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Intrauterine interventions with the aid of ultrasonography

Ultrasonografi eşliğinde intrauterin girişimler

Bulat Aytek Şık [1], Alim Özcan [2], Serkan Kumbasar [3], Murat Bozkurt [3], Sedat Bilecan [1]

Abstract

Aim: The aim of this study was to research the applicability of the surgical treatment of intrauterine pathologies with the aid of ultrasonography by passing a laparoscopic grasper or scissor through a metal sheath placed in the cervical canal, and compare this method with hysteroscopy, which is considered the gold standard in diagnosis and treatment.

Methods: Our study was conducted with 39 cases where intrauterine pathologies were found with transvaginal ultrasonography (TVUSG). The patients were evaluated for endometrial polyp, submucosal leiomyoma/fibroid and uterine malformations using a transvaginal probe in the 6th to 12th days of the menstrual cycle. Patients with endometrial polyps and submucosal leiomyomas/fibroids were excised with a laparoscopic 5 mm grasper. A laparoscopic plain dissection scissor (5 mm) was used instead of a grasper for the uterine septum. In patients undergoing polypectomy and myomectomy, the uterine cavity was reevaluated by TVUSG about one month later (in the follicular phase after the first menstruation). Patients who underwent resection of the septum after the second menstrual bleeding, intrauterine cavity and tubal were evaluated by hysterosalpingography.

Results: Considering the presence of intrauterine pathologies, TUSVG has sensitivity of 1 (0.87- 1.0), specificity of 0.56 (0.21-0.86), positive predictive value of 0.87 (0.71-0.96), negative predictive value of 1 (0.48-1.0), accuracy of 0.89 and positive likelihood ratio of 2.25 (1.03-4.5) for the detection endometrial polyps. When endometrial polyps were found as the intrauterine pathology during TUSVG, the chance of having endometrial polyps in hysteroscopic diagnosis was found to be 2.25 times more compared to those with no pathology. According to hysteroscopic diagnosis, TUSVG has sensitivity of 0.90 (0.74-0.98), specificity of 0.56 (0.21-0.86), positive predictive value of 0.87 (0.71-0.96), negative predictive value of 0.63 (0.25-0.92), accuracy of 0.82 and positive likelihood ratio of 2.03 (0.95-4.2) for intrauterine pathology. When the intrauterine pathology was found during TVUSG, the chance of having these pathologies in hysteroscopic diagnosis was found to be 2.03 times more compared to those with no pathology.

Conclusion: We think that the surgical treatment of intrauterine pathologies with the aid of ultrasonography can be an alternative for hysteroscopy.

Keywords: Endometrial polyp, Intrauterine pathologies, Hysteroscopy, Uterine septum

Öz

Amaç: Bu çalışmanın amacı, intrauterin patolojilerin transabdominal ultrasonografi eşliğinde, servikal kanala yerleştirilen metal kılıf içerisinden laparoskopik grasper veya makas geçirilerek cerrahi tedavisinin uygulanabilirliğini araştırmak, tanı ve tedavide altın standart olarak kabul edilen histeroskopi ile karşılaştırmaktır.

Yöntemler: Çalışmamız transvajinal ultrasonografi(TVUSG) ile intrauterin patoloji saptanan 39 olgu ile yapıldı. Hastalar menstrual siklusun 6-12. günleri arasında, transvajinal prob kullanılarak endometrial polip, submuközmyom ve uterin malformasyonlar açısından değerlendirildi. Endometrial polip ve submuköz myomu olan hastalar,laparoskopik 5 mm'lik grasper ile tutularak çıkartıldı. Uterin septum için ise grasper yerine laparoskopik 5 mm'lik düz disseksiyon makası kullanıldı. Polipektomi ve myomektomi yapılan hastalarda uterin kavite ortalama 1 ay sonra ilk mestruasyon sonrası foliküler fazda TVUSG ile tekrar değerlendirildi. Septum rezeksiyonu yapılan hastalarda işlemden sonraki ikinci menstrüel kanama sonrası HSG çekilerek intrauterin kavite ve tubalar değerlendirildi.

Bulgular: İntrauterin patoloji dikkate alındığında TVUSG'de endometrial polip için duyarlılık 1 (0,87-1,0), özgüllük 0,56 (0,21-0,86), pozitif kestirim değeri 0,87 (0,71-0,96), negatif kestirim değeri 1 (0,48-1,0), doğruluk 0,89 LR (+) 2,25 (1,03-4,5) bulundu. İntrauterin patoloji olarak TVUSG'de endometrial polip bulunduğunda histeroskopik tanıda da endometrial polip olma olasılığı patolojik olmayanlardan 2,25 kat daha fazla bulundu. Histeroskopik tanıya göre, TVUSG ile intrauterin patoloji saptanması için duyarlılık 0,90 (0,74-0.,98), özgüllük 0,56 (0,21-0,86), pozitif kestirim değeri 0,87 (0,71-0,96), negatif kestirim değeri 0,63 (0,25-0,92), doğruluk 0,82 ve pozitif olabilirlik oranı 2,03 (0,95-4,2) bulundu. TVUSG ile intrauterin patoloji tespit edildiğinde, histeroskopik tanıda da patolojik olma olasılığı patolojik olmayanlardan 2,03 kat daha fazla bulunmuştur.

Sonuç: Ultrasonografi eşliğinde intrauterin patolojilerin cerrahi tedavisinin, histeroskopiye alternatif cerrahi olabileceğini düşünmekteyiz.

Anahtar Kelimeler: Endometrial polip, Intrauterin patolojiler, Histeroskopi, Uterus septumu

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Introduction

Intrauterine interventions are processes such as polyp resections, synechiolysis, sterilization, septum resections, and the extraction of left-over pregnancy products [1]. Polyps are encountered in nearly 10% of women with perimenopausal and postmenopausal bleeding, and are one of the most important reasons for abnormal uterine bleeding [2]. Even though the true prevalence of Mullerian abnormalities is not exactly known, they are reported in rates changing between 0.16% and 10% [3]. The most commonly seen uterine abnormality is uterine septum (90%), and is followed by bicornuate uterus (5%) and uterine didelphys (5%) [4]. Repeating miscarriages, which are defined as spontaneous consecutive losses of 2 or more pregnancies, affect 2 to 4% of all couples in their reproductive phases throughout the world [5]. In cases where repeating miscarriage is defined as 3 or more losses of pregnancies spontaneously and consecutively, this rate is 1% [6].

The high sensitivity and effectiveness of Intrauterine Saline Infusion Sonohysterography in the diagnosis of endometrial polyps, submucous fibroids (myoma), synechia, and uterine abnormalities has been proven with studies [7]. Today, hysteroscopy is considered the gold standard in the diagnosis and treatment of intrauterine lesions [8]. The main complications faced during hyteroscopic interventions are uterine rupture, cervical/vaginal lacerations, bladder and intestine damage secondary to uterine rupture, secondary problems to distension medium (fluid load, fluid electrolyte imbalance, vasovagal syncope, lung edema, gas emboli), and endomyometritis [9].

