. In the study, the literature was searched by "somatotype and elderly" search terms on Pubmed, Scholar Google, Medline, Scopus databases. According to the common results of our study, it can be said that in older ages (60 years and older), the rate of endomorphy in males and females is decreased and mesomorphic or ectomorphic rates are more common. In the middle age group (31-60), mesomorphy and endomorphy ratios are higher than those in the 60 years old group. In young age group (18-30), less endomorphism is seen similar to older age group.

Keywords: Somatotype, elderly, character analysis

GİRİŞ

Somatotip bireylerin fiziksel ve somatik sağlığını göreceli olarak tanımlayan genetik bir belirteç olup vücut büyüklüğü ve şeklinden bağımsız olarak vücut kompozisyonunun ifade edildiği bir analizdir. Bireylerin morfofonksiyonel özelliklerini değerlendirirken somatotipi de değerlendirmek klinikte çok önemli yer tutar. Somatotip karakter analizi detaylı bir vücut kompozisyon analizi olduğu için kişinin fiziki yapısının tanımlanmasını sağlar (1-4).

Somatotip karakter analizinin oluşturulmasındaki çabalar ve girişimler Hipokrat döneminden günümüze kadar devam etmektedir. Bugün yaygın bir şekilde kullanılan metodun ortaya çıkmasını sağlayan yaklaşım 1940 yılında Sheldon ve arkadaşları tarafından bulunmuş olup temeli, Kretschmer'in (1921) ve diğeri de Viola'nın (1933) iki temel sınıflandırma düşüncesini birleştirmesinde yatmaktadır. Sheldon üç farklı beden tipine göre bireyleri sınıflandırmış ve bireylerin endomorfi, mezomorfi, ektomorfi durumlarını belirlemiştir. Bunu yaparken de 1'den 7'ye kadar rakamlar vererek baskın vücut tipini isimlendirmiştir. Endomorfi, mezomorfi, ektomorfi olmak üzere bu üç beden tipinin de kendine has özellikleri vardır. Gözlemsel olarak da ayırt edilebilen özellikleri sayesinde Sheldon ve bu tekniği kullanan araştırmacılar sadece fotoğraflardan elde edilen verilerle bireylerin somatotip skorlarını tespit edebilmekteydiler. Sheldon'ın önerdiği somatotip hesaplama tekniğinin subjektif ögeler içermesi

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ve değişmez kabul edilmesi nedeniyle araştırıcılar daha objektif hesaplamalar yapabilmek için çalışmışlardır. Bu konudaki en başarılı çalışma 1967 yılında Heath ve Carter tarafından yapılmıştır. Heath - Carter somatotip metodu tüm dünyada en çok uygulanan metot olarak kabul görmüştür (5, 6).

Heath - Carter Somatotip Tekniği

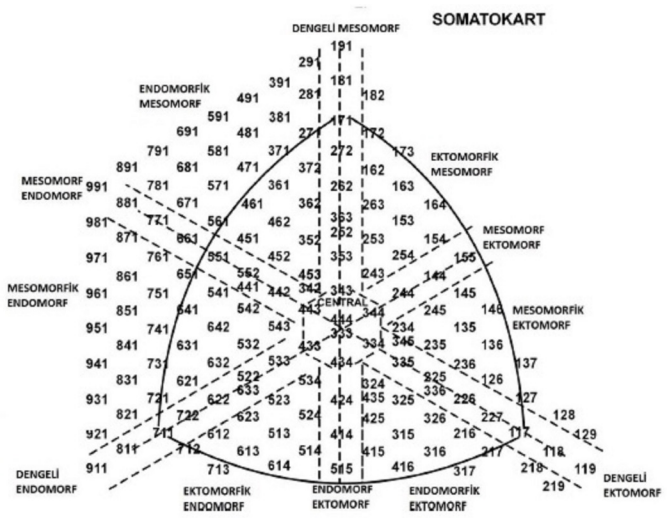
Heath - Carter somatotipi, insan vücudunun var olan göreceli şekil ve kompozisyonunun sayısal tanımlamasıdır. Heath-Carter metodu fiziki yapının her üç komponentini de bir rakam ile ifade eden üç rakamlı bir değer ile belirtmektedir. Örneğin 2-5-3 olarak ifade edilen bir somatotip değerinde; 2 endomorfiyi, 5 mezomorfiyi, 3 ektomorfiyi ifade eder. Bu metotta değerlendirmeler fotoğraflama, antropometri veya her ikisinin birlikte kullanımı ile yapılabilir (5-7).

