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Research article
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Evaluation of atherosclerosis risk by measurement of intima media thickness and pulse wave velocity in Lichen Planus patients.

Liken Planus hastalarında ateroskleroz riskinin intima media kalınlığı ve nabız dalga hızı ile değerlendirilmesi

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Abstract

Aim: Lichen planus (LP) is one of the chronic inflammatory diseases. Chronic inflammation may play an important role in the development of subclinical atherosclerosis. In this study, we aimed to investigate the relationship between LP and atherosclerosis by using carotis intima media thickness (CIMT) and pulse wave velocity (PWV) measurements.

Methods: Forty Lichen planus patients (32 female and 8 male; mean age 44.6±1.2 years) and 40 healthy individuals (32 female and 8 male; mean age 41.2±0.9 years) enrolled in the study. Individuals with atherosclerotic risk factors were excluded from the study for both groups. Demographic and biochemical data were recorded for both groups. Carotis intima media thickness and pulse wave velocity measurements were compared between healthy and LP patients.

Results: Maximum and average CIMT values in LP patients were significantly higher than the control group (Right maximum CIMT; 0.77±0.01 vs. 0.74±0.01, p=0.01, Left maximum CIMT; 0.80±0.01 vs. 0.76±0.01, p=0.011, Right average CIMT; 0.65±0.01 vs. 0.63±0.01, p=0.039, Left average CIMT; 0.68±0.01 vs. 0.64±0.01, p=0.005, respectively). No statistically significant difference was found between LP patients and control group for PWV (6.34±0.30 vs. 6.79±0.70 respectively, p=0.131).

Conclusions: Our study demonstrated that CIMT was increased in patients with LP who had no clinical evidence of heart disease. LP patients were under an increased risk of subclinical atherosclerotic vascular dysfunction and structural changes.

Key words: Lichen planus, Carotis intima media thickness, Pulse wave velocity, Atherosclerosis

Öz

Amaç: Liken Planus (LP) kronik inflamatuar hastalıklardan birisidir. Kronik inflamasyon subklinik ateroskleroz gelişiminde önemli bir role sahip olabilir. Bu çalışmamızda, LP ile ateroskleroz arasındaki ilişkiyi karotis intima medya kalınlığı (KİMK) ve nabız dalga hızı (NDH) ölçümlerini kullanarak araştırmayı amaçladık.

Materyal ve Metod: Kırk LP hastası (ortalama yaşı 44.6±1.2 olan 32 bayan ve 8 erkek) ve 40 sağlıklı birey (ortalama yaşı 41.2±0.9 olan 32 bayan ve 8 erkek) çalışmaya alındı. Her iki grupta da aterosklerotik risk faktörleri olan hastalar çalışmadan dışlandı. Her iki grubun demografik ve biyokimyasal parametreleri kaydedildi. Sağlıklı bireyler ve LP hastalarında karotis intima medya kalınlığı ve nabız dalga hızı ölçümleri karşılaştırıldı.

Bulgular: Maksimum ve ortalama KİMK değerleri LP hastalarında kontrol grubuna göre anlamlı olarak daha yüksek saptandı (sırasıyla; sağ maksimum KİMK; 0,77±0,01 ve 0,74±0,01 p=0,01, sol maksimum KİMK; 0,80±0,01 ve 0,76±0,01 p=0,011, sağ ortalama KİMK; 0,65±0,01 ve 0.63±0,01 p=0,039, sol ortalama KİMK; 0,68±0,01 vs. 0,64±0,01, p=0,005). LP hastaları ve kontrol grubu arasında NDH ölçümleri açısından anlamlı istatistiksel farklılık gözlenmedi (sırasıyla; 6,34±0,30 ve 6,79±0,70, p=0,131).

Sonuçlar: Bizim çalışmamıza göre kalp hastalığı olmayan LP hastalarında KİMK değerleri daha yüksek oranlarda gösterildi. LP hastaları subklinik ateroskleroza bağlı vasküler disfonksiyon ve yapısal değişiklikler açısından risk altındadırlar.

Anahtar kelimeler: Liken planus, Karotis intima medya kalınlığı, Nabız dalga hızı, Ateroskleroz

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Introduction

Lichen planus (LP) is a chronic inflammatory disease that affects the skin, skin appendages and mucosal tissues [1]. Chronic inflammation, which is involved in the pathogenesis of diseases like LP, impairs the lipid metabolism via reducing the high density lipoprotein (HDL) levels and increasing the triglyceride (TG) levels. This impaired lipid status in chronic inflammation leads to increased cardiovascular risk associated with dyslipidemia [2]. High plasma lipid levels were detected in previous studies with LP patients [3]. Also, increased inflammatory mediators in diseases such as LP contribute to the pathogenesis of atherosclerosis. Non-invasive tests such as carotis intima media thickness (CIMT) and pulse wave velocity (PWV) may be important for examining LP patients to prevent atherosclerotic complications.

An ultrasonographic measurement, CIMT is well-demonstrated clinical predictor of subclinical atherosclerosis in inflammatory diseases such as rheumatoid arthritis, psoriasis and systemic lupus erythematosus [4-7]. The increase in CIMT value represents the intimal smooth muscle proliferation and accumulation of atherogenic particles. CIMT measurement is used for early detection of atherosclerosis, risk classification and evaluation of treatment response. Another predictor of subclinical atherosclerosis, PWV can represent the arterial wall stiffness. Previous studies have shown that arterial wall stiffness is relevant to cardiovascular morbidity and mortality rate [8-10]. These parameters have been also used for determination of long-term prognosis of cardiovascular diseases.

In this study, we aimed to investigate the relationship between subclinical atherosclerosis and LP in patients without other conventional risk factors for atherosclerosis by performing CIMT and PWV measurements and compare with healthy individuals.

Material and methods

Study groups

Forty patients (32 female (80%) and 8 male (20%); mean age 44.6±1.2 years) diagnosed as LP clinically and histopathologically in the departments of dermatology and cardiology and 40 healthy individuals (32 female (80%) and 8 male (20%); mean age 41.2±0.9 years) enrolled in this study. All the individuals in the study met below inclusion criteria.

Patients with other inflammatory diseases or receiving systemic steroid therapy for LP were not included in the study. Furthermore, patients have proven atherosclerosis, hypertension, diabetes mellitus, atrial fibrillation and arrhythmia, chronic kidney (creatinine clearance ≤50 mL/min) and liver failure, left ventricular ejection fraction <55%, severe valvular heart disease and mechanical heart valve were excluded as well as patients using drug because of hyperlipidemia and patients who has not suitable image quality for CIMT and PWV measurement. Also patients with under 18-years old excluded from the study. This procpective case-control study has been approved by the ethics committee of our university. Informed consent was received from the patients included in the study. This research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects".

Disease duration and family history of patients were recorded. Dermatological and cardiovascular examinations of both groups were performed, heights and weights were measured and body mass indexes (BMI) were calculated. Peripheral venous blood samples taken after overnight fasting for at least eight hours and blood glucose, lipid levels, blood cell count and basic biochemical parameters were studied. According to the metabolic syndrome criteria based on the report of The National Cholesterol Education Program (NCEP) 2001 Adult Treatment Panel (ATP) III metabolic syndrome status of patients and controls were identified and recorded. PWV and CIMT values of each individual in the patient and control groups were calculated.

Pulse Wave Velocity Measurement

PWV measurements of the patients were made blindly and without knowing the CIMT values of the patients. The spygmoCor (Artcor, Sydney, Australia) device was used for measurement. Resting blood pressure of the patients was measured before the procedure. The patients were hospitalized in the supine position on the examination table. The point where femoral artery pulse is palpable and of the most distal point of the carotid pulse is palpated was recorded by measuring the distance from the sternal notch to the system. An applanation tonometry device was sequentially applied to these points through the skin. The recordings were taken after the optimal waveform with appropriate amplitude and shape occurs. Simultaneously electrocardiographic (ECG) traces of patients were recorded with the recorder by connecting to the same device. Pulse transit time, i.e. pulse wave velocity was analyzed automatically by subtracting the time between proximal and distal pulses of the ECG.

Measurement of Carotis Intima Media Thickness

CIMT measurements of the patient were made blindly and without knowing PWV values. The patients are hospitalized in a dark room in supine position on the examination table. Both the right and left common carotid arteries were imaged with 7.5 MHz linear probe of the ultrasound device (Povervisio 7500, Toshiba AG, Japan). A segment of about 1 cm determined from 2-3 cm distal to the main section of carotid artery bulbus and signals were transferred to the computer via a video connection cables. After that, intima-media thickness measurement was performed with M'ATH® standard version 2.0.1.0 (Metris AG, France) whereby the maximum and average thickness of the respective segments were determined using the far side measurement method. Every carotis segment was measured three times and mean, maximum and average thickness values calculated.

Statistical Analysis

Experimental data were analyzed by "SPSS 18.0" software. Continuous variables are expressed as mean ± standard deviation and median (minimum-maximum), categorical data were expressed as a percent. Data were analyzed by analysis of normality of Shapiro Wilk test and Kolmogorov-Smirnov test. Regarding the assumptions to compare the two groups for continuous variables Student's t test or the Mann-Whitney U test was used. The correlation between the two groups was

performed by using Pearson's correlation analysis. $p \leq 0.05$ was considered significant.

Results

The mean disease duration of the patients was found 35.1±5.7 months. Mean ages, sex, height, weight and body mass indexes (BMI) of the patients were not different between both groups. Waist circumference was significantly higher in LP group (93.4±1.6 vs. 86.4±1.0, p=0.01). No significant difference was found between groups in biochemical parameters including; HDL, VLDL, TG and TG/HDL, LDL/HDL levels. Total cholesterol, LDL and total cholesterol/HDL levels were higher in the LP group compare with control group (200.2±6.4 vs. 183.4±4.9, p=0.04; 124.4±5.4 vs. 108.2±4.4, p=0.03; 4.1±0.2 vs. 3.6±0.2, p=0.04, respectively). Systolic blood pressure was significantly higher in LP group (120.0±1.5 vs. 113.8±1.5, p=0.03), but there was no difference in diastolic blood pressure. The baseline demographics, characteristics and biochemical parameters of the LP and control groups are summarized in Table 1.

Table 1: Demographic and biochemical data of the Liken Planus and control group.

	Liken Planus	Control Group	p
	Mean ± SD		
Age (years)	44.6±1.2	41.2±0.9	0.07
BMI (kg/m^2)	28.8±0.5	27.6±0.5	0.34
Waist circumference (cm)	93.4±1.6	86.4±1.0	0.01
Systolic blood pressure (mmHg)	120.0±1.5	113.75±1.5	0.03
Hemoglobin (g/dL)	13.1±0.2	13.0±0.3	0.91
Leukocyte(1000/mm^3)	6.7±0.3	6.5±0.2	0.84
Platelets (1000/mm^3)	241.2±8.1	252.8±8.9	0.34
Creatine (mg/dL)	0.6±0.0	0.7±0.0	0.94
Uric acid (mg/dL)	4.1±0.2	4.2±0.2	0.28
ALT (U/L)	17.3±1.5	17.2±1.3	0.85
AST (U/L)	18.8±0.8	18.4±0.8	0.57
TSH (mIU/L)	2.4±0.4	2.1±0.2	0.72
Free T4 (ng/dL)	1.2±0.0	1.1±0.0	0.49
Erythrocyte sedimentation (mm/s)	12.7±1.6	11.2±1.8	0.43
CRP (mg/dL)	0.22±0.04	0.21±0.0	0.79
Fasting blood glucose (mg/dL)	87.7±1.45	86.2±1.47	0.47
Total chol. (mg/dL)	200.2±6.4	183.4±4.8	0.04
LDL-chol. (mg/dL)	124.4±5.4	108.2±4.4	0.03
HDL-chol. (mg/dL)	52.2±2.4	54.6±2.1	0.19
Triglyceride (mg/dL)	116.4±7.7	100.9±7.2	0.14
Total chol./HDL chol.	4.1±0.2	3.6±0.2	0.04
LDL chol./HDL chol.	2.5±0.2	2.1±0.1	0.06
Triglyceride/HDL chol.	2.5±0.2	2.1±0.3	0.09

ALT: Alanine aminotransferase; AST: Aspartate aminotransferase; BMI: body mass index; CRP: C reactive protein; HDL: High density lipoprotein; LDL: Low density lipoprotein; TSH: Thyroid stimulating hormone

Maximum and average CIMT values were significantly higher in LP group compare with control group and these are Maximum and average CIMT values are summarized in Table 2.