The aim of this study was to research the applicability of the surgical treatment of intrauterine pathologies i.e. endometrial polyp, submucous myoma, synechia, uterine septum with the aid of ultrasonography by passing a laparoscopic grasper or scissor through a metal sheath placed in the cervical canal, and compare this method with hysteroscopy, which is considered the gold standard in diagnosis and treatment.

Material and methods

Our study was conducted between December 2009 and November 2010 in Istanbul Suleymaniye Women's Diseases and Obstetrics Training and Research Hospital Gynecology service and operating room. 39 patients that presented at our hospital and were diagnosed with intrauterine pathologies through transvaginal ultrasonography (TVUSG) were included in the study after the approval of the planning and ethics board of the hospital and signing an informed consent form. This study has been conducted in accordance with the declaration of Helsinki.

The patients were evaluated for endometrial polyp, submucosal leiomyoma and uterine malformations using a transvaginal probe in the 6th to 12th days of the menstrual cycle using a GE Voluson 730 Expert ultrasonography (USG) device and a 2D B-Mode 5-9 Mhz transvaginal probe. Our study was a retrospective study using a prospectively held database. Patients who were diagnosed with endometrial polyps (Figure 1), submucosal leiomyoma, and uterine septum were included in the study. The maximum diameter of the endometrial polyps were measured and recorded. The veins feeding the endometrial polyp tissue were recorded in the patients where the Resistance Index value could be measured. The inclusion criteria for submucosal leiomyoma cases were a myoma having a pedicle and the maximum diameter of the myoma being less than 2.5 cm, and submucosal leiomyoma patients who didn't meet the criteria were excluded from the study. Cases with a septum maximum depth over 2 cm were included in the study. Cases with a septum maximum depth under 2 cm were excluded from the study.

After a detailed anamnesis and physical examination, the demographic information of the patients were recorded and patients were prepared for operation by requesting tests for complete blood count, blood type, full urine analysis, biochemistry, and serology. Daily treatment of 0.03 mg ethynil estradiol and 0.15 mg desogestrel (Desolett®, Merck Sharp Dohme, Netherlands) were started from the 1st day of menstruation to the day of the operation to get better preoperative endometrial visibility. All patients were taken into the operation between the 8thand 13th days of the menstrual cycle.

In the day of the operation, the necessary materials in the surgery room for intrauterine intervention with the aid of ultrasonography were prepared: USG device (Shimadzu® SDU 2200 Pro 2-5 Mhz abdominal probe), DVD recorder (Toshiba® RD-XS27 160 GB HDD), speculum, two-way Foley catheter, atraumatic clamp, tenaculum, Hegar plugs (until No:10) ,Two-way 5 mm. metal trocar sheath and blunt ended trocar (Karl Storz®, Tuttingen, Germany), distension medium (Glycine %1.5 Sol.),pump system (Glycine solution fluid bag attached to a coupled infusion pump),laparoscopic 5 mm. 360° rotating shaft curved dissection scissor (EndoSurg®,Laparoscopic 5 mm., 360° rotating shaft grasper (EndoGrasp®), StorzHysteroscope (Karl Storz®, Tuttingen, Germany).

The operations were performed under general anesthesia in two phases in the same session: 1- Intrauterine intervention with the aid of ultrasonography, 2- Hysteroscopic control or operative hysteroscopy. The number of steps and the intervals between the trocar entries and exits were recorded in all intrauterine intervention cases.

In patients who underwent polypectomy (Figure 2, 3) and myomectomy, the uterine cavity was evaluated again after approximately 1 month after the first menstruation via TVUSG. In patients who underwent septum resection, the intrauterine cavity and the Fallopian tubes were evaluated via hysterosalpingography (HSG) after the second menstrual bleeding after the process.

Data analysis was performed using the Statistical Package for Social Sciences (SPSS Inc, Chicago, Illonois, USA) 10,0 program. Continuous data was written as mean ± standard deviation (SD). Sensitivity, specificity, positive and negative predictive values, likelihood ratios and overall accuracy were calculated for the results of the diagnoses after TVUSG based on the hysteroscopic diagnosis.

Results

The mean age of 39 patients included in the study was 37.1 ± 9.11 years with a range of 25 to 60. Their mean height was 160.38 ± 6.34 cm with a minimum of 150 cm and a maximum of 172, and their mean weight was 65.38 ± 11.31 kg with a minimum of 49 and a maximum of 100. Demographic characteristics are given in Table 1.

The distribution of the complaints during the presentation of the patients were as follows: irregular menstruation in five (12.8%), intense vaginal bleeding in seven (17.9%), pain during sexual intercourse in one (2.6%), desire to have children in 19 (48.7%), groin pain in one (2.6%), routine checkup in one (2.6%), repeating miscarriages in one (2.6%), and vaginal bleeding in four (10.3%). 12 patients (30.8%) had a previous history of intrauterine interventions. There were hysteroscopic polypectomy, hysteroscopic setup resection and fractioned curettage (F/C) for postmenopausal bleeding in each patient (2.6%). Nine patients (23.0%) underwent revision curettage for miscarriage.

The distribution of patients diagnosed with intrauterine pathologies via hysteroscopy and TVUSG is given in Table 2.

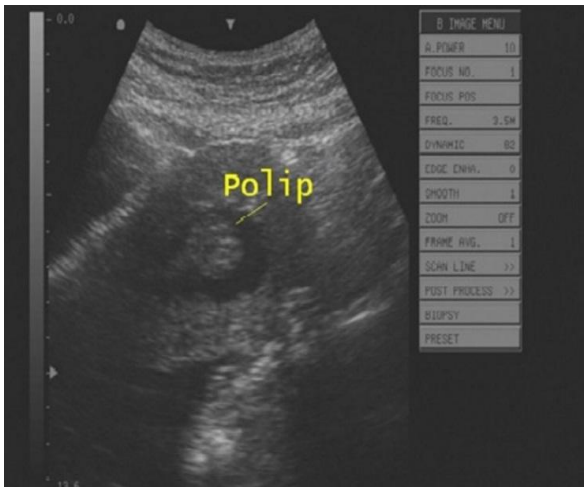

Figure 1: Intrauterine intervention under ultrasound guidance; polyp appearance.

Figure 2: Intrauterine intervention under ultrasound guidance (Endometrial polypectomy); polyp, grasper and metal case localizations.

Figure 3: Intrauterine intervention under ultrasound guidance; endometrial cavity appearance after polyp removal.

During the second phase of the operation, hysteroscopy, the cases in which their intrauterine pathologies were detected through TVUSG were compared to hysteroscopy with regard to diagnosis and treatment outcomes. In 33 patients diagnosed with endometrial polyps via TVUSG, 26 had the same diagnosis (78.7%), four had normal endometrial tissue pieces (12.1%), and three had submucosal leiomyoma (9.0%). The hysteroscopic diagnosis of one patient diagnosed with submucosal leiomyoma via TVUSG was again submucosal leiomyoma. The hysteroscopic diagnoses of five patients diagnosed with uterine septum via TVUSG were again uterine septum (Table 3).