Somatotipin Belirlemesi

Endomorfik, mezomorfik, ektomorfik terimleri somatotip yapısına göre bir şahsın tarif edilmesinde Kullanılır. Her üç komponentin her birinin derecesine göre sayılar 1'de den 9'a kadar dizilmiştir. 9 rakamı maksimum oranı gösterirken, 1 rakamı en az oranı göstermektedir. Böylece, 9.1.1'lik somatotip en büyük oranda endomorfiyi (yağlılığı) gösterirken, 1.9.1'lik en büyük oranda mezomorfiyi (kaslılığı) ve 1.1.9' luk somatotip de en büyük oranda ektomorfiyi (incelik) gösterir (2). Tablo 1'de somatotip karakterlerin rakamsal ifadeleri belirtilmiştir (5)

Table 1. Somatotip karakterlerin rakamsal belirtilişi

1.9.1 İleri derecede mezomorf	6.4.3. Mezomorfik endomorfi	1.6.3. Ektomorfik mezomorfi	4.2.4.Endoektomorfi
1.1.9. İleri derecede ektomorf	5.5.2. Mezomorfı ve endomorfı	2.4.4. Mezomor- fiektomorfi	5.2.4. Ektomorfik endomorfi
9.1.1. İleri derecede endomorf	5.5.2. Mezomorfi ve endomorfi	2.2.5.Dengeli ektomorfi	4.3.3.Dengeli somatotip yapıyı
5.2.2. Dengeli endomorfi	2.5.2. Dengeli mezomorf	3.2.5. En- domorfik ektomorfi	4.3.4 Dengeli somatotip



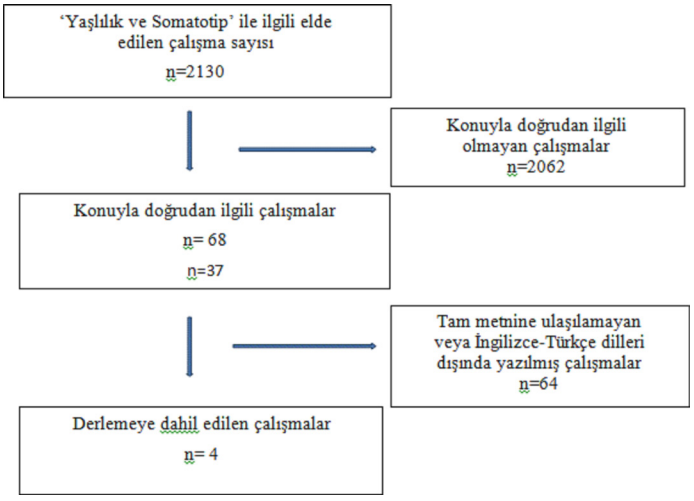
Şekil 1. Somatokart

Bir deneğin somatotipi üçgen içinde bir nokta olarak yer alır. Somatokartta bütün örnekler sırası ile noktalanmaktadır. Somatokart bireysel somatotip kategorilerine dayalı olarak ilave analizlerin yapılmasını da sağlar. Somatokart kendi içinde üç eksen olacak şekilde bölümlere ayrılmıştır. Bu eksenler üçgenin merkezinde kesişirler. Bu üçgen endomorfi, mezomorfi, ektomorfiyi belirler. Komponent dereceleri merkezden bu eksenlerin uçlarına doğru artış gösterirler. Bununla birlikte üç komponentteki ekstrem değerler uçlarında yazılıdır. Somatotip bölümleri pozisyonları orantı derecelerine veya somatotip komponentlerinin dominant olma durumlarına göre isimlendirilir (6, 7).

MATERYAL ve METOT

Bu derleme çalışmada somatotip karakter analizinin yaşlılarda konu edildiği çalışmalar incelenmiştir. Araştırma 2000-2019 yılları arasında yapılmış çalışmalar ile sınırlandırılmıştır.

Araştırmada literatür Pubmed, Scholar Google, Medline, Scopus veritabanları üzerinden 'somatotip ve yaşlılık' arama terimleri ile taranmıştır. Literatür taramasına ilişkin akış şeması Şekil 2'de gösterilmiştir. Çalışmaya 60 yaş ve üzeri popülasyonun somatotip profillerini inceleyen çalışmalar dahil edilmiştir. Üst yaş sınırı 90 olarak alınmıştır.