Table 2: CIMT values of the LP and control group.

	Liken Planus	Control Group	p
	Mean ± SD		
Right Max-CIMT (mm)	0.77±0.01	0.74±0.01	0.010
Left Max-CIMT (mm)	0.80±0.01	0.76±0.01	0.011
Right average-CIMT (mm)	0.65±0.01	0.63±0.01	0.039
Left average-CIMT (mm)	0.68±0.01	0.64±0.01	0.005

CIMT: Carotis intima media thickness

LP patients were grouped as mucosal involvement and non-mucosal involvement; demographic and biochemical parameters, CIMT and PWV values were not significantly different between both groups.

In this study, the relationship between CIMT values and increasing age in the LP group were evaluated through the correlation analysis. There was a positive correlation between the values of right maximum CIMT (p=0.001, r=0.73), right average CIMT (p=0.001, r=0.77), left maximum CIMT (p=0.001, r=0.68), left average CIMT (p=0.003, r=0.45) and increasing age in the LP group. On the other hand no significant correlation was detected between CIMT and duration or extent of the LP.

Discussion

LP is an inflammatory disease affecting skin, mucous membranes and hair follicles [1]. It was reported at the rate of 0.14 – 1.27% in general population [11,12].The disease may occur at any age and mean onset age of the disease is 40s. The incidence does not vary between sexes [12].

The relationship between inflammatory processes of LP, dyslipidemia and cardiovascular risk has been shown in previous studies [13-15]. Although it is not known exactly, a cell-mediated immune dysfunction is responsible for LP etiology and pathophysiology. Antigens are processed by the Langerhans cells and presented to the T lymphocytes. This stimulated lymphocytic infiltration is epidermotropic and attacks keratinocytes, resulting in the production of reactive oxygen radicals. During lymphocytotoxic process, keratinocytes stimulate cytokine release and attracts lymphocytes further [2]. A delayed type hypersensitivity immune reaction and resulting cytokine release by activated T cells attracts inflammatory cells and leads to destruction of keratinocytes by reactive oxygen species. All these occurrences play a role in the pathogenesis of LP. A variety of cytokines including IL-2, IL-4, IL-6, IL-10, TNF-α, IFN-γ, IFN-α and TGF-β1 is also associated with LP. These inflammatory processes potentially explain the atherosclerosis development, the relationship between dyslipidemia and LP, and possibly other components of the metabolic syndrome [2,13].

It has been demonstrated in previous studies that cardiovascular risk factors such as smoking, low physical activity, hypertension, obesity, diabetes mellitus, dyslipidemia and metabolic syndrome were higher in patients with psoriasis [16,17]. These cardiovascular risk factors associated with atherosclerosis may be higher in LP patients, as in psoriasis. In a study, cardiovascular risks were examined in 100 LP patients and 100 healthy individuals; higher lipid levels and acute phase reactants were found in LP patients [2]. Arias-Santiago S et al performed a case-control study with 80 LP patients and 80 healthy individuals to identify lipid status in LP. High triglycerides, total cholesterol and LDL levels, but low HDL levels were found in LP patients (3). Dreiher J et al checked

1477 LP and 2846 healthy individuals to examine the relationship between LP and dyslipidemia and showed significantly higher prevalence of dyslipidemia in patients with LP [13]. In our study, lipid parameters were compared between patient and control groups; total cholesterol, LDL, and total cholesterol/HDL values were statistically higher in patient group, but HDL, VLDL, TG, TG/HDL and LDL/HDL values were similar in groups.

CIMT is a value used to determine the degree of subclinical atherosclerosis as a result of chronic inflammation. Previous studies showed that CIMT values were significantly higher in diseases such as psoriasis [18-20]. Recently, a study demonstrated that LP was associated with increased mean CIMT, and furthermore that CIMT was correlated with longevity of LP [21].Similarly, in our study the maximum and average CIMT values were significantly higher in LP patients compared with control group. Also, there was a positive correlation between the CIMT values and increasing age in the LP group. On the other hand no significant correlation was detected between CIMT and duration or extent of the LP.

There are studies in the literature that showed the relationship between psoriasis and atherosclerosis using by PWV measurements, and in these studies, PWV values were significantly higher in the psoriasis group compare with the control group [20,22]. But in our study, there was no significant difference in PWV values between the LP and control group. This is the first study which investigated the relationship with LP and PWV, and further large studies are necessary for this relation to be better illuminated.

Our study has some limitations. Small sample size is the most important limitation of our study. But according to the power analysis this sample size was found enough for our study. Another one is lack of long-term clinical follow-up in these patients for atherosclerotic complications.

We show that compared with healthy individuals, LP patients may have an increased risk of atherosclerosis development. Increased CIMT values and dyslipidemia reflect the propensity to atherosclerotic progression in these patients. Therefore, the screening of these patients against cardiovascular risks by noninvasive tests and beginning the treatment of risk factors in aggressive form at earlier stage can be important in the prevention of atherosclerosis and the potential complications that may arise in the future in LP patients.

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Research article
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Clinical characteristics and results of laser peripheral iridotomy of pigment dispersion syndrome

Pigment dispersiyon sendromlu olgularımızda klinik bulgular ve laser periferik iridotomi sonuçları

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Abstract

Aim: To report the clinical findings, characteristics and the results of peripheral laser iridotomy in pigment dispersion syndrome (PDS) patients.

Methods: Medical records of 30 patients who had been diagnosed with PDS were evaluated retrospectively at Glaucoma Department of Istanbul Faculty of Medicine at Istanbul University. Sixty eyes of these 30 patients enrolled in the study.

Results: Eighteen of them (60%) were male and 12 (40%) were female with mean age of 42.4 ±12.3 years (range: 22 to 73 years). Forty-six eyes of the 23 patients had myopia, 12 eyes of six patients had hyperopia, and two eyes of one patient had emmetropia. All patients except two eyes of the one patient had (96.6%) Krukenberg spindles. Homogeneous trabecular meshwork (TM) pigmentation was seen in all patients. Thirty-two eyes of 17 patients (53.3%) had iris trans-illumination defects. Neodymium:yttrium–aluminum–garnet (Nd:YAG) peripheral laser iridotomy was performed in 44 eyes of 60 eyes (73.3%).

Conclusion: The most common clinical findings in Turkish PDS patients were Krukenberg spindles and homogeneous TM pigmentation. If PDS hasn't advanced in pigmentary ocular hypertension or pigmentary glaucoma, progression can be stabilized by laser iridotomy and medical treatment.

Keywords: Glaucoma, Pigment dispersion syndrome, Peripheral laser iridotomy

Öz

Amaç: Pigment dispersiyon sendromlu (PDS) olgularımızda klinik bulguları ve laser periferik iridotomi sonuçlarımızı bildirmek

Materyal ve Metod: İstanbul Üniversitesi İstanbul Tıp Fakültesi Glokom departmanında PDS tanısı alan 30 olgunun tıbbi kayıtları retrospektif olarak incelendi. Çalışmaya 30 olgunun 60 gözü dahil edildi.

Bulgular: Olguların 18'i (%60) erkek, 12'si (%40) kadındı. Ortalama yaş 42,4 ±12,3 yıldı (22-73). 23 olgunun 46 gözünde miyopi, altı olgunun 12 gözünde hipermetropi ve bir olgunun iki gözünde emetropi mevcuttu. 29 olgunun her iki gözünde de (%96,6) Krukenberg mekiği izlendi. Trabeküler ağda homojen pigmentasyon tüm olgularda görüldü. On yedi olgunun 22 gözünde (%53,3) iris transilüminasyon defektleri vardı. Neodymium:yttrium–aluminum–garnet (Nd:YAG) laser periferik iridotomi 44 göze (%73,3) uygulandı.

Sonuçlar: Olgularımızda en sık rastlanan klinik bulgular Krukenberg mekiği ve trabeküler ağda homojen pigmentasyondur. Pigment dispersiyon sendromu pigmenter oküler hipertansiyona ve pigmenter glokoma ilerlemedikçe periferik ND yag laser iridotomi ve medikal tedavi ile kontrol altına alınabilir.

Anahtar kelimeler: Glokom, Pigment dispersiyon sendromu, Laser periferik iridotomi

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Hasta Onamı: Çalışmanın retrospektif olması nedeniyle hasta onamı alınmamıştır.

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Introduction

Pigment dispersion syndrome (PDS) is characterized by disruption of the iris pigment epithelium by irido-zonular contact and deposition of the released pigment throughout the anterior segment of the iris [1].Characteristic concave iris configuration has been described and it is thought to facilitate pigment release. Over time, chronic pigment release can lead to elevated intraocular pressure (IOP) and advanced pigmentary glaucoma (PG). PDS can be associated with ocular hypertension or glaucoma. Pigmentary ocular hypertension (POH) is a pigment dispersion syndrome with elevated IOP and no glaucomatous optic neuropathy. PG is glaucomatous optic neuropathy in association with PDS [2].

The classic diagnostic triad is corneal endothelial pigmentation (Krukenberg's spindle), radial mid-peripheral iris trans-illumination, and homogenous trabecular meshwork (TM) pigmentation [1]. Typically, PDS is a bilateral condition that affects young males with myopia and it is more common in Caucasian patients. PDS can also be associated with endotheliopathy, deeper anterior chamber depth, heterochromia, anisocoria, pigment deposition on the anterior or posterior lens capsule, and zonules.

In addition to findings within the anterior segment of the eye, PDS can also affect the posterior segment. Lattice retinal degeneration has been reported to be evident in PDS and PG, which is greater than what would be expected for the associated myopia [3]. Laser peripheral iridotomy (LPI), can reverse backward bowing of the iris and it might prevent pigment release. It is an effective and safe method for reducing intraocular pressure.

This study aims to report the clinical findings, characteristics, and results of using LPI to treat PDS in Turkish patients at a single center.

Material and methods

The medical records of 30 PDS patients who were diagnosed and followed at the Glaucoma Department of the Istanbul Faculty of Medicine at Istanbul University were evaluated retrospectively. The study protocol was approved by the Ethics Committee of Istanbul University, Istanbul Faculty of Medicine. The research follows the tenets of the Declaration of Helsinki. Informed consent was obtained from all participants.

All 30 patients underwent detailed ophthalmic examinations, including family history, systemic and ocular history, laterality, visual acuity, and central corneal thickness, number of topical medication, IOP measurement (Goldman applanation tonometry), refraction, spherical equivalent power, slit-lamp biomicroscopy, gonioscopy, and detailed funduscopic examination. The Humphrey Automated (Carl Zeiss Meditec, Dublin, CA, USA) Swedish Interactive Threshold Algorithm (SITA) standard 30-2 visual field test results, the Heidelberg Retinal Tomography 3 (Heidelberg Engineering, Gmbh, Dossenheim, Germany) results, and the retinal nerve fiber layer analysis results (Spectralis OCT, Heidelberg Engineering) of each patient were also recorded. TM pigmentation was evaluated by physicians experienced in diagnosing glaucoma using gonioscopy.

Diagnostic criteria for PDS include at least two of the following three signs: Krukenberg's spindle, homogenous TM pigmentation, and iris trans-illumination defects. Patients with a history of uveitis, trauma, or previous laser or ocular surgery were excluded.

LPI was performed on the PDS eyes at the 10 or 2-o'clock meridian with 3 mJ energy using an Abraham contact lens. All of the LPIs were performed by two physicians (SB, BI). After undergoing LPI, the patients were treated topically with corticosteroids three times daily for one week.