Table 1: Demographic characteristics of the patients.

	n	Min	Max	Mean	SD
Age (year)	39	25	60	37.1	9.1
Height (cm)	39	150	172	160.4	6.3
Weight (kg)	39	49	100	65.4	11.3
Partus	39	0	9	1.6	1.9
Abortus	39	0	4	0.4	0.9

n: Number of patients, SD: standart deviation, Min: minimum, Max: Maximum

The preoperative diagnoses of the patients were endometrial polyp in three (7.7%), menometroragia in six (15.4%), polymenorrhea in three (7.7%), postmenopausal bleeding in four (10.3%), primary infertility in 12 (30.8%), secondary infertility in 7 (17.9%), and repeating miscarriages in one patient (2.6%).

The number of moves with the grasper or scissor during the operation phase of the intrauterine intervention with USG was found to have an average of 4.13 ± 2.41, with a minimum of 1 and a maximum of 10. The total length of the process was found to have a minimum of 4 minutes and a maximum of 25 minutes, with an average of 12.74 ± 5.59. The amount of glycine solution used during the operation was found to have a minimum of 600 cc and a maximum of 3500 cc, with an average of 1812.82 ± 630.45 cc.

Table 2: The distribution of patients diagnosed with intrauterine pathologies via hysteroscopy and transvaginal ultrasonography.

Group	Pathology	n	%
Intrauterine pathology	Endometrial polyp	33	84.6
	Uterine septum	5	12.8
	Submucous myoma	1	2.6
Hysteroscopic diagnosis	Endometrial polyp	26	66.7
	Normal endometrium tissue pieces	4	10.3
	Uterine septum	5	12.8
	Submucous myoma	4	10.3

When the technical problems encountered during intrauterine intervention with USG were examined, it was found that there were five pathologies that could not be held with a grasper in hysteroscopy as two endometrial polyps, one endometrial tissue piece, and two submucous myomas. In addition, two pathologies that could not be clearly defined with regard to pathological borders were both endometrial tissue pieces. The pathologies in which the distension of the uterine cavity was insufficient and the grasper couldn't open were endometrial polyp in one and endometrial tissue piece in one. In two cases with endometrial polyps, the pathology in the uterine cavity could not be seen clearly. In 32 patients (82.0%), the intrauterine pathology was operated fully with the aid of USG, and the operation did not require additional hysteroscopic resection. Among the patients who underwent additional processes, one patient underwent H/S myomectomy (25% of all submucosal leiomyoma), five patients underwent H/S polypectomy (19.2% of all endometrial polyps), and one patient underwent H/S septum resection (20% of all uterine septum).

Table 3: The comparison of the diagnosis distributions of the intrauterine pathologies via TVUSG and hysteroscopy

		Hysteroscopic diagnosis [β]				
		Endometrial polyp	Normal endometrium tissue pieces	Uterine septum	Submucosal leiomyoma	Total
Intrauterine pathology by TVUSG[β]	Endometrial polyp	26 (100)	4 (100)	0 (0)	3 (75)	33 (84.6)
	Uterine septum	0 (0)	0 (0)	5 (100)	0 (0)	5 (12.8)
	Submucosal leiomyoma	0 (0)	0 (0)	0	1 (25)	1 (2.6)
	Total	26	4	5	4	39

TVUSG: Trans vaginal ultrasonography, [β]: n(%)

Table 4: The diagnostic values of TVUSG for intrauterine pathologies and endometrial polyps based on the hysteroscopic diagnosis.

	Sensitivity	Specificity	PPV	NPV	Accuracy	LR (+)	LR (-)
All intrauterine pathologies	0.90 (0.74-0.98)	0.56 (0.21-0.86)	0.87 (0.71-0.96)	0.63 (0.25-0.92)	0.82	2.03 (0.95-4.2)	0.18
Endometrial polyp	1.00 (0.87- 1.0)	0.56 (0.21-0.86)	0.87 (0.69-0.96)	1.00 (0.48-1.0)	0.89	2.25 (1.03-4.5)	0.00

TVUSG: Trans vaginal ultrasonography, PPV: positive predictive value, NPV: negative predictive value, LR: likelihood ratio

Among the patients included in the study, those who were diagnosed with endometrial polyp and submucosal leiomyoma hysteroscopically (n=34) were called to the hospital after their first menstruation in the follicular phase for TVUSG, and those who were diagnosed with uterine septum uteri were called to the hospital for control HSG. In the control USG, repeating endometrial polyps were found in two patients (5.9%), one patient had irregular endometrium (2.6%) and 31 patients (91.5%) had normal endometrium. Control HSG was performed in five patients, and four patients were found to be normal (75.0%) while one patient had subseptus (25.0%).

According to hysteroscopic diagnosis, considering the presence of intrauterine pathologies, TUSVG has sensitivity of 1 (0.87-1.0), specificity of 0.56 (0.21-0.86), positive predictive value of 0.87 (0.71-0.96), negative predictive value of 1 (0.48-1.0), accuracy of 0.89 and positive likelihood ratio of 2.25 (1.03-4.5) for the detection endometrial polyps. When endometrial polyps were found in the intrauterine pathology during TUSVG, the chance of having endometrial polyps in hysteroscopic diagnosis was found to be 2.25 times more compared to those with no pathology. According to hysteroscopic diagnosis, TUSVG has sensitivity of 0.90 (0.74-0.98), specificity of 0.56 (0.21-0.86), positive predictive value of 0.87 (0.71-0.96), negative predictive value of 0.63 (0.25-0.92), accuracy of 0.82 and positive likelihood ratio of LR 2.03 (0.95-4.2) for intrauterine pathology. When the intrauterine pathology during TUSVG was found to be pathological, the chance of having pathologies in hysteroscopic diagnosis was found to be 2.03 times more compared to those with no pathology (Table 4).

Discussion

In infertile couples, uterine cavity abnormalities have a high rate as an etiological factor between 10 and 15% [10]. There is almost complete agreement in the literature that symptomatic patients with history of infertility or bed obstetric histories should be treated and that the preferred method should be the hysteroscopic approach [11].

Transvaginal ultrasonography can detect uterine myomas, malformations, and intrauterine synechia, and is also very successful in determining tubal patens, tubal blockage, and inner surface contours. TVUSG is a noninvasive test that can be easily applied and is among the first order diagnosis methods for infertility work ups [12, 13].

Williams et al [14] among the 104 patients they compared with regard to transvaginal ultrasound and diagnostic H/S, diagnosed intrauterine pathology in 52 (53%), at least one polyp in 25 patients, submucosal leiomyoma in 17 patients, endometrial hyperplasia in 7 patients, and endometrial cancer in 3 patients. In our study, we determined the endometrial pathology completely in 32 patients out of 39 (82.0%).

Kamil et al [15] compared the diagnostic accuracy values of ultrasound and sonohysterography for detecting endometrial polyps in 106 women with uterine bleeding complaints. The false positive and false negative velocities of the ultrasound were found to be 25.8% and 36.2%, respectively. The sensitivity and specificity of ultrasound was 64.5% and 75.5% respectively, and in sonohysterography, these values were raised to respectively 93.1% and 93.9%, which was found statistically significant. In our study, the sensitivity and specificity of TVUSG in detecting endometrial pathologies were found to be respectively 100% and 56%.