Şekil 2. Araştırmada yapılan literatür taramasının akış şeması

Tablo 2. Derlemede incelenen çalışmaların özeti

Yazarlar, yılı	Araştırma Grubu	Somatotip Analiz Tekniği	Sonuç
Kalichman ve Kobliansky (2006)	18-89 yaş arası 802 erkek ve 18-90 yaş arası 738 kadın sağlıklı gönüllü	Heath ve Carter Metodu	Endomorfı ortalama değeri açısından kadınlarda 31-40, 41-50, 51-60 ve 61-70 yaş grupları arasında anlamlı fark bulunmazken; erkeklerde 31-40 ile 18-30 yaş grupları arasındaki fark anlamlı bulunmuştur. 50 yaşından itibaren her iki cinsiyette de ortalama mezomorfı değerleri azalmış; ancak, değişiklikler istatistiksel olarak anlamlı bulunmamış iken ektomorfinin ortalama değerlerinde neredeyse hiçbir değişiklik bulunmamıştır. Kadınlarda 18-30 yaş grubunda endomorfı ortalama değeri 71-80 yaş grubu dışında diğer gruplara göre anlamlı düşük bulunmuştur.
Rahmawati ve ark. (2008)	18-90 yaş arası 426 sağlıklı gönüllü	Heath ve Carter Metodu	Her iki cinsiyette de 21–40 ve 41-60 yaş grubunda ektomorfinin dışında diğer somatotiplerde önemli bir fark bulunmamıştır. Erkelerde ektomorfinin, kadınlarda endomorfinin; daha sık görüldüğü, 61-90 yaş grubunda endomorfinin azaldığı sonucuna varılmıştır.
Buffa ve ark. (2007)	65-90 yaş arası 110 Tip 2 diyabet hastası	Heath ve Carter Metodu	Tip 2 diyabet hastası erkeklerde %68'lik oranın mezomorfik endomorf, %16'lık oranın endomorfik mezomorf, ve geriye kalan % 16'lık oranın ise mezomorf-endomorf olduğu belirlenmiştir. Tip 2 diyabetli kadınların ise % 83'ü mezomorfik endomorf, %14'ü mezomorf-endomorf, %3'ü ise endomorfik mezomorf somatotip sınıfında olarak belirlenmiştir.
Buffa ve ark. (2005)	60-89 yaş arası 280 sağlıklı gönüllü	Heath ve Carter Metodu	Erkek gönüllülerin %30.1'i mezomorfik endomorf, %28,6'sı mezomorf-endomorf, %40,6'sı endomorfik mezomorf ve %0.7'si ektomorfik mezomorf olarak belirlenirken kadın gönüllülerin %69.9'u mezomorfik endomorf, %20.5'i mezomorf-endomorf, %8.9'u endomorfik mezomorf ve %0.7'si ise santral tip olarak belirlenmiştir.

SONUÇ

TKalichman ve Kobliansky (2006) (9) ve Rahmawati ve ark. (2008) çalışmalarında inceledikleri popülasyonu yaş gruplarına ayırmışlardır (10). Buffa ve ark. (2007) ve Buffa ve ark. (2005) (12) ise yaşlı popülasyonu inceleyerek somatotip karakter analizi yapmışlardır (11).

Literatürde farklı ırk ve toplumlardan popülasyonlar konu edilmiş olsa da somatotip karakterde yaşlan mayla birlikte bir değişim gözlendiği ortak çıkarım olarak gözükmektedir. Çalışmamız bu çıkarımları ortaya koymayı amaçlamıştır.

Bu çalışmada konu edilen araştırmalardan ortaya çıkan ortak sonuca göre ileri yaşlarda (60 yaş ve üzeri) erkek ve kadınlarda endomorfı oranının azaldığı, mezomorfi veya ektomorfi oranlarının daha sık görüldüğü söylenebilir. 60 yaş öncesinde orta yaş grubunda (31-60) ise mezomorfi ve endomorfi oranları daha yüksek görülmektedir. Genç yaş grubunda ise (18-30) ileri yaş grubuna benzer şekilde daha az endomorfi görülmektedir.

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