SPSS software (version 11.5; SPSS Inc. Champaign, IL, USA) was used for statistical analysis, which included the Shapiro Wilk test, the paired sample t-test, the Wilcoxon signed-rank test, and the Kruskal-Wallis test. $p<0.05$ was considered to be statistically significant.

Results

Thirty patients (60 eyes) were evaluated in the study. Eighteen (60%) of the 30 patients were male and 12 (40%) were female. Four patients had been referred to our clinic with a misdiagnosis of uveitis. Fifteen patients had already been diagnosed with glaucoma at other centers. Seven patients had visual problems and three had complaints of redness. Two patients were diagnosed during the routine examination.

The mean age of the patients was 42.4 ±12.3 years (range: 22–73 years). The average age for the male and female patients was 41.8±14.7 (range: 22–73) and 43.2±7.8 (range: 27–56 years), respectively. The male-to-female ratio was 3:2. Six of the patients had a family history of glaucoma. None of the patients had a family history of PDS or PG. Twenty-three patients (46 eyes) had myopia of -0.5 D or greater, with a mean refractive error of -1.7±1.1 D spherical equivalent dioptres (range: -0.50–6.0 D). Five patients (10 eyes) had hyperopia with a mean refractive error of 1.0±0.3 D spherical equivalent dioptres (range: 0.50-1.50 D), and two patients (four eyes) had emmetropia.

Most of the patients (96.6%) had Krukenberg's spindle (as seen in Figure 1a), which were bilateral; one patient (two eyes) did not have that condition. The gonioscopy results showed that the eyes in all 30 patients (100%) had homogeneous TM pigmentation (as seen in Figure 1b). Seventeen patients (53.3%; 32 eyes) had iris trans-illumination defects (as seen in Figure 2), and these were found to be bilateral in 15 patients and unilateral in two patients. One patient (3.3%) had heterochromia, two patients (5%; three eyes) had pigment granule dusting on the anterior lens surface. None of the patients had anisocoria. After reviewing the fundus examination results, five eyes (8.3%) were found to have peripheral lattice degeneration. Vitreoretinal surgery was performed due to the development of retinal detachment in two eyes (3.3%).

The average central corneal thickness was 537±35.2μm (range: 481–617 μm) Best-corrected visual acuity (BCVA) of the all participants at first examination was 0:02± 0.19 logMAR. The initial average intraocular pressure was 19.3±6.9 mmHg and the patients were using an average of 0.4±0.7 topical medications at the time of their first visit. At the final visit in all patients, the mean intraocular pressure was 14.7±2.6 mmHg with an average of 1.3±1.3 medications.

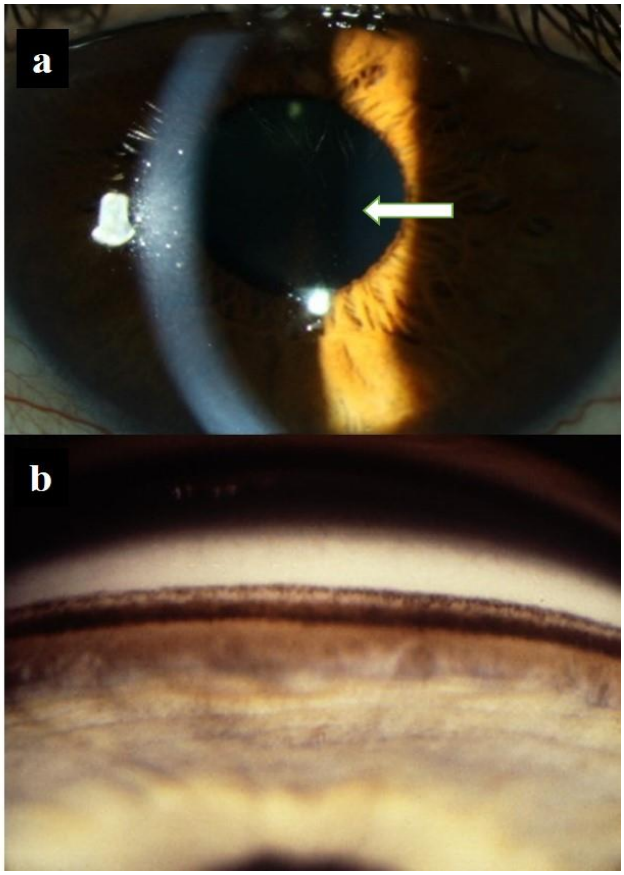

Figure 1: (a) Slit-lamp photo of the left eye. Arrow shows Krukenberg spindle. (b) Homogeneous TM pigmentation

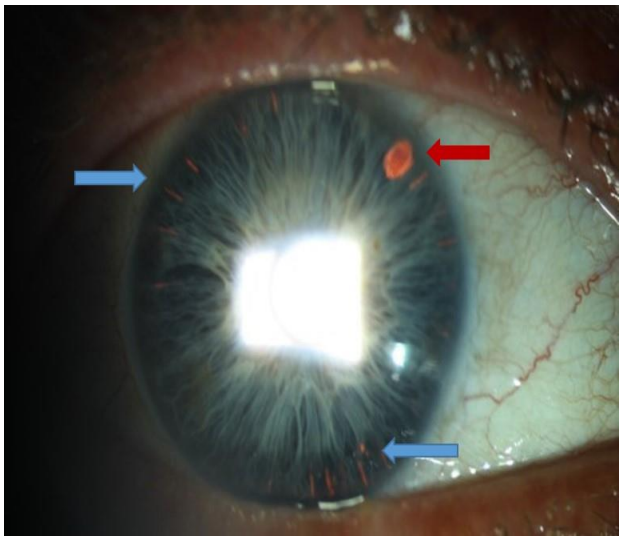

Figure 2: Anterior segment photo of the right eye of a patient. Blue arrows show iris trans-illumination defects, red arrow shows the peripheral laser iridotom

LPIs were performed in 44 of the 60 eyes (73.3%). Three patients (three eyes) underwent trabeculectomy due to high IOP (>30 mmhg) with the maximum amount of antiglaucomatous medication. Seven patients (13 eyes) that were supposed to receive the laser treatment declined to undergo it.

For the peripheral laser treatment group, the mean intraocular pressure and the average number of medications at the first visit was 20.2±7 mmHg and 0.38±0.68, respectively. At the last visit, the mean intraocular pressure and the average number of medications in that group was 14.8±2.8 mmhg ($p<0.001$) and 1.5±1.5 ($p<0.001$), respectively. The C/D ratios and the retinal nerve fiber layer (RNFL) thickness measurement of these patients before treatment were 0.43±0.18 and 85.8±19.2µ, respectively; after treatment the C/D ratios and RNFL measurements were 0.5±0.2 ($p=0.002$) and 84.6±19.5µ ($p=0.048$), respectively.

Twenty-one eyes were classified as PDS, 15 eyes as POH, and 24 eyes as PG. LPIs were performed in 14 of the 21 PDS eyes. The mean IOP and the average number of medications at the first visit in the PDS group before LPI were 17.5±1.5 mmHg and 0, respectively. At the last visit after LPI, the mean IOP and the average number of medications were 15.1±2.6mmhg ($p<0.05$) and 0.8±1.1 ($p<0.05$), respectively. Eight of those eyes (57%) continued without topical medication after the LPI procedure. The C/D ratios and RNFL thickness measurements of those patients before treatment were 0.36±0.18 and 97.86±7.07 µ, respectively. After treatment the C/D ratios and RNFL measurements were 0.36±0.18 ($p=0.88$) and 97.93±6.40µ ($p=0.97$), respectively. Five eyes (36%) progressed to POH and one eye (7%) progressed to PG. Seven of the PDS eyes did undergo LPI. Three (43%) of those seven eyes progressed to POH and four (57%) of the seven eyes did not.

In the POH cases, 11 eyes underwent LPI; one eye progressed to PG and two eyes regressed to PDS. In the POH group, the mean IOP and the average number of medications at the first visit before LPI were 22.2±7.8 mmHg and 0.9±0.9, respectively. At the last visit after LPI, the mean IOP and the average number of medications were 14±2.9 mm Hg ($p=0.06$) and 1.18±1 ($p=0.77$), respectively. The C/D ratios and the RNFL thickness measurements of these patients before treatment were 0.40±0.15 and 97.45±9.60 µ, respectively; after treatment they were 0.54±0.22 ($p<0.05$) and 95.27±10.15 µ ($p<0.05$), respectively. No progression to PG was observed in four eyes that did not undergo LPI; moreover, IOP had been controlled with topical medications.

Nineteen of the 24 PG eyes underwent LPI treatment. In this PG group, the mean IOP and the average number of medications at the first visit before LPI were 21.1±8.6mmHg and 0.3±0.5, respectively. At the last visit after LPI, those values were 15.2±2.9 mmHg ($p<0.05$) and 2.3±1.6 ($p<0.001$), respectively. The C/D ratios and the RNFL thickness measurements of these patients before treatment were 0.51±0.19 and 70.32±18.8 µ, respectively; after treatment those values were 0.59±0.18 ($p<0.001$) and 68.74±18.88 µ ($p=0.059$), respectively. The mean follow-up period was 69.7±57.7 months (range: 3–168 m). The LPI results are summarized in Table 1.

Discussion

Sugar and Barbour first described pigmentary glaucoma in 1949 in their report of two patients with marked trabecular meshwork pigmentation, iris trans-illumination defects, and elevated intraocular pressure.4 These findings were later described to be secondary to a posterior bowing of the concave iris figuration and increased pigment dispersion from iridozonular contact [5,6].

Studies have shown that 4–21% of PDS patients have a family history of glaucoma [7,8].Our cases showed a 20% family history of glaucoma, and none of the patients had a family history of PDS or PG. Several conditions, including pseudoexfoliation syndrome, uveitis, intraocular surgery, and

Table 1: Results of the laser peripheral iridotomy

	IOP (mmHg)	No. of medication	C/D ratio (HRT)	RNFL thickness (µ)
PDS (before)	17.5±1.5	0	0.35±0.18	97.8±7.06
PDS (after)	15.1±2.6	0.8±1.1	0.36±0.17	97.9±6.4
p	0.023	0.026	0.888	0.970
POH (before)	22.2±7.8	0.9±0.9	0.4±0.1	97.4±9.5
POH (after)	14±2.9	1.18±1	0.53±0.2	95.2±10.1
p	0.06	0.744	**0.023**	**0.018**
PG (before)	21.1±8.6	0.3±0.5	0.5±0.18	70.3±18.7
PG (after)	15.2±2.9	2.3±1.6	0.59±0.18	68.7±18.8
p	0.017	0.001	<0.001	0.059
All of LPI (before)	20.2±7	0.38±0.68	0.43±0.18	85.8±19.2
All of LPI (after)	14.8±2.8	1.5±1.5	0.5±0.2	84.6±19.5
p	<0.001	<0.001	0.002	0.048

trauma, have characteristics that are similar to PDS. Iris trans-illumination defects are not always present in PDS eyes, but they are present in most (86%) PDS cases and these defects are more obvious in light-colored eyes [8].

Tugal-Tutkun et al. [9] described Bilateral Acute Depigmentation of the Iris (BADI), which is an acute onset of bilateral pigment dispersion in the anterior chamber, depigmentation and discoloration of the iris stroma, and pigment deposition in the trabecular meshwork. This condition was initially mistaken for pigment dispersion syndrome. Patients with a diagnosis of BADI do not have the other characteristic features of pigment dispersion syndrome, including pigment deposition on the surface of the lens, zonules, iris stroma, iris concavity, or mid-peripheral trans-illumination defects in a spoke-like pattern. Therefore, it is important not to misdiagnose PDS patients with a normal IOP as having BADI.

Ocular hypertension or pigmentary glaucoma develops over a number of years in PDS, whereas the increase in IOP occurs within weeks or months in Bilateral Acute Iris Trans-illumination (BAIT), which is a condition in which bilateral acute iris trans-illumination develops in association with pigment showering and persistent mydriasis [8]. Compromised pupillary constriction to light was thought to be related to variable amounts of sphincter paralysis in BAIT [10]. Pupillary reactions to light and near stimuli are not affected in PDS [11,12].