Lindheim et al [16] extracted endometrial polyps with diameters between 7 and 15 mm transcervically with USG. In our study, we dilated the cervix to 6 mm and used a 5.5mm grasper. Additionally, in our study, we were able to extract larger polyps or submucous myomas with a 5.5 mm grasper (maximum diameter 19mm).

In order to perform intrauterine interventions hysteroscopically, the cervix needs to be dilated to 10-11 mm. Cervix dilation, especially in patients that have lesions that take up intrauterine space in the postmenopausal period, is very difficult. In our method, the dilation of the cervix to 6 mm is sufficient.

The complications that are seen in hysteroscopy are fluid load, uterine perforation, and bleeding, and present in the respective rates of 5%, 1%, and 3%, especially during operative hysteroscopy [17]. Generally, the rates of complication are reported as 0.1% and 1.35% [18,19].When compared with regard to costs, endometrial polypectomy performed with USG is cheaper than hysteroscopic polypectomy.

Lee et al [20] used TVUSG probe for endometrial polypectomy with USG in 37 patients. In 32 patients out of 39 (86.5%) endometrial polypectomy with USG was successful. In our study, success was achieved in 21 out of 26 endometrial polyp patients (80.7%). Differing from our study, this study didn't have a metal sheath placed in the cervix. In the same study, in the ultrasonographies of the patients performed after menstruation, residual polyps could not be found. In our study, in

the control ultrasonography performed after the first menstruation, endometrial polyps were seen in two cases.

Today, two important indications cause uterine septum to be surgically corrected: repeating miscarriages and the prevention of premature birth [21]. Among the five patients in our study diagnosed with uterine septum, one had repeating miscarriages. In our study, the aim of septum resections was the same. Out of five patients we performed septum resections, 1one was resected because of repeating miscarriages, and four were resected because of primary infertility.

In a study by Ohl and Bettahar [22], septum resection with USG was stated to be appropriate for all uterine septum types. In wide based septum, they stated that the scissor could be easily moved to the left and right on the transversal plane in the uterine cavity to perform septum resections, and that deep septum could be easily resected using this method.

In our study, we succeeded in four patients out of five patients we applied septum resection to, and no additional resections were seen to be necessary in the control with hysteroscopy. In one patient, a complete resection could not be performed since the septum base was wide (3.2 cm).

When there is blood or endometrium tissue in the uterine cavity in intrauterine interventions performed with hysteroscopy, the operation can be limited or outright impossible. In septum resections performed with USG, such a timing issue cannot be experienced and the method can be applied in every period of the menstrual cycle. Blood or endometrial tissue pieces in the uterine cavity doesn't affect ultrasonographic septum visibility.

There is no much bleeding in septum resections. In some publications, in fact, hysteroscopic septum resection is suggested to be performed with the aid of ultrasonography [23]. In our study, during septum resection with USG, no uterine perforation complications were experienced.

In a study by Jurkovic et al. [24], the use of 3D ultrasonography in the diagnosis of congenital uterine abnormalities was examined. The diagnoses of septum or other congenital uterine abnormalities can be performed with 3D USG without needing HSG. In our study, uterine septum diagnoses were performed with 3-D USG (GE Voluson 730 Expert) and confirmed through HSG.

In conclusion, since the surgical technique we applied is cheaper and simpler to use compared to hysteroscopy, we think that the surgical treatment of intrauterine pathologies with the aid of ultrasonography can be an alternative for hysteroscopy.

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Factors affecting the success of conservative management in de Quervain cases

De Quervain olgularında konservatif tedavi başarısını etkileyen faktörler

Hasan Hüseyin Ceylan [1], Özcan Kaya [2], Barış Çaypınar [3], Muhammed Beşir Öztürk [4]

Abstract

Aim: De Quervain's disease, which is known as tenosynovitis of the first radial dorsal compartment, usually is a self-limiting condition and it could be managed conservatively. In this study, we aimed to evaluate the factors affecting the success of the conservative treatment.

Methods: Patients who admitted to outpatient service with radial styloid pain and diagnosed as de Quervain's disease between March 2014 and December 2016 were enrolled to our study. A total number of 84 patients evaluated retrospectively, and 12 of them excluded due to inadequate patient information, previous interventions in other clinics, and lost to follow up. Patients' files with regard to the patients' data on age, sex, duration of symptomatic period, history of previous trauma, season of admission and need of surgery were evaluated.

Results: Mean age of the patients was 42.24 (range 16-66) years. Of the cohort, 58 patients (80.6%) were female and the remaining patients (19.4%) were male. Mean length of pre-admission symptomatic period was 2.2 (range 1-12) months. There was no significant correlation between the resistance to treatment and the duration of the symptoms (r=0.4597). Sixty-one of 72 patients (84.7%) received one month of orthosis and oral/local medication and they were all healed. The remaining 11 patients with persistent pain received additional steroid injections. The mean age was 46.72 years at the injection group, and 10 of these 11 were female. Two female patients from these 11 resistant cases underwent surgical decompression.

Conclusion: In conclusion, our study also supported the self-limiting clinical feature of de Quervain's disease. Most of the patients have satisfactory results with conservative treatment or corticosteroid injections if needed. Most of the patients who needed corticosteroid injections in addition to splint use were female; therefore, the female patients should be informed in this aspect.

Keywords: De Quervain, Conservative management, Failure

Öz

Amaç: Birinci dorsal kompartmanın tenosinoviti olan de Quervain hastalığı sıklıkla konservatif olarak tedavi edilebilen bir antitedir. Bu çalışmamızda konservatif tedavi başarısını etkileyen parametreleri tartışmayı amaçladık.

Yöntemler: Mart 2014- Aralık 2016 tarihleri arasında el bileği radial stiloidde lokalize ağrı ile polikliniğimize başvuran ve de Quervain tanısı alan hastaların verilerine ulaşıldı. Ulaşılan 84 hastadan, başvuru öncesinde dış merkezde müdahale edilen veya enjeksiyon yapılan, detaylı anamnezine ulaşılamayan ve ikinci kontrole gelmeyen 12'si çalışma dışı bırakıldı. Toplam 72 de Quervain hastası çalışmamıza dahil edildi. Hastaların yaşları, cinsiyetleri, semptomatik periyodun uzunluğu, travma anamnezi, başvurunun yapıldığı mevsim ve cerrahi gereksinimi sorgulandı.