In PDS, iris trans-illumination defects are commonly located in the mid-peripheral iris and with a spoke-like pattern [13]. The incidence of iris trans-illumination defects in our study was 53% and most of them were observed to have a spoke-like pattern.

The characteristic gonioscopic feature of PDS is increased homogenous TM pigmentation contrast to the patchy pigmentation in pseudo-exfoliation syndrome [14-16]. We observed TM pigmentation in all of our patients. Although some sources have said that Krukenberg' spindle is not seen in all patients, it was observed in 96.6% of the patients in our study [17].

Heterochromiamay be observed in asymmetric patients, with the affected eye having a darker iris as a result of the deposition of pigment onto the anterior surface of the iris [14-18]. In our cases, only one patient had heterochromia (3.3%).

PDS can affect the posterior segment. Lattice retinal degeneration has been reported to occur in 20–33% of cases of PDS and PG, which is greater than would be expected for the associated myopia [2, 19]. Retinal detachments have been reported to occur in 5.5–6.6% of PDS cases; again this is higher than the expected for the degree of myopia [15,20,21].However, in our study peripheral lattice degeneration was present in five eyes (8%) and retinal detachment was present in two eyes (3%), requiring vitreoretinal surgery. Similar results were seen in the published studies.

In 1992, Karickhoff [6] suggested that LPI may be a potential treatment for PG. He postulated that LPI may relieve the posterior bowing of the peripheral iris by equalizing the pressure in the anterior and posterior chambers. LPI has been advocated as a means to correct peripheral iris bowing from reverse pupillary block. Gandolfi and Vecchishowed that the use of Nd:YAG LPI reduced the incidence of POH in a randomized control trial of 21 patients [22]. In a retrospective study, Reistad et al. could not provide evidence to support the benefit of LPI in the long-term IOP control of patients with PG [23]. In our study, we observed a statistically significant decrease of IOP in the PDS cases that underwent LPI, although the PDS eyes required more medication. Despite this, the C/D ratios and the RNFL thickness did not deteriorate during the follow-up period. In the POH cases, IOP decreased after LPI but that decrease was not statistically significant. However, during the follow-up period the increase in the C/D ratios and the thinning of RNFL thickness were statistically significant in these cases. In the PG eyes, IOP was under control; however, it is difficult to say that this was due to LPI because these PG eyes also needed more medication and other treatment modalities.

Consequently, homogeneous trabecular meshwork pigmentation was the most common clinical finding in our 30 patients (100%), followed by Krukenberg's spindle (96.6%) and then iris trans-illumination defects (53.3%). In addition to the anterior segment findings, it is important to use funduscopic examinations in order to ensure that retinal pathologies are identified.

This study's findings suggest that if pigment dispersion syndrome hasn't advanced to pigmentary ocular hypertension or pigmentary glaucoma, its progression can be stabilized by laser peripheral iridotomy and medical treatment.

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Research article
Araştırma makalesi

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Comparison of open acromioplasty outcomes according to approach type; anterior and lateral

Anterior ve lateral insizyon ile yapılan açık akromioplasti sonuçlarının karşılaştırılması

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Abstract

Aim: Subacromial impingement syndrome appears to be one of the most frequent causes of shoulder pain. Acromioplasty is the surgical intervention modality where conservative treatment no longer gives effect. Even though arthroscopic techniques keep arising popularity, open acromioplasty yet is very often used surgery. Our main goal was to compare clinical success of anterior and lateral open techniques whether or not these techniques affect final range of motion, DASH , UCLA& CONSTANT scores.

Methods: We assembled 37 regularly followed cases (26 female, 11 male) over 18 years old, operated between 2014 and 2016. We then ultimately evaluated comparison among variations such as age, sex, dominant extremity, postoperative follow-up time, approach type, operation duration, acromion type and most recent form where CONSTANT, DASH and UCLA scores , ROM (range of motion), developed complications were assessed. We divided cases to 2 main groups; group 1 anterior approach and group 2 lateral approach. Comparison throughout this particular study mainly went on these 2 groups.

Results: 70.3% (26 cases) were female, 29.7% (11 cases) were male. Mean age was 57.64 ± 9.17 (avg 45-84 years). 75.6 % (28 cases) had symptoms on dominant limb. Postoperative mean follow-up 18.49±5.37 months (avg 8-28 months). Mean operation duration was 35 minutes for group 1 and 37 minutes for group 2. No complications were presented. Patients also filled out prepared subjective survey papers at final clinical examination. Mean CONSTANT score was 88.5 for group 1 and 83.57 for group 2. Postoperative recovery lasted upon 7.1 ± 3.3 weeks (avg 1-12 week) and 6.6 ± 3.9 weeks (avg 1-14 wk) in group 2. CONSTANT, UCLA and DASH scores were evaluated separately and showed no significant difference in ordinary comparison, whereas very same CONSTANT scores were put to odds ratio calculator and presented surprising result; according to preoperative-postoperative comparison, anterior approach was predicted that would have had 2.8 times chance to show better results (80< score) than lateral approach. Same ordinary comparison was performed on UCLA and DASH scores and no significant difference was detected. Although very same odds ratio calculation for UCLA scores appeared to be 2.5 and for DASH it was 1.167. In all three assessment methods anterior approach was more recommendable approach type. Subjective assessments of the patients were as following: 14 patients determined clinically very good and good, 1 patient normal in group 1, where 16 patients were determined very good and good, 2 normal and 3 patients poor according to overall scoring.

Conclusions: There is no significant difference between anterior and lateral approaches according to ROM, various scorings, hospitalization duration. On the other hand, forbsubacromial impingement, open acromioplasty is yet highly reliable, convenient method with short surgery time.

Keywords: Subacromial impingement syndrome, Acromioplasty, Acromion

Öz

Amaç: Subakromiyal sıkışma sendromu omuz ağrısının en sık nedenlerinden biridir. Akromioplasti konservatif tedaviyle sonuç alınamayan hastalarda uygulanan bir tedavi yöntemidir. Artroskopik cerrahi yöntemlerin daha sık kullanılmaya başlanmasına rağmen açık akromioplasti sık uygulanan cerrahi bir yöntemdir. Çalışmamızın amacı anterior ve lateral insizyon sonrası uygulanan akromioplastinin tedavinin başarısını, hareket açıklığını ve DASH, UCLA, Constant skorlamalarını etkileyip etkilemediğini ortaya koymaktır.

Materyal ve Metod: Kliniğimizde 2014-2016 yılları arasında opere edilmiş ve en düzenli takibi olan 18 yaş üzeri 37 (26 kadın, 11 erkek) olgu retrospektif olarak değerlendirildi. Hastaların değerlendirilmesinde cinsiyet, yaş, dominant ekstremite, operasyon süreleri, postop takip süreleri, akromion tipi ve son kontrollerinde Constant omuz skor, DASH skor, eklem ROM(range of motion), komplikasyon kısımlarının olduğu değerlendirme formu kullanıldı.

Bulgular: Hastaların %70,30'u (26 hasta) kadın, %29,70'i (11 hasta) erkekti. Ortalama yaşı 57.64 ± 9.17 (dağılım 45-84yaş) idi. Hastaların 28'inde (%75,6) dominant omuzda şikayetleri mevcuttu. Operasyon sonrası ortalama takip süresi 18,49±5,37 (dağılım 8-28 ay) idi. Ortalama operasyon süreleri anterior insizyon yapılanlarda (grup 1) 35, lateral insizyon yapılanlarda (grup 2) 37 dakikaydı. Hastalarda herhangi bir komplikasyon saptanmadı. Hastaların postoperatif son kontrollerinde hazırlanmış form dolduruldu. Ortalama Constant skoru grup 1 de 88,50, grup 2 de 83,57 idi. Postop şikayetler grup 1 de ortalama 7,1 hafta± 3,3 (dağılım 1-12 hafta), grup 2 de 6,6 hafta± 3,9 (dağılım 1-14 hafta) devam ediyordu. Odds ratio değerine bakıldığında operasyon sonrasında anterior yaklaşımdaki 80 ve üzeri constant skorları lateral yaklaşıma göre 2,8 kat daha fazladır. Postop ve preop DASH skorları farkları açısından anlamlı bir fark bulunmamıştır. Subjektif değerlendirilmede grup 1 hastalarda 14 hasta çok iyi ve iyi, 1 hastada orta düzeyde başarılı, 1 hasta kötü olarak değerlendirildi. Grup 2 hastalarda 16 hasta çok iyi ve iyi, 2 hasta orta düzeyde başarılı, 3 hasta kötü olarak değerlendirildi.

Sonuçlar: Açık akromioplastide uygulanan anterior ve lateral insizyonlar sonrasında abduksiyon ve fleksiyon hareketlerinin açıklığı, skorlamalar, hastanede kalış süreleri arasında fark bulunmamaktadır. Açık akromioplasti subakromiyal sıkışma sendromunda başarı oranı yüksek, operasyon süresi kısa, pratik bir yöntemdir.

Anahtar kelimeler: Subakromiyal sıkışma sendromu, Akromioplasti, Akromion

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Introduction

Subacromial impingement syndrome appears to be one of the most frequent causes of shoulder pain. This clinical condition is a long period in which fundamental structures of shoulder such as acromion, coracoacromial ligament; coracoid process and acromioclavicular joint apply pressure on rotator cuff squeezing it underneath each other causing subacromial bursitis. Neer, described mechanical impingement of 1/3 anterior portion of acromion on subacromial space after 100 scapular dissections in 1970s, furthermore offered acromioplasty as the treatment modality which presented clinically satisfying outcomes [1,2,15]. This clinical condition is shown to significantly reduce life quality and working capacity [3].

Etiology can be due to many reasons. These might be constitutional such as the shoulder joint anatomy, as well as job, recurrent minor/major traumas, consistent limb usage overhead, overusing activities leading to joint inflammation [1,2]. Conservative treatment should be held on for a bit of time before appointing any surgical intervention.

Temporary joint immobilization, activity management, strengthening and ROM advancing exercises, non-steroidal anti-inflammatory medications should be considered. Arthroscopic techniques have been used increasingly in the last 20 years since it was first described by Ellman in 1985 [16].

Material and methods

We assessed 37 patients (26 female, 11 male) retrospectively, performed acromioplasty operated by open anterior and lateral approaches, in our Orthopaedics and Traumatology Clinic of Ege University Hospital. There was 43.2% (16 of them) anterior and 56.8% (21 in total) of lateral incision. Mean age was 57.64 ± 9.17 (avg. 45-84 years). 75.6% (28 out of total) of patients had symptoms on dominant limb.

Postoperative mean follow up was 18.49 ± 5.37 (avg 8-28 months) months. 48.6% (18out of total) patients had symptoms on right side and 51.4% (19 out of total) on the left.

Physical examination, conventional X-rays, MRI, CONSTANT, UCLA and DASH scores were ultimately evaluated based on preoperative and postoperative assessments. All the patients used to complain either from moderate or severe shoulder joint pain as well as painful arc of motion while elevating arm. According to preoperative MRI assessment, all the patients had hyperintensity at acromial bursa, inflammation, edema or tear of the rotator cuff. According to antero-posterior and supraspinatus outlet (Y radiography) imaging, 5.4% (2 out of total) patients had type 1 acromion, 21.3% (8 out of total) patients had type 2 and 72.9% (27 out of total) patients had type 3 acromion.

Preop and postop test data were recorded and statistical analyzes were performed using SPSS 11.0 (SPSS, Chicago, Illinois). The correlation between the direction of scoring and scoring was assessed using the Mann-Whitney U test and odds ratios. A p value <0.05 was considered statistically significant.

Patients having different complications other than subacromial impingement such as partial as well as total rotator cuff rupture, joint instability, cervical neuropathy, calcific tendinitis were excluded out of the study. Patients were operated under regional anesthesia, in bitchair position. Anterior approach was made through the anterior and medial bundles of deltoid muscle reaching its anterior acromial insertion and excising anterior process where lateral approach was made through medial bundles. Subacromial bursectomy was performed and bony process underneath acromion was reamed in both approaches.

Postoperative early rehabilitation is the important final step in achieving appropriate range of motion in shoulder after decompression of subacromial area. We believe, humeral head is being set free of anatomical obstacles and provided with opportunity to travel in maximally possible range. So, for each patient we initiated passive exercises immediately (1st day postoperatively) in most tolerable ranges of motion in pain limit. We removed stitches and bandages at 14th day postoperatively and beginning from 14 days, active exercises were prescribed in supervisory of physiotherapist in certain periods and patients were examined during periodic visits until satisfactory recovery was obtained.

Results

We focused on 2 approaches as we mentioned before. So we were able to design 2 different groups that could be given a chance to compare in many vantages. From now we will be naming anterior approach groups as group 1 and lateral approach group as group 2.

Hospitalization duration was 1.75 ± 0.99 (avg 1-2 days) in group 1 and 1.72±0.99 (avg 1-2 days) in group 2. There was no significant difference between anterior and lateral approaches according to hospitalization durations (p>0.05, table 1). Operation time was 35 minutes (avg 27-40 min) for group 1 and 37 minutes (avg 30-44 min) for group 2. There was no significant difference (p>0.05) between 2 groups. Postoperative full healing was achieved in 7.1±3.3 weeks (avg 1-12 weeks) in group 1 and 6.6±3.9 weeks (avg 1-14 weeks) in group 2. There was no significant difference (p>0.05) between 2 groups. Preoperative CONSTANT score was calculated 34.6±7.5 in group 1 and 33.8±6.7 in group 2, whereas postoperative CONSTANT score was 85.7± 11.3 in group 1 and 83.5±12.6 in group 2. Both of the groups presented significantly satisfying clinical results although there was no significant difference (p>0.05) between calculated progresses.

Table 1. Preop versus postop contstant score

	CONSTANT score		
	Preop	Postop	p
Group1	34.62±7.56	88.50±8.97	0.469
Group 2	33.80±6.77	83.57±12.65	

Postoperative CONSTANT scores were calculated separately via Mann-Whitney U test p=0.46 so there was found no significant difference. According to Odds ratio value group 1 had 2.8 times better promising (80<score) results than in group 2, though. Also all the patients gave the anamnesis of better sleep quality and no awaking night pain appeared after surgery. In the evaluation of the pre-op dash scores, group 1 mean 65.16±13.24 and mean in group 2 was 67.52±9.36. Postop dash scores were 13.01±12.52 in group 1 and 16.64±10.91 in group 2.

Statistically, there was no significant difference in postop and preoperative differences between the 2 groups of taki dash scores. There was no statistically significant difference between the mean postoperative mean UCLA scores (p>0.05). Subjective assessments of the patients were as following: 14 patients determined clinically very good and good, 1 patient normal in group 1, where 16 patients were determined very good and good, 2 normal and 3 patients poor according to overall scoring.

Discussion

There appears to be no significant difference regarding anterior and lateral incisions used in open acromioplasty in terms of orthopaedic scores and treatment outcomes. Each mechanical factor applying pressure on rotator cuff could possibly develop chronic inflammation which eventually causes subacromial impingement syndrome. As well as acromion type and impingement alone, trauma, degenerative tendonitis, overusing, inflammation and etc. could play role in developing subacromial impingement syndrome [1,2,4,15]. It is very important to diagnose subacromial impingement appropriately.

According to Matsen persistent pain after subacromial injection negatively affects prognosis for surgical treatment [6,13]. Mean follow-up period for our cases was 18,49±5.37 months (avg 8-28 mth). Patrick et al. published 25 year follow-up for open acromioplasty techniques. 5 cases were reoperated. Only 2 of total cases were performed acromioplasty again [5]. Neer blamed acromion morphology as one of outstanding etiological causes of subacromial impingement, in his study. We observed similar results throughout our study. 73% (27 out of total) had type 3 acromion, 21.6% (8 out of total) had type 2 acromion. [5,7]. We intraoperatively advanced excision of antero-inferior portion of acromion a bit more in each patient we detected persistent impingement while full arm elevation. There was no significant difference between abduction (p=0.926) and flexion (p=0.875) angle postoperative progress rates. Nowadays arthroscopic techniques have rising popularity for surgical treatment of the impingement syndrome. There are studies declaring arthroscopic techniques more prospering besides open techniques [7,8,10]. Many studies comparing open and arthroscopic techniques report similar results, on the other hand. No significant difference could be presented among pain, ROM and strength in functional assessment of long term outcomes [11,14].

As a matter of fact, there are also studies reporting open techniques more superior [12]. Increasing cosmetic concerns tend many studies present prosperous outcomes for arthroscopic surgery as a remarkably popular treatment modality for the last 20 years, yet having very similar good clinical outcomes in comparison with open technique. There are also studies reporting statistically no significant difference as a treatment modality.

After open acromioplasty performed on a subacromial impingement syndrome, patient satisfaction increases and pain relief while activity as well as rest is remarkable and shoulder joint ROM advances. In comparison of open and arthroscopic techniques, literature reports similar results considering ROM advancement, CONSTANT, UCLA and DASH scores. In our study there was no significant difference among abduction and flexion ranges, scorings, and hospitalization periods in comparison of anterior and lateral approaches, as well. Open acromioplasty is yet highly reliable, convenient method with short surgery time as a treatment option for subacromial impingement syndrome.

In conclusion; in spite of arising popularity of arthroscopic interventions, open acromioplasty keeps its current row among treatment options of subacromial impingement as prospering, practical method with short surgery time. Treatment outcomes remain unaffected regarding anterior and lateral incisions.

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Research article
Araştırma makalesi

Journal of Surgery and Medicine

Relationship of depression to diabetes, prediabetes and nondiabetics according to HbA1c classification: Retrospective study on 72,175 patients

Depresyonun HbA1c sınıflamasına göre diyabet, prediyabet ve nondiyabetiklerle olan ilişkisi: 72.175 hastadaki retrospektif çalışma

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Abstract

Aim: It is aimed to examine the relationship between HbA1c and the diagnosis of depression in patients who have been HbA1c measured at any time.

Material and Methods: The retrospective descriptive study was conducted by scanning the files of patients applying for any reason between the dates of January 1, 2016 and January 1, 2017 to hospital. The files of 72175 patients over 18 years of age who had measured HbA1c value during the admission were examined.

Results: The relationship between gender and depression was compared, depression was found to be significantly higher in women (p<0,001). All HbA1c values were divided into three groups: less than 5.7 (no diabetes), 5.7 to 6.5 (prediabetes), 6.5 and over (diabetes). When HbA1c classification was compared with depression, there was a significant relationship between HbA1c and depression (p<0,001). In patients with prediabetes, depression was significantly higher than non-diabetic and diabetic patients (p<0,001).

Conclusion: This study shows that health care professionals should also pay attention to mental health of the patients with prediabetes, one of the most at risk for the development of DM disease.

Keywords: Prediabetes, HbA1c, depression

Öz

Amaç: Herhangi bir zamanda hastalarda ölçülen HbA1c değeri ve depresyon tanısı arasındaki ilişkiyi incelemek hedeflenmiştir.

Materyal metod: Retrospektif tanımlayıcı çalışma, 01.01.2016-01.01.2017 tarihleri arasında herhangi bir nedenle başvuran hastaların dosyalarını tarayarak gerçekleştirilmiştir. HbA1c değeri ölçülen, 18 yaşından büyük 72175 hastanın dosyaları çalışmaya dahil edilmiştir.

Bulgular: Cinsiyet ile depresyon arasındaki ilişki karşılaştırıldığında kadınlarda depresyon anlamlı derecede yüksek olarak tespit edildi (p<0,001). Tüm HbA1c değerleri 5,7'nin altı (diyabet yok), 5,7 ile 6,5 arası (prediyabet), 6,5 ve üzeri (diyabet) olmak üzere üç gruba ayrıldı. HbA1c sınıflaması ile depresyon olup olmadığı karşılaştırıldığında HbA1c ile depresyon arasında anlamlı bir ilişki tespit edildi (p<0,001). Prediyabetli hastalarda depresyon, diyabeti olmayan ve diyabetli hastalara göre anlamlı olarak yüksek saptandı (p<0,001).

Sonuç: Bu çalışma, sağlık profesyonellerinin diyabet gelişme riskinin en yüksek olduğu durumlardan biri olan prediyabetik hastaların ruh sağlığına da özen göstermesi gerektiğini göstermektedir.

Anahtar kelimeler: Prediyabet, HbA1c, depresyon

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Introduction

Diabetes mellitus (DM) is a metabolic disease caused by defects in insulin secretion or insulin action, which is accompanied by chronic hyperglycaemia and affects all systems. DM has psychiatric and psychosocial dimensions as well as organic findings. The DM patient is confronted with a number of problems related to physical, emotional and social situations [1].

Continuous education for healthcare professionals and patients is essential to reduce the risk of DM disease, acute complications, and to prevent long-term costly and chronic disruption of treatment. It has been accepted that hemoglobin A1c (HbA1c) is used as a diagnostic test for diabetes all around the world as a result of the efforts for standardization and the growing evidence of prognostic significance. The World Health Organization has recommended the use of HbA1c as a diagnostic test in the Consultation Report published in 2011, with the use of a reliable method and standardization regularly according to international reference values [2]. Since HbA1c is not affected by daytime fluctuations of blood sugar, it is chosen as a marker of blood sugar control [3]. Degree of glycemic control has a central role in preventing some type 2 diabetes-related complications [4].

Despite significant developments in the diagnosis, treatment and follow-up methods, failure to achieve treatment goals has led to an increase in studies on the investigation of different factors in diabetes cases [5-7].

Depression is a serious mental health / community health problem with intra-community prevalence. The description phase includes the identification of the clinical symptomatology and diagnosis according to a preferred classification system (ICD-10 or DSM-IV). Depression is defined as the diagnosis of the depressive syndrome. The diagnosis of depressive syndrome is a descriptive diagnosis based on clinical symptomatology, independent of etiology [8].

Psychiatric disorders in patients with DM are known to be seen frequently [9]. There are studies that indicate that depression is 3-4 times more frequent in DM patients than in general population [10]. Some investigators have found moderate to strong associations between depressive symptoms and HbA1c, although others have found no relationship [11,12]. Some other cross-sectional studies have found a significant positive correlation between depressive symptoms and HbA1c in patients with Type 1 diabetes but not in type 2 diabetes [13,14].

In this study, it is aimed to examine the relationship between HbA1c and the diagnosis of depression in patients who have been HbA1c measured at any time.

Material and methods

A retrospective descriptive study was planned. The study was conducted by the researchers in accordance with the Helsinki Declaration. This study was conducted by scanning the files of patients applying for any reason between the dates of 01.01.2016-01.01.2017 to the University of Health Sciences, Umraniye Education and Research Hospital. The files of 72175 patients over 18 years of age who had measured HbA1c value during the admission were examined. Those that are missing and insufficient information in the scanned files are not included in the study.

In evaluating the findings obtained in the study, SPSS (Statistical Package for Social Sciences) for Windows 20.00 was used for statistical analysis. Descriptive statistics for data analysis mean and standard deviation for continuous variables, and number and percentage were used for categorical data. The Chi-squared test was used for comparisons. The semantics were evaluated in the confidence range of 95%, and $p<0.05$ was considered meaningful.

Results

The average age of 72175 individuals who were taken to study was 51.67±16.20. 68% (n=49109) of the participants were female and 32.0% (n=23066) were male. The mean HbA1c values of the participants were 6.40±1.66. While 3.2% of the participants (n=2339) had a diagnosis of depression, 96.8% (n=69836) did not have depression.

When the relationship between gender and depression was compared, depression was found to be significantly higher in women (p<0,001) (Table 1).