Bulgular: Hasta grubu yaş ortalaması 42,24 (aralık 16-66) yıl olarak saptandı. Hastalardan 58'i kadın (%80.6) ve 14'ü erkekti (%19,4). Başvuru öncesi ortalama semptomatik periyodun 2,2 (aralık 1-12) ay olduğu görüldü. Bu periyodun uzunluğu ile tedaviye direnç arasında anlamlı ilişki saptanmadı (r=0,4597). 72 hastanın 61'inin (%84,7) bir aylık istirahat ateli ve oral ve topikal antienflamatuar tedavi ile iyileştiği saptandı. Diğer 11 hastanın semptomlarının devam ettiği görüldü ve tamamına lokal kortikosteroid enjeksiyonu yapıldı. Enjeksiyon ihtiyacı duyulan hastaların 10'unun kadın olduğu ve cerrahi tedaviye ihtiyaç duyan hastaların tamamının kadın olduğu görüldü. Enjeksiyon grubunun yaş ortalaması 46,72 yıl olarak saptandı. Takip eden kontrollerde bu 11 hastanın ikisinin enjeksiyona rağmen semptomlarda gerileme olmadığı ve cerrahi dekompresyon yapıldığı saptandı.

Sonuç: Çalışmamız de Quervain hastalığının kendini sınırlayıcı niteliğini teyit etmektedir. Hastaların çoğunluğu konservatif tedavi ya da kortikosteroid enjeksiyonu ile tedavi edilebilmektedir. Başvuran hastamız kadınsa medikal tedavi ve atele ilave olarak enjeksiyon tedavisi gerekebileceği hastaya anlatılmalıdır.

Anahtar Kelimeler: De Quervain, Konservatif tedavi, Başarısızlık

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Introduction

Stenosing tenosynovitis of the first dorsal compartment of the wrist, which includes two tendons, is also known as de Quervain's disease. It is a well-known pathological condition of the wrist and its incidence is estimated between 0.94 to 6.3 per 1000 person [1,2]. The pain may be provoked by ulnar deviation of the wrist and abduction of the first metacarpophalangeal joint in flexion, which is called as Finkelstein's test [3]. The clinical condition is de Quervain syndrome (DS).

The exact etiology of the disease has not been well described yet. Literature focused on overuse of the wrist as the major etiologic factor for the disease [3]. Repetitive ulnar deviation while the metacarpophalangeal joint of the thumb is in flexion, like typing, lifting etc., is considered to result such clinical problem [4]. Cumulative trauma from repetitive strain is triggering the pathologic changes. The pathophysiology of the disease is thought to be thickening and stenosing of the synovial sheath of the first extensor dorsal compartment due to repetitive trauma or overuse, which contains the extensor pollicis brevis (EPB) and abductor pollicis longus (APL) tendons [3]. This stenosing causes impaired gliding of the APL and EPB tendons due to narrowing of the first dorsal compartment and thickening of the extensor retinaculum. Pathological fibroblastic response of the tendon vagina was also shown before [5].

The release of the first dorsal compartment is the last method to solve the problem surgically [6]. Most surgeons recommend conservative management including splinting and nonsteroidal anti-inflammatory drugs as the first line treatment [7]. In case of failure of conservative treatment, a single dose of local corticosteroid administration may be helpful for relieving the pain up to 83% of the cases [8]. Additional conservative management modalities include acupuncture, platelet-rich plasma injection, hyaluranic acid injection, and ultrasound [9,10]. Many studies on the effectiveness of conservative treatment were reported in current literature [6,7,11]. Additional to splinting and medication, occupational therapy was considered to be important for the success of the conservative treatment. This includes patient education and modification of the daily activities that may provoke the pathology [7,12,13]. However, factors affecting the success of conservative treatment of disease are not well described. Purpose of this study is to figure out the factors affecting the success of conservative treatment for DS.

Material and methods

The design of our study was a retrospective database evaluation. The study was performed in a district hospital's outpatient service. After approval of the local ethical authority (Istanbul Lutfiye Nuri Burat State Hospital, 2018/62560444-929), patient records with a diagnosis of DS between March 2014 and December 2016 were evaluated and presented in this paper.

The patients with a diagnosis of DS were identified from electronic hospital medical archiving system according to International Classification of Diseases (ICD) coding system, as radial styloid tenosynovitis (M65.4). Then, patients' files were searched for exact diagnosis and inclusion criteria. On the other hand, the term 'quervain' was searched from all electronic files of the orthopedic patients. The medical history of each patient was evaluated. The patients with a diagnosis of DS based on the tenderness and/or swelling on the radial styloid and the first dorsal compartments, with a positive Finkelstein test were determined by two separate surgeons. Patients with a history of previous history of interventions, suspicious diagnosis because of unavailable or incomplete patient's data, loss of follow up after initial out-patient admission, previously receiving a corticosteroid injection or different conservative treatment modalities in different centers were excluded.

All patients were evaluated in terms of accurate diagnosis and prescribed with anti-inflammatory medication and splint at the first admission. Both of our surgeons at the institution routinely called the patients after the 4th months of the treatment in their clinical practice to evaluate the efficacy of the treatment. The conservative management was considered to fail in case of unresponsiveness to the four weeks of splint and drug usage.

Patients were evaluated according to age and sex, reported symptomatic period before the admission, previous history of a trauma around the wrist, and need of injection and surgical release in addition to the conservative management.

Statistical analysis

All statistics were performed using SPSS 20.0 for Windows (SPSS Statistics for Windows, Version 20.0, IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD). Categorical variables were expressed as frequencies. Pearson correlation test was used to evaluate the correlation between the length of preadmission symptomatic period and treatment resistance. The differences were considered statistically significant if the p value was equal to or less than 0.05.

Results

Among 84 patients with a diagnosis of DS found in the electronic database, six were excluded due to a history of previous interventions, like splinting or injection, in other clinics. Four patients were also excluded due to lack of detailed anamnesis records. Two patients were also excluded due to loss of follow up after the first admission. Therefore, a total of 72 patients with DS were included in our study.

The mean age of the patient group was 42.24 (range 16-66) years. Of the 72 patients, 58 (80.6%) were female and 14 patients (19.4%) were male, the disease affected females more than males. The mean symptomatic period before the hospital admission was 2.2 (range 1-12) months. There was no significant relationship between the length of this period and treatment resistance (Pearson Correlation test, r= 0.4597). Sixty one of 72 patients (84.7%) were recovered at 1-month rest and oral and topical anti-inflammatory therapy. The other 11 patients (15.3%) continued to have symptoms despite splinting and medical treatment and a local corticosteroid (Diprospan®, injectable ampoule, betamethasone dipropionate and betamethasone sodium phosphate, Merck Sharp & Dohme, Istanbul, Turkey) injection were made. It was seen that 10 of the patients who needed injection were female and all of the patients who needed surgical treatment were female. The mean age of the injection group was 46.72 years old. In follow-up controls, two of these 11 patients were found to have no symptom relief despite the injection, and surgical decompression was performed. Only one of the patients had a history of trauma that healed with conservative treatment in the first month of admission.

Discussion

Controversies about the main pathophysiological mechanism of DS are going on. Some authors suggest acute inflammation as the main pathophysiology, in contrast, the others point to myxoid degeneration [3,14-16]. For these reasons, some authors suggest the use of "tendinosis" instead of tendinitis. Repetitive tension on APL and EPB tendons due to overuse, or any other triggering mechanism result with fibroblastic response of the tendon vagina [5]. In our study cohort, all patients had a history of overuse, and only one patient reported a previous trauma.