Table 1. Gender and depression relation

	Depression				Total		p
	Absent		Present				
Gender	n	%	n	%	N	%	
Femala	47277	96.3	1832	3.7	49109	100	<0.001
Male	22559	97.8	507	2.2	23066	100	

All HbA1c values were divided into three groups: less than 5.7 (no diabetes), 5.7 to 6.5 (prediabetes), 6.5 and over (diabetes). When HbA1c classification was compared with depression, there was a significant relationship between HbA1c and depression (p<0,001) (Table 2).

Table 2. HbA1c and depression relation

	Depression				Total		p
	Absent		Present				
HbA1c level	n	%	n	%	n	%	
<5.7	26559	96.6	937	3.4	27496	100	<0.001
5.7-6.5	23897	96.1	976	3.9	24873	100	
≥6.5	19380	97.8	426	2.2	19806	100	

In order to find the group that caused the significant association, the HbA1c groups were grouped together in duplicate and the chi-square test was repeated until a meaningful result was obtained. In patients with prediabetes, depression was significantly higher than non-diabetic and diabetic patients (p<0,001) (Table 3).

Table 3. Diabetes relations

	Depression				Total		p
	Absent		Present				
HbA1c level	n	%	n	%	n	%	
5.7-6.5	23897	96.1	976	3.9	24873	100	<0.001
<5.7 ve ≥6.5	45939	97.1	1363	2.9	47302	100	

Discussion

Diabetes Mellitus (DM) and depression both are highly prevalent among the elderly population and are associated with increased risk for morbidity and mortality [15]. Depression and diabetes have individual, societaland economic effects, and they often co-occur [16]. In this study, we tried to determine the relationship between these two common and high-risk diseases.

Previous studies have reported conflicting results regarding the association between the construct of depression and metabolic outcomes. Depression has been frequently associated with elevated hemoglobin A1c (HbA1c) levels [l7-19]. HbA1c is likely a central mediator of the association between depression and long-term outcomes [20]. The frequency of blood glucose monitoring and the diabetes-specific sense of self-efficacy mediate the association between depression and HbA1c levels [18,21]. When we compared the presence of depression with the HbA1c classification in our study, we found a significant relationship between HbA1c classification and depression.

Even if they are smaller in quantity, there are also studies that have not reached like these conclusions. For example a study shows that major depression as measured by the Hamilton Depression Rating Scale (HAM-D) score is significantly correlated with duration of Type 2 diabetes and mean values of insulin injection, but there is no significant correlation between depression and HbA1c [22]. Fewer cross-sectional studies either found a significant correlation in univariate but not multivariate analysis or found no significant association at all [14,23-24]. It is well known that depression is more common in women than men [25]. A study's sample included a larger proportion of women (68.6%) consistent with the gender distribution for lifetime prevalence of major depression, which is almost twice as high in women as in men [22]. The results of Sevincok et al.'s [26] study suggest that depression in Type 2 DM was only associated with female gender. Current study, the relationship between gender and depression was compared and depression was found to be significantly higher in women.

Although it seems to be a limitation of the study to be done on retrospective records, it is more reliable that it is done on more than seventy-two thousands records.

In our study we found that in patients with prediabetes, depression was significantly higher than non-diabetic and diabetic patients. The literature has been searched, but a study has not been found, especially one in which prediabetes has been isolated like this current study.

This study shows that health care professionals should also pay attention to mental health of the patients with prediabetes, the most at risk for the development of DM disease.

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Review
Derleme

Journal of Surgery and Medicine

Transcatheter mitral valve repair and replacement; current therapies and general evaluation of new approaches

Katater aracılığıyla mitral kapak onarımı ve değiştirilmesi; güncel tedaviler ve yeni yaklaşımların genel değerlendirmesi

Yakup Alsancak, Ahmet Seyfeddin Gürbüz, Mehmet Akif Düzenli

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Abstract

There has been a revolution in catheter based therapies for structural valvular heart diseases in last decade and many incredible improvements in the percutaneous treatment of mitral and aortic valve diseases. The use of transcatheter mitral valve repair has gained widespread acceptance in worldwide. More than 50.000 patients have been treated with percutaneous edge-to-edge repair system or annuloplasty systems. Although the most experience has been obtained with MitraClip®, using of percutaneous direct and indirect annuloplasty devices have been on the forefront in recent years. In addition, the percutaneous mitral valve replacement, like the transcathater aortic valve replacement (TAVI), will also be mentioned more in the near future.

Keywords: Mitral valve, MitraClip, Mitral regurgitation, Percutaneous

Öz

Son on yılda yapısal kalp kapakçık hastalıklarının kateter bazlı tedavilerinde bir evrim meydana gelmiş, mitral ve aort kapak hastalıklarının perkütan tedavisinde inanılmaz birçok gelişme olmuştur. Transkateter mitral kapak onarımı, dünya çapında yaygın kabul görmüştür. 50000'den fazla hasta perkütan uc-uca tamir sistemi veya perkütan anuloplasti sistemleri ile tedavi edilmiştir. En fazla deneyim MitraClip® ile elde edilmiş olsa da, perkütan direkt ya da indirekt anüloplasti cihazlarının kullanımı son yıllarda ön plana çıkmıştır. Ek olarak, transkatater aort kapak replasmanı (TAVI) gibi perkütan mitral kapak replasmanı da yakın gelecekte daha çok gündeme gelecektir.

Anahtar kelimeler: Mitral kapak, MitraClip, Mitral yetersizlik, Perkütan

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Introduction

Percutaneous heart valves repairs or replacements are among the most popular topics in interventional cardiology within the last decade. Particularly, the fact that percutaneous aortic valve replacement (TAVI) has been widely used in daily life plays an important role in the investigation of percutaneous treatment of other heart valves. At this point, TAVI is recommended in patients who are not suitable for surgical aortic valve implantation as assessed by the Heart Team with class I and level evidence B indication according to recently published Guidelines for the management of valvular heart disease by European Society of Cardiology [1]. Although mitral valve regurgitation is the most prevalent valvular heart disease, transcatheter mitral valve therapies have progresses more slowly due to the complex anatomy of mitral valve [2].

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In patients with severe degenerative or primary mitral valve regurgitation and secondary mitral regurgitation who undergo coronary artery bypass graft surgery with greater than 30% left ventricular ejection fraction, surgically mitral valve repair is the generally accepted "gold standard" treatment of choice [1]. However, as known, overall one of the two patients with severe MR cannot be operated on due to accompanying comorbid conditions and too high risk nature for open heart surgery [3]. Various catheter based mitral valve repair methods have been applied and developed for these patients who have extremely high mortality and cannot be operated.

Percutaneous mitral valve repair systems for mitral regurgitation

Percutaneous edge-to-edge repair system: MitraClip

MitraClip system (Abbott Vascular, Santa Clara, CA) has the most experience method in percutaneous mitral valve repair in worldwide and recommended as the only percutaneous treatment method in current guidelines [1]. This technique is aimed to decrease mitral regurgitation with create a double orifice by attaching the mitral valve leaflets to each other (edge-to-edge leaflet repair) and the clip is implanted percutaneously via a transseptal approach under general anesthesia or deep sedation and transesophageal ultrasound and fluoroscopy guidance. The efficacy and safety of the MitraClip method has been demonstrated with several studies [4,5]. As a general outcomes of these studies that; the MitraClip is less effective at reducing mitral regurgitation than a surgical approach, but it was found to be associated with a favorable safety profile, similar mortality rates as well as similar improvements in functional status, quality of life, and left ventricular size during follow up. The results of these studies led to its CE (Conformite Europeenne) marked approval in 2008 for use in patients with symptoms due to primary and secondary mitral regurgitation who are at high risk for surgery and FDA approval in 2013 only for primary mitral regurgitation. Currently, the guidelines of European Society of Cardiology recommend this method with a class II b indication for primary and secondary mitral valve regurgitation, the guidelines of American Heart Association provide a class II b indication for primary mitral valve regurgitation in symptomatic patients who are at prohibitive risk for mitral valve surgery [1,6].

Transcatheter direct or indirect mitral annuloplasty systems

Recurrent mitral regurgitation after the MitraClip therapy may be observed. This situation can explain with continued mitral annular dilatation. In addition to the percutaneous edge-to-edge mitral leaflet repair, the annulus of mitral apparatus is the other target for catheter based treatment of choice. Although several methods have been investigated in the last two decade, we have no FDA approved direct or in-direct annuloplasty device, and only three devices have received Conformite Europeenne (CE) mark for percutaneous mitral valve annuloplasty. The only currently CE approved device in the category of indirect annuloplasty is the Carillon Mitral Contour System (Cardiac Dimensions, Kirkland, WA), which has been used in over 500 patients. In this method, the device is placement via the jugular vein to the coronary sinus. After the deployment of device, manual traction is performed on the delivery system to compress the periannular tissue neighboard of posterior annulus. Several limitations of this device have been reported, including reports of potential nitinol wire fracture with or without clinical events and especially compression of circumflex coronary artery [7]. This technique peri-procedural success is lower than MitraClip according to published studies.

The Cardioband device (ValtechCardio, OrYehuda, Israel) is one of the direct annuloplasty percutaneous techniques mimicking to surgical annuloplasty. The device is implanted percutaneously via transseptal approach under general anesthesia with transesophageal echocardiography and fluoroscopy guidance. The safety and feasibility of the procedure was shown with a few studies with low participants [8]. Interestingly, periprocedural device success was very high and the recurrence of mitral regurgitation was lower than other percutaneous mitral valve repair system during follow up. That may be considered that the rate of using this method in daily practice will increase further.

The Mitralign device (Mitralign, Tewksbury, MA) is the another direct annulopasty method via the trans-femoral arterial approach with CE marked. Specifically, the P1 and P3 scallops regions of the posterior mitral annulus are targeted in order to decrease the anterior-posterior dimension. The mitral valve is punctured from the ventricular surface of the posterior annulus to pass the atrial side allowing for the delivery of pairs of pledgeted sutures. These pledgets are then cinched and locked to reduce the annular diameter. Peri-procedural device success was lower than other techniques and further studies are needed to understand the Mitralign effectiveness [9].

Transcatheter mitral valve replacement

Transcatheter mitral valve replacement is a new promising therapeutic option especially in patients who have high surgical risk for mitral valve surgery. The development of percutaneous mitral valve replacement system has been more complex compared to percutaneous aortic valve replacement systems due to asymmetric morphology of mitral annulus, the proximity of the mitral valve to the left ventricular outflow tract and the heterogeneity of pathologies of patients with mitral valve regurgitation [10,11].

Several types of transcathater mitral valves are being developed and the effectiveness and safety of these systems have been tested with first clinical studies or case based interventions. These implantations were performed with different approach such as transapical, transatrial or transfemoral or transseptal. Significant hemodynamic compression of left ventricular outflow tract (LVOT), device embolization, significant paravalvular leak, valve thrombosis and perforation are known as the main complications of procedure [12]. The Fortis valve (Edwards Lifesciences, Irvine, CA), The Tendyne Bioprosthetic Mitral Valve System (Tendyne Holdings, Roseville, MN), the CardiAQ-Edwards transcatheter mitral valve system (Edwards Lifesciences, Irvine, CA), the Tiara system (Neovasc Inc.,

Richmond, British Columbia, Canada) and the Intrepid Twelve system (Medtronic, Minneapolis, MN) are using for transcathater mitral valve replacement and the devices are under clinical evaluation [13]. This treatment modality is at an early phase for clinical using, and progress will be significantly slower than the development of transcathater aortic valve replacement due to the complexity of the mitral valve anatomy and different pathological types.

Conclusion

The mortality rate in patients with severe mitral regurgitation reaches 50% at 5 years of follow-up, and many of the surviving patients had one or more re-hospitalization for decompansed heart failure within the 5 years after the first diagnosis [3,14]. Although it is known that gold standard treatment for degenerative mitral regurgitation is surgery, it is unclear which therapeutic approach is superior for functional mitral regurgitation. So, we need more data to accept that percutaneous treatments modalities are more effective than medical treatment. Herein, the ongoing studies (The ongoing Cardiovascular Outcomes Assessment of the MitraClip® Percutaneous Therapy for Heart failure Patients with Functional Mitral Regurgitation (COAPT), the Randomized Study of the MitraClip Device in Heart Failure Patients with Clinically Significant Functional Mitral Regurgitation (RESHAPE) and CARILLON Mitral Contour System® for Reducing Functional Mitral Regurgitation (REDUCE FMR)) will reveal whether percutaneous edge-to-edge repair or indirect annuloplasty are superior to medical treatment. And also, large scale studies with long term follow up will be a guide for clinical use of direct percutaneous annuloplasty devices.

Finally, we need more clinical experiences to appreciate consistent safety and efficacy of percutaneous mitral valve replacement system for severe mitral regurgitation or severe calcific mitral stenosis. There are no mitral devices yet established itself decently or approved for use in daily practice anywhere in the world.

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Severe acute myocardial ınfarction and peripheral thrombosis in patient with bladder cancer: A case report

Mesane kanserli hastada ciddi akut miyokard enfarktüsü ve periferik toromboz: Olgu sunumu

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Abstract

Cancer-associated thrombosis worsens the lives of patients substantially. Venous manifestations of cancer-associated thrombosis include deep vein thrombosis and pulmonary embolism. Arterial events include stroke and myocardial infarction. In this patient, myocardial infarction and cardiogenic shock are associated with diffuse coronary thrombosis together with peripheral thrombosis. He had surgery because of bladder carcinoma. Severe hypercoagulable condition probably facilitated by cancer itself and surgery caused multivessel coronary and peripheral intense thrombus burden. Intracoronary 10 mcg/kg tirofiban bolus and 15 mg tissue plasminogen activator (tPA) were administered respectively before revascularization and thrombectomy operation was performed. Complete revascularization was achieved.

Keywords: Bladder cancer, Myocardial infarction, Peripheral ischemia, Thrombosis

Öz

Kansere bağlı tromboz, hastaların yaşamlarını önemli ölçüde etkiler. Kansere bağlı trombozun venöz olayları, derin ven trombozu (DVT) ve pulmoner embolinin (PE) yanı sıra visseral veya splanknik ven trombozunu içeren venöz tromboembolizmdir (VTE). Arteriyel olaylar ise inme ve miyokard enfarktüsünü içerir. Bu hastada, miyokard enfarktüsü ve kardiyojenik şok, periferik trombozla birlikte yaygın koroner tromboz ile ilişkilidir. Hastada kardiyovasküler risk faktörlerinden sigara ve hipertansiyon, ayrıca öyküsünde mesane karsinomu nedeniyle cerrahi mevcuttu. Muhtemelen kanserin kendisi ve cerrahisi tarafından kolaylaştırılan ciddi hiperkoagülan durum çok damar koroner ve periferal yoğun trombüs yüküne neden oldu. Revaskülarizasyon ve trombektomi ameliyatı yapılmadan önce intrakoroner 10 mcg / kg tirofiban bolus ve 15 mg doku plasminojen aktivatörü (tPA) sırasıyla uygulandı. Tam revaskülarizasyon elde edildi.

Anahtar kelimeler: Mesane kanseri, Miyokard enfarktüsü, Periferik iskemi, Tromboz

Introduction

The relationship between cancer and thrombosis is defined obviously [1]. Thromboembolism including venous and arterial events is one of most common cause of death in cancer patients [2,3]. The underlying mechanisms are not exactly understood [4]. In this report, we present a case with extensive multivessel coronary thrombotic occlusion concomitant with acute peripheral thrombotic occlusion in a patient with bladder carcinoma and discussed the potential underlying mechanism.

Case Presentation

A 68 years old man admitted to our hospital with the complaint of chest pain and new onset severe left leg pain. He had smoking and hypertension as cardiovascular risk factors. He had an operation because of bladder cancer and prostate hypertrophy one week ago. No adjuvant therapy had been required. In immunohystochemical analysis of cancer tissue p53 (+) Ki67 (+) papillary urothelial carcinoma had been detected. In emergency room blood pressure was 75/35mmHg, heart rate 80bpm, and O2 saturation was 87%. In electrocardiogram 5mm ST segment elevation in leads II, III, aVF and V4-V5-V6 and ST segment depression in leads V1-V2, aVL was detected. Bilateral rales in the inferior zones of lungs was heard by auscultation. Bilateral femoral pulses were palpable but left popliteal and dorsalis pedis pulses were nonpalpable. In laboratory parameters, wbc 27000/µl, hb 12 g/dl, plt 196000/µl, troponin

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>50000ng/ml, CK-MB 162u/l, creatinine 1.34 mg/dl, urea 52 mg/dl were detected. After 600 mg clopidogrel loading dose administration, coronary angiography was performed. Coronary angiogram showed 80% proximal left anterior descending artery (LAD) lesion and mid LAD occluded with intense thrombus burden and 100% occlusion of well-developed circumflex-obtuse marginal branch (CX-OM) with intense thrombus burden as well (figure1A, 1B). A floppy guidewire was advanced to CX-OM lesion and provided TIMI 3 flow and intracoronary 10 mcg/kg tirofiban bolus and 15 mg tPA were administered respectively after showing thrombus existence angiographically. Shortly after coronary reperfusion, blood pressure increased to 110/70mmHg. Bare metal stent (2.75x24 mm) implanted into CX-OM lesion. Then LAD lesion was advanced by floppy guidewire and 2.0x20 mm balloon was inflated. And then 4.0x20 mm bare metal stent was implanted. TIMI 3 flow is provided for both lesions (figure 2A). After that right coronary artery (RCA) was cannulated by JR4 catheter and %100 occlusion was seen on proximal RCA (figure 1C). A floppy guidewire was advanced to RCA and thrombectomy was performed. After thrombectomy bare metal stent (3,0x32 mm) was implanted and postdilatation with 3,5x10 NC balloon was performed successfully. TIMI 3 flow was provided (figure 2B). Vital values of patient improved. The patient was taken to coronary care unit (CCU) and tirofiban infusion administered but the left leg pain of patient proceeded.

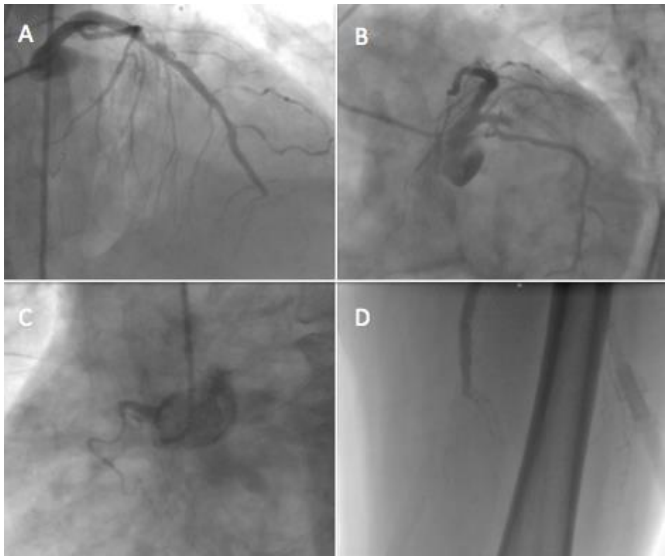

Figure 1: Coronary angiography showed (A) Critically proximal left anterior descending artery (LAD) lesion and mid LAD thrombotic occlusion. (B) Proximal Circumflex coronary artery (Cx) thrombotic occlusion. (C) Right coronary artery (RCA) proximal thrombotic occlusion. (D) Thrombotic occlusion in left superficial femoral artery.

A peripheral angiogram (PAG) showed chronic total occlusion in right superficial femoral artery and a 100% occlusion with intense thrombus burden in left superficial femoral artery and left arteria profunda femoralis (figure 1D). The patient was consulted with cardiovascular surgeons. Surgical thrombectomy was preferred because of the necessary peripheral interventional materials. Thrombectomy operation was planned and performed successfully. No complication was observed after operation. His coagulation profile showed normal results. The patient discharged with fully relieved symptoms.

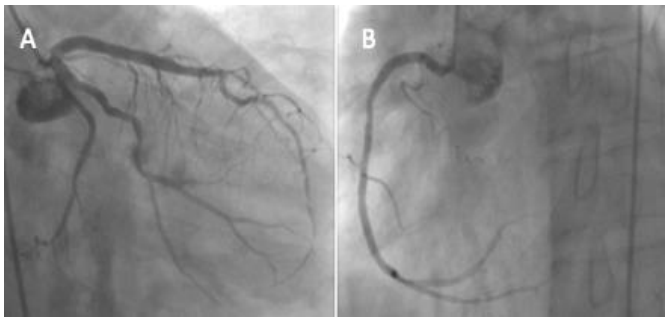

Figure 2: Post-revascularization (A) Left anterior descending artery (LAD) and Circumflex coronary artery (Cx) image. (B) Right coronary artery (RCA) image.

Discussion

Cancer and its treatments such as chemotherapy, immunotherapy, hormone therapy, radiotherapy and surgery are often complicated by thromboembolism and cardiovascular events [5]. In patients with cancer, venous thromboembolism including deep venous thrombosis and pulmonary embolism, arterial thromboembolism including stroke, myocardial infarction and peripheral thrombosis are also more common [4]. The etiology of prothrombotic status cannot explain one particular mechanism, but it clarifies presumably multifactorial [4,6]. The expression of tissue factor (TF) by procoagulant tumor or stromal cells is especially blaming factor. In this pathway, TF expressed by tumor can directly prompt factor X; TF released by monocytes or macrophages can activate factor VII [2]. Another mechanism of hypercoagulability is inflammatory response such as cytokine release, acute phase reaction induced by tumor cell interactions with endothelial cells and macrophages. Tumor necrosis factor (TNF) and interleukin-I procoagulant role was proved in some studies [7]. Some solid tumors, such as renal cell carcinoma, can stimulate coagulation cascade due to vessel wall injury [1]. Out of these factors, cancer treatments can also enhance tendency of thrombosis even if they improve cancer free survival [7]. Cardiovascular events such as heart failure, myocardial infarction and stroke are undesired result of treatment [5].

In our case severe hypercoagulable condition probably facilitated by cancer itself and surgery. Although the relationship between cancer and thrombosis was clearly shown, the relationship between the type of cancer and thrombosis is conflicting. An analysis conducted by Nalluri et al [8], shown that solid tumors are more prone to develop thrombosis. Pancreas, brain, prostate cancers more than other types of tumors are known to be at higher risk of the development of thrombosis [9]. Although a study reported that bladder cancers are relatively small proportion of cancers associated with thrombosis, contrary to this data Chew and colleagues reported higher risk of deep vein thrombosis in patients with bladder cancer [10,11]. In another study conducted by Sandhu et al [12], reported that higher risk of thrombosis in bladder cancer especially if the patient is older and male. Villemur et al [13] reported occluded with thrombus bypass graft in three patient with cancer including one is bladder, and concluded that bypass grafts are more prone to thrombosis in patients with cancer. In another case Kanemaru et al, reported a male with bladder cancer with carotid stent thrombosis despite regular use of antiplatelet therapy [14]. In our

case, patient was a 68 years old male and was operated one week ago. Besides being male patients of advanced age, it is known that the history of operation is another factor for increasing the risk of thrombosis development. However, in our case femoral artery thrombosis as well as coronary arteries signifies a systematic tendency to develop thrombosis as well as local factors. Referring to our case we conclude that bladder cancer could be more associated with thrombosis as well as prostate, pancreas and brain cancer. Patients with bladder cancer especially who have atherosclerotic risk factors such as advanced age, male gender, diabetes mellitus, it should not be forgotten to develop acute coronary syndrome or systemic thrombosis. These patients should be detailed questioned about acute coronary syndrome or cardiovascular disease and physical examination and electrocardiograms should be investigated.

In patients with cancer thromboembolic complications secondary to the hypercoagulable clinical condition increase both morbidity and mortality. We should be aware of thromboembolic situations and we should also consider using antithrombotic prophylaxis for these patients.