Despite all possible pathological mechanisms, the clinical presentation is almost the same. A pain around the radial side of the wrist, which may be aggravated with forced ulnar deviation of the wrist joint [3]. This is called as Finkelstein test in literature. All of our patients had positive sign of Finkelstein test.

DS is also suggested as a self-limiting condition in current studies [17]. So overtreatment is unnecessary, and simple way of local injection seems sufficient for treatment. In our cohort, nearly 85% of patients' complaints resolved with a one month of splinting and anti-inflammatory medication. In our cohort, 11 of 72 (15.3%) had persistent pain after a month of splinting and medication, and undergone local injection and it was effective in nine of these 11 cases.

Menendez et al [18] compared the effect of fulltime vs. desired time use of splinting for DS in a randomized controlled study, and they couldn't find a difference in symptom relief between two groups. We didn't compare this difference in our cohort.

Corticosteroid injection alone resulted in better outcomes compared with other conservative treatment modalities in terms of early pain relief and activity limitation [14, 19]. Mardani-Kivi et al [20] also favored corticosteroid injection plus splinting in terms of the success of treatment and functional outcomes, compared to corticosteroid injection alone. In contrast to corticosteroid injection studies, some authors pointed the adverse effects of corticosteroid injections such as atrophy of subcutaneous tissue, an increase of blood glucose levels in type 1 diabetic patients and local flare reactions [21, 22]. Other injection methods like platelet-rich plasma or hyaluronic acid were also reported, but they are not so practical and cost-effective, compared to corticosteroid [9]. In our patients, we used corticosteroids routinely and did not have any related complication.

Surgical release of the first dorsal compartment for treatment of DS is mainly indicated in patients unresponsive to corticosteroid injections and having persistent symptoms more than six months despite conservative treatment methods [16, 23]. The surgical release resulted in satisfactory clinical outcomes with minimal morbidity in general [17]. In our cohort, only two (2.7%) cases were resistant to conservative treatment and local injection and treated with surgical decompression.

Some factors may decrease the efficacy of conservative treatment. Patients with a lower psychosocial well-being response were reported to perceive higher levels of dissatisfaction from conservative treatment [8]. Ilyas [7] stated that splinting is an essential part of successful conservative management, and decreased cooperation of the patient to splinting may decrease the success. Parents with a baby should be warned to limit lifting periods of their babies during treatment [7]. Female sex and increased age are other factors that inversely correlated with the success of conservative treatment [3]. Our study cohort pointed that the majority of DS patients were women (80.6%) and 10 of 11 patients in dissatisfaction group (15.3%) was women, that was similar to literature findings. These patients were unresponsive to splinting and anti-inflammatory treatment of four weeks. All undergone corticosteroid injection and all healed except two cases. Both of these patients who had undergone surgical intervention were also female. The mean age of corticosteroid injection group was higher than conservatively treated patient group. Previous studies pointed longer duration of the symptoms and need for a local corticosteroid injection [24]. In our cohort, we could not find any relation between symptom duration and persistence of pain.

Our study has certain limitations. First of all, the number of evaluated patients was very low for a common conclusion. Factors like occupation, daily habits, and concomitant medical conditions like diabetes may also interfere with the success of treatment. However, we could not access to these details in our digital database. There may be some individual differences on the preference of injection types and styles, and this detail may change the results.

In conclusion, our study also supported the self-limiting clinical feature of DS. Most of DS patients have satisfactory results with conservative treatment or corticosteroid if needed. Female patients should be kept in mind for the possible resistance to conservative management and need of corticosteroid injection in addition to splint use.

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Is there any benefit of harmonic scalpel for hemorrhoidectomy versus conventional diathermy?

Geleneksel diyatermi ile kıyaslandığında harmonik bistürinin hemoroidektomide faydası var mıdır?

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Abstract

Aim: Symptomatic hemorrhoidal disease is among the most common surgical diseases and it may necessitate surgical intervention. The most common and effective approaches used for surgical treatment are harmonic scalpel hemorrhoidectomy and conventional diathermy excision. The aim of the study was to compare the outcomes of hemorrhoidectomy using harmonic scalpel and the conventional diathermy excision techniques.

Methods: The files of 113 consecutively operated patients (26 females 23%, 87 males 77%), who were operated on for symptomatic Grade III–IV hemorrhoids, were retrospectively reviewed for length of operation and hospitalization, early and delayed bleeding, urinary retention, postoperative abscess and anal stenosis. Exclusion criteria were additional operations, recurrent cases and inflammatory bowel disease.

Results: Conventional diathermy hemorrhoidectomy in 60 (53%) and harmonic scalpel hemorrhoidectomy were used in 53 patients (47%). There were significant differences between the operation and hospitalization times in favor of harmonic scalpel group ($p<0.05$ for both). The other parameters did not show any significant differences ($p>0.05$ for all).

Conclusion: Harmonic scalpel hemorrhoidectomy is advantageous and superior to conventional diathermy hemorrhoidectomy in regard to shorter operation time and earlier discharge from the hospital with no additonal complications.

Keywords: Harmonic, Hemorrhoidectomy, Scalpel, Surgery, Technique

Öz

Amaç: Semptomatik hemoroidal hastalık, en yaygın cerrahi hastalıklar arasındadır ve tedavide cerrahi müdahale gerekebilir. Cerrahi tedavide etkili yaklaşımlar harmonik bistüri ile hemoroidektomi ve konvansiyonel diyatermi ile eksizyondur. Çalışmanın amacı, harmonik bistüri ve konvansiyonel diyatermi eksizyon teknikleriyle yapılan hemoroidektomi sonuçlarını karşılaştırmaktı.

Yöntemler: Semptomatik Evre III-IV hemoroid nedeniyle ardışık operasyon yapılan 113 hasta (26 kadın, % 23; 87 erkek, % 77) dosyaları retrospektif olarak incelendi ve operasyon ve hastanede kalış süresi, erken ve gecikmiş kanama, idrar yapmada zorluk, postoperatif apse ve anal stenoz araştırıldı. Dışlama kriterleri; ek cerrahi uygulanması, rekürren vakalar ve inflamatuvar bağırsak hastalığı idi.

Bulgular: Altmış hastada (%53) konvansiyonel diyatermi ile hemoroidektomi ve 53 hastada (%47) harmonik bistüri ile hemoroidektomi uygulandı. Operasyon ve yatış süreleri arasında harmonik bistüri grubu lehine anlamlı farklılık tespit edildi (her ikisi için $p<0,05$). Diğer parametrelerde anlamlı bir farklılık yoktu (hepsi için $p>0,05$).

Sonuç: Harmonik bistüri ile hemoroidektomi, ameliyat süresinin kısa olması ve hastaneden daha erken taburcu olmasına karşın ek bir komplikasyona rastlanmadığı için konvansiyonel diyatermi hemoroidektomisine göre avantajlıdır.

Anahtar Kelimeler: Harmonik, Hemoroidektomi, Bistüri, Cerrahi, Teknik

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Introduction

Hemorrhoids are one of the most common anorectal disorders affecting around 39-45% of the Western population [1,2]. The most common symptoms are bleeding, swelling, prolapse, and peri-anal irritation. They may be further complicated with thrombosis which sometimes causes severe pain. The current theory about symptomatic hemorrhoids is the destruction of the anal cushions, which help the defecation and fine-tuning of anal continence. The muscle fibers are then replaced by collagen and there is an inflammatory process in the connective tissues around vessels which leads to ischemia and ulceration thus ending up in bleeding [3]. Hence the disease is very common and causes a significant number of operations and creates a community burden. For example, there are over 20000 hemorrhoidal procedures in the United Kingdom each year [4].

The ideal operation for hemorrhoids must have low recurrence, low postoperative pain causing less hospital stay, early return to work and minimum morbidity. The main and ultimate treatment for advanced stage hemorrhoidal diease is hemorrhoidectomy. Various methods of hemorrhoidectomy have been introduced to decrease pain, bleeding, stenosis, and chronic postoperative itchy discharge.

Conventional hemorrhoidectomy is carried out by creating an anodermal wound after the excision of the hemorrhoidal packages and is associated with significant pain, marked bleeding, and a prolonged period before return to normal activity [5]. The ultrasonic scalpel uses ultrasonic vibration to cut tissue and automatically coagulate at the same time by generating heat. A hemorrhoidectomy performed with an ultrasonic scalpel may have several advantages, including less damage to tissues, better hemostasis, less stimulation to neuro¬muscular tissues, and local control of the surgical site, compared to a hemorrhoidectomy performed with surgical scissors and/or mo¬nopolar electric cautery [6].

In the present retrospective clinical study, we aimed to assess the pain and complication rates following the use of either the traditional conventional hemorroidectomy procedure or harmonic scalpel hemorrhoidectomy.

Material and methods

The present retrospective study was done at the Department of Surgery, Haseki Training and Research State Hospital, University of Health Sciences between June 2014 and May 2017. Approval of the local ethic committee was obtained. All procedures were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1964 and later versions.

A total of 113 patients were included in the study. All patients were aged between 18 and 80 of both genders. The patients represented mostly with rectal bleeding, mucous discharge, pain and itching to the hospital. The diagnosis was made by rectal examination and medical treatment was given initially. If medical treatment failed or the patient did not want to continue medical therapy, the patients with symptomatic 3rd or 4th grade of the hemorrhoids were referred to surgery. All patients had signed written informed consent. Patients who had gone under harmonic scalpel hemorrhoidectomy (HS Group) and conventional hemorroidectomy (CH Group) were selected for a retrospective study.

Patients who were going under additional operations like fissure or fistulae, or who have inflammatory bowel diseases were excluded. The patients who had previous hemorrhoidal operations were also excluded. Anticoagulant medication or aspirin were told to stop 7 days prior to surgery and replaced by low molecular weight heparin.

A standardized spinal anesthesia was the preferred method. Previous spinal surgery and patients' choice were indications for general anesthesia. Both procedures were carried out in the surgery room with the patient in the lithotomy position and with Trendelenburg position. Each patient was examined under anesthesia. The hemorrhoidal package was held by two forceps at the apex and the mucocutaneous junction.

In the harmonic scalpel group (HS Group), the package was held with a forceps from the apex and the junction. Then, the harmonic instrument (Harmonic®; Ethicon Inc., Cincinnati, OH, USA) was applied with the jaws facing on the pedicle. No securing sutures were applied in the harmonic scalpel group and no mucosa suturing was used unless necessary.

An incision was made at the base of the package and the tissue was separated from the internal sphincter either by diathermy and/or scissors in the conventional group (CH Group). Then, the hemorrhoidal pedicle was transfixed with no 0 absorbable continuous sutures. The wounds were left open. An anal sponge was left into the anal canal at the end of the procedure after inspection by an Eisenhammer retractor.

Both groups had anal canal packing to secure homeostasis. The patients' files were reviewed for demographic data including age, gender, weight in kilograms and height in meters, operation time, length of hospitalization, pain scoring, the usage of additional analgesics and complications. BMI was calculated as weight in kilograms divided by the square of height in meters (kg/m2).The pain scoring was carried out by a simple questionnaire and patients were asked to score their pain according a scale ranging from 0-5, indicating 0 as no pain, and 5 as the worst pain encountered. The size or number of removed packages or the size of excised packages were not recorded due to contraction because of variations due to the time past until pathological examination and also hemorrhoidal packages removed with diathermy may have undergone additional shrinkage because of the destructive effect of heat.

All patients were given a standard scheme of analgesics as intravenous paracetamol (Perfalgan, 10 mg/ml, intravenous, 100 ml vial, Bristol-Myers Squibb, Istanbul, Turkey) in three doses with eight hours interval; the first dose was given in the operation room while the operation ended. The patients were applied one additional dose of 20 mg tenoxicam (Tilcotil, 20 mg, intravenous, 1 ml vial, Deva, Istanbul, Turkey) intravenously, if needed. If the pain persisted, slow intravenous use of tradamol 50 mg (Contramal, 50 mg/ml, intravenous 2 ml ampoule, Abdi Ibrahim, Istanbul, Turkey) was the preferred way for pain control. The need was decided on the patients' pain statement. The patients were also asked to evaluate and score their pain on the other day of the surgery.

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The patients were discharged on the first postoperative day unless there are other clinical indications. All patients were advised to use siz bath and proper diet and a standard medical treatment. They were examined on the first postoperative day and within one week after the surgery. We used the files of the outpatient polyclinic since we followed up the patients at least for six months in addition to communicating them by phone.

Statistical analysis was done with SPSS software. Student t-test was applied to compare the hospitalization and operation times between the groups. The differences were considered statistically significant if the p value was equal to or less than 0.05.

Results

The files of 113 (26 females 23%, 87 males 77%) consecutive patients were reviewed. While 60 patients (53%)

underwent conventional hemorrhoidectomy (CH) either with cold knife or diathermy depending on the surgeons' decision (CH Group), 53 patients (47%) underwent harmonic scalpel (HS) excision (HS Group). Patients' ages were between 18 and 80 years. The average age was 45.4±12.1 years. There was no difference between the groups in terms of age, gender and body mass index (Table 1). One hundred and five patients (92.1%) underwent spinal anesthesia as eight (7.1%) patients were operated under general anesthesia. Additional local anesthesia injection just after or during the operation was performed in 15 patients as nine in CS and six in HS groups. The mean operation time for the conventional group was 22.9±5.2 and 17.8±5.2 minutes for the harmonic scalpel group (p=0.001). The mean hospitalization times for CH and HS groups were 1.3±0.5 and 1.2±0.4 days, respectively (p=0.155). There were significant differences between the two groups in regard to analgesic requirement and operation times (p=0.038 and p=0.001, respectively).

Sixty patients in the conventional diathermy group were analyzed for additional need of analgesics. 45 (75%) patients were found to have been given additional dose of analgesics, and their subjective pain score was 5. Ten (17%) patients scored as 4 and only 5 (8%) patients took the score of 3 considering postoperative pain. Of the 53 patients in the harmonic scalpel group, 30 (56%) needed extra analgesic use and 35(66%) patients' subjective pain score was 5. Ten (19%) patients scored as 4 and 8 (15%) patients took a score of 3. The difference was significant for extra analgesic use (p=0.038) but not for pain perception (p=0.294) even though the HS group had significantly lower extra analgesic requirement.

There were two patients (3.3 %) with bleeding that needed to be intervened in CH Group, and one (1.8%) in HS Group (Table 2). They were treated medically with simple packing and observation. Only one patient in CH Group needed additional simple suturing in the early postoperative period. The other bleedings in both groups occurred after 72 hours postoperatively and they were treated medically with simple packing and observation. Urinary retention was encountered in four (6.6%) and three patients (5.6%) in CH and HS Groups, respectively (Table 2). None of the patients with general anesthesia had urinary retention. As for other complications, we did not encounter any incontinence in both groups. During the follow up period, there were no late complications such as recurrence or anal stenosis.

Table 1: Demographic data and features of the treatment modalities.

	CH Group (n=60)	HS Group (n=53)	p
Age (years)	45.3±11.8	45.7±12.7	0.846
Gender (female/male)	23.3	22.7	0.933
BMI (kg/m^2)	25.8±5.4	24.1±6	0.125
Operation time (min)	22.9±5.2	17.9±5.3	0.001
Pain score >5	45 (75%)	35 (67%)	0.294
Analgesic requirement (number)	45 (75%)	30 (56%)	0.038
Length of hospitalization (day)	1.3±0.5	1.17±0.4	0.155

Table 2: The complications and their respective rates.

	CH group	HS group
Bleeding	2 (3.3%)	1 (1.8%)
Urinary retention	4 (6.6%)	3 (5.6%)

Discussion

Surgery is the gold standard for advanced stage hemorrhoidal disease. However, conventional hemorrhoidectomy (both open and closed) is associated with significant postoperative pain, irritation, and discharge. The postoperative pain may lead to urinary retention and constipation. Therefore, there are always attempts to find an easy to perform operation with less postoperative pain. HS both cuts and seals simultaneously and makes little thermal damage (1-3 mm). Harmonic devices perform simultaneous ultrasonic cutting and coagulation by mechanical vibration and provide hemostasis at a lower temperature than electrosurgical devices [7]. Ideally, both internal and external hemorrhoidal packages must be removed completely with minimal postoperative pain. The operation must be easy and short to perform. It must have the least complications as well as recurrence [8].

Excisional hemorrhoidectomy is the gold standard operation for grade 3-4 hemorrhoidal diease and complicated hemorrhoids. Closed (Ferguson) hemorrhoidectomy is found to be superior to open hemorrhoidectomy when the patient comfort and continence is considered [9]. However, both procedures have been found to be equally effective and safe [10]. The grave problem about the conventional hemorrhoidectomies is the postoperative pain starting just after the operation and still exists as a major issue, even though the procedure is considered to be an old intervention. This aspect has been analyzed in several studies, as the hemorrhoidectomy is a procedure in which the severe pain necessitating opioid drugs in analgesic management occurs in 20–40% of patients [11, 12].

In a double blind randomized study, Chung et al [13] found that HS hemorrhoidectomy had the best pain score when compared with hemorrhoidectomes with bipolar scissors and Milligan-Morgan hemorrhoidectomy, and that patients required significantly less pethidine injection after HS hemorrhoidectomy than it was in Milligan-Morgan hemorrhoidectomy. In another study by Armstrong et al [14], HS hemorrhoidectomy group had significantly less pain than the electrocautery patients had, on each postoperative day. Analgesic needs were also significantly less in the HS group on days 1, 2, 7, and 14. There was no correlation between the postoperative pain and the grade of hemorrhoids, the status of the surgical incision as in either open or closed. Bleeding is an important complication of hemorrhoidectomy which may be fatal, when accompanied by other medical conditions [15]. Early postoperative hemorrhage is defined as immediate bleeding which happens within the early postoperative period from 24 to 48 hours and is likely related to the loss of control of the vascular pedicle. Delayed bleeding is defined as a hemorrhage reported up to 2 weeks postoperatively, and is more often related to infection or local trauma [16]. Considering the bleeding rates in the present study, it was in agreement with the literature even though the definition of hemorrhage differs. Late hemorrhage occurred in a series of HS hemorrhoidectomies as 1.7% [17]. This is in agreement with the rate of around 2% that is reported in the literature [16]. The hemorrhage rates were given as 5% for the open technique and 9 % for the closed in a study by Ho et al [18]. However, these rates were given by Neto et al [19], as 0 percent and 0.6%, respectively.

Ninety percent of anal stenosis is caused by overzealous hemorrhoidectomy. Excision of large areas of anoderm and hemorrhoidal rectal mucosa, without sparing of adequate muco-cutaneous bridges, leads to scarring and a progressive chronic stricture. However, it is a rare complication after the introduction of Milligan-Morgan procedure. Likewise, we didn't encounter any reported anal stenosis.

We did not encounter any anal incontinence in both groups. This is because of mostly anal continence is becoming rare and rare as hemorrhoidectomy is considered to be an old operation nowadays. However, in our study the return time to work could not be studied. Abo Hasem et al [20] noticed a

significant difference in the time needed to return to work in favor to the HS method than the conventional one. Seventy-five percent of the patients in HS Group reported full-time return to work within the first two weeks postoperatively while for CH Group, this was true only for forty-five percent of the patients [20]. In another study of Chung et al [13], it was reported that return to work or normal activity for Milligan-Morgan and electrothermy and HS was different from each other. The period was shorter in the HS group, but this was not significantly different [13].

The operation time was significantly shorter in HS Group when compared to CH Group. This may be due to the technique applied by HS because of the shape and design of the device, since it can seal and cut longer measures of tissues in a shorter period of time. In a small group, Tan et al [21] found no significant difference in the operation time between two groups with a similar mean operating time for both groups. Khan et al [22] found the mean operative time for closed hemorrhoidectomy with electrocautery as 35.7 ± 3 minutes; for HS patients, it was 31.7 ± 2 minutes. There was no statistical difference even though it was shorter on the average for HS Group. Our findings were consistent with the findings of Ramadan et al [23] in which they reported the operation times as 29.6±5.4 vs 13.2±1.7 minutes, which was significantly shorter for the HS group. Another study from Turkey revealed much shorter time for HS, where Ozer et al [24] found 45 minutes for CH vs 20 minutes for HS groups.

There were no significant differences in the hospital stay because in our study group even though most of our patients were discharged on the first day after the surgery. Delayed hospital stay in our group was because of prolonged pain and the need of analgesics almost all the time except one patient for prolonged urinary retention in the CH group. Chung et al [13] found no significant difference in the hospital stay for two groups which were 3.8 vs 3.1 days for CH and HS, respectively. Ramadan et al [23] found the hospitalization duration as 40.6 vs 21 hours for CH vs HS in an outpatient series, respectively. Although there are outpatient clinics which perform both conventional hemorrhoidectomy and other methods, we think that postoperative pain relief plays an important role for patient comfort. We think that by reducing the operation time and postoperative pain, HS hemorrhoidectomy, unlike CH, may be an ideal operation for such outpatient