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Possible cause underlying gastric necrosis and perforation: Celiac artery thrombosis

Gastrik nekroz ve perforasyonda olasi sebep: Çölyak arteri trombozu

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Abstract

In this article, we are sharing a case of a 76-year-old woman with known hypertension, atrial fibrillation, diabetes mellitus, coronary artery disease, who is presenting with stomach necrosis and perforation possibly due to celiac artery thrombosis after newly developed abdominal pain and bloody vomiting. In our case, emergency surgery was planned and the patient refused the operation and was lost at 48 hours of clinical follow-up. We aimed to discuss the etiology of celiac artery thrombosis, briefly. We believe that necrosis and perforation of the stomach due to celiac artery thrombosis deserves to be shared because it is a rare and difficult case to manage.

Keywords: Gastric necrosis, Celiac artery, Thrombosis

Öz

Bu yazıda bilinen hipertansiyon, atriyal fibrilasyon, diyabet, koroner arter hastalığı olan 76 yaşında bir kadın hastada yeni gelişen karın ağrısı ve kanlı kusma sonrasında olası çölyak arter trombozuna bağlı mide nekrozu ve perforasyonu olgusunu paylaşıyoruz. Olgumuzda acil cerrahi planlandı ancak hasta operasyonu reddetti ve 48 saatlik klinik izlemde yaşamı sona erdi. Çölyak arter trombozu etyolojisini kısaca tartışmayı amaçladık. Çölyak arter trombozuna bağlı mide nekrozu nadir görülmesinin yanında tanı konulması zor bir klinik durum olduğu için paylaşmaya değer bulduk.

Anahtar kelimeler: Gastrik nekroz, Çölyak arter, Tromboz

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Introduction

Celiac artery thrombosis is a rare clinical condition and it can be seen due to advanced age, atherosclerosis, connective tissue diseases, coagulation disorders, pancreatitis, surgical trauma, congenital anomalies. Celiac artery thrombosis is an urgent condition requiring immediate diagnosis, treatment and urgent revascularization if necessary. Delay in diagnosis can lead to impaired perfusion in organs such as the stomach, liver, pancreas and spleen. On the other hand, celiac artery thrombosis usually occurs on the basis of atherosclerosis and cardiovascular diseases. Population studies have shown a prevalence of 1% to and 12.5% and 1% to 24% for celiac artery occlusion and celiac axis stenosis, respectively [1]. Despite significant improvements in diagnosis and treatment, hospital mortality was reported as 59-93%. Successful treatment depends restoring blood circulation of the affected tissue, intervention with surgical resection if necessary, and close monitoring in intensive care unit [2].

In this article, we are sharing a case of a 76-year-old woman with known hypertension, diabetes mellitus, atrial fibrillation, coronary artery disease, who is presenting with stomach necrosis and perforation possibly due to celiac artery thrombosis after newly developed abdominal pain and bloody vomiting. In our case, emergency surgery was planned and the patient refused the operation and was lost at 48 hours of clinical follow-up. We aimed to discuss the etiology of celiac artery thrombosis.

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Case Presentation

A 76-year-old lady was admitted to our clinic with severe abdominal pain, bloody vomiting and impairment in general condition. In the medical history of the patient, hypertension, diabetes mellitus, hyperlipidemia, atrial fibrillation, congestive heart failure and coronary artery disease were noted. In the detailed anamnesis of the case, there were complaints of abdominal pain and weight loss that started after the meals. In the physical examination of the patient; The overall condition was poor, she was dyspneic, tachycardic, and the blood pressure was 90/55 mm / Hg, pulse 118 / min, temperature 37.1 ° C, oxygen saturation 92% and respiratory rate was 24 / min. In the abdominal examination, distention was detected, bowel sounds were found to be reduced, and widespread tenderness was present in all quadrants with palpation. Melena was detected on rectal examination. At the base of the left lung, respiratory sounds were found to be decreased. Tachycardia was present in the cardiovascular system examination. Peripheral arterial pulses were taken and there was widespread edema in both legs. The laboratory values were as follows: Hemoglobin: 7,2 g/dl, WBC: 12000/mm3, platelet: 375000/mm3, AST:384 U/L, ALT:275 U/L , LDH:712 U/L, sodium: 132 mEq/l, potassium: 3,4mEq / l, calcium: 7.9mg / dl, urea: 47mg / dl, creatinine: 1,6 mg/dl. Arterial blood gas examination revealed pH: 7,32 mm Hg, Pa02: 58 mm Hg, oxygen saturation: 92%, PaCO2: 40 mm Hg. Electrocardiography was compatible with atrial fibrillation. Hemoglobin decline occurred in the patient who had vomiting in bloody bright red color. Nasogastric tube lavage revealed large blood clots with no bright red blood present. Endoscopic examination of the upper gastrointestinal tract revealed that spontaneous hemorrhages and necrotic areas extending from the stomach corpus proximal to the antrum were seen (Figure 1-2).

Figure 1: Endoscopic view of necrotic and spontaneous hemorrhagic areas in stomach.

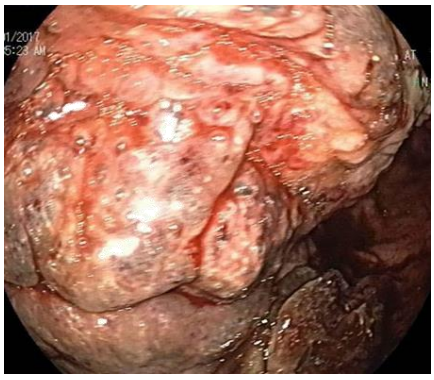

Figure 2: Endoscopic view of necrotic areas in stomach

Abdominal computerized tomography angiography taken to describe the etiology of necrosis detected in endoscopic imaging showed that a filling defect compatible with celiac truncus thrombus and free air density consistent with perforation in the posterior part of the stomach and medial to the spleen (Figure 3). In the patient, considering the stomach necrosis and perforation due to celiac artery thrombosis, the patient's oral intake was stopped. Surgical operation was planned for the patient who underwent erythrocyte and fluid replacement for hemodynamic stabilization for hemorrhage and was monitored under intensive care conditions. Surgical operation was not accepted by patient and relatives. In follow-up, respiratory distress and deep hypoxia developed, generalized worsening of the patient's need for invasive mechanical ventilation and patient was intubated. Cardiac arrest developed within 48 hours of intensive care hospitalization and did not respond to resuscitation and lost his life.

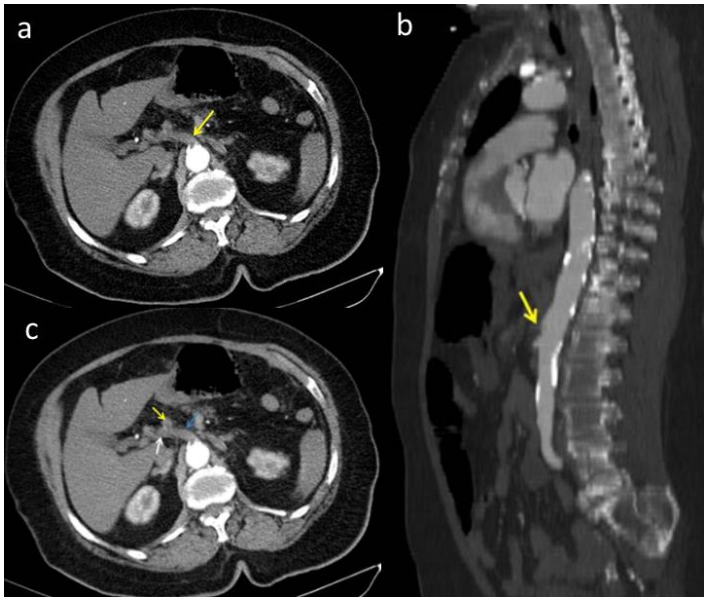

Figure 3: a:Computed tomography angiography- Axial view. b: Sagittal reformat view. c: Axial view, yellow arrow: splenic artery white arrow: common hepatic artery blue arrow: celiac truncus

Discussion

Gastric necrosis is a rare clinical condition because the rich blood supply and widespread submucosal vascular network of the stomach [3]. On the other hand, gastric necrosis may be a life-threatening condition due to increased perforation risk [4]. Its etiology includes cardiovascular disease, hypercoagulable state, arterial thrombosis and embolism, hemodynamic compromise, hypoxemia, alcohol ingestion, corrosive substance intake, gastric outlet obstruction, gastric herniation, massive gastric dilatation, volvulus, previous gastric surgery, bulimia, trauma and infection [4-7]. Based on the information gleaned from the patient's evaluation, the most likely diagnosis is stomach necrosis and perforation due to celiac artery thrombosis. Abdominal tomography of our case; The celiac artery had a thrombotic appearance from the abdominal aortic outlet, so gastric necrosis was thought to be due to underlying celiac thrombosis. The celiac artery is a large artery that is vertically separated from the anterior aspect of the aorta at the level of the T12-L1 vertebra. Three major arteries, the hepatic artery, the left

gastric artery, and the splenic artery, pass through the diaphragmatic crura. The ischemic event of these regions is rare due to the fact that they are separated by a vertical angle from the aorta and anastomoses between the branches [8]. Celiac artery thrombosis is a rare cause of acute abdomen and has a high mortality rate if diagnosis and treatment are delayed. The main causes of celiac artery thrombosis include atherosclerosis, congestive heart failure, past myocardial infarction, advanced age, malignancies, collagen tissue diseases, coagulation disorders [2]. Celiac artery thrombosis is typically associated with a preexisting stenosis and is at the origin of the arteries. Typically, over the years, this stenosis progressively increases and reaches a critical level, resulting in sudden thrombosis during a low-flow period. Acute celiac artery may occur with non-spesific symptoms such as severe abdominal pain that are not specific to any disease. Ileus, peritonitis and gastrointestinal bleeding (as in our case), may mask initial symptoms [9]. Patients usually have extensive atherosclerosis, coronary, cerebrovascular, peripheral arterial insufficiency before this clinical picture [10]. In our present case, there were many risk factors predisposing to thrombosis such as advanced age, previous myocardial infarction, diabetes mellitus, and atrial fibrillation. 20-30% of patients with acute thrombosis may have symptoms of chronic mesenteric ischemia. In the history of the case, the presence of complaints such as abdominal pain, weight loss after meals support the background of chronic ischemia. Keskin and colleagues reported a case of celiac artery thrombosis in a 44-year-old female patient with essential thrombocytosis and smoking risk factors [11]. Serck LC et al reported a case of celiac truncus and superiorial mesenteric ischemia in a 59-year-old female patient with sigmoid colon carcinoma [12]. Kanth R et al reported a case of celiac artery thrombosis due to protein C deficiency in a 33 years old male patient [13]. Celiac artery thrombosis may develop as a local complication of acute pancreatitis as well as due to atherosclerosis, malignancies, coagulation disorders. Kumaran et al, reported total gastric necrosis associated with celiac artery thrombosis in a patient with acute pancreatitis [14]. Arul et al reported a case of celiac axis thrombosis and splenic infarction in a 14-year-old girl using oral contraceptive pill [15]. If acute celiac artery thrombosis is suspected, emergency angiographic imaging and revascularization may be life-saving if needed. Although endovascular balloon angioplasty and surgical bypass are available, endovascular interventions have become popular recently due to low complication rates [11]. Conclusion Although acute celiac artery thrombosis is very rare, in cases of high clinical suspicion, it should be diagnosed by emergency angiographic examination and rapid revascularization should be provided in clinically appropriate cases. Delays in diagnosis have a high mortality and morbidity rate. Celiac artery thrombosis should be remembered in patients with advanced cardiovascular risk factors who present with severe abdominal pain, gastrointestinal bleeding and acute abdomen clinic. In patients with celiac artery thrombosis, thrombophilic states, cardiovascular disorders, vasculopathy, and detailed drug history that may cause thrombosis tendency should be questioned.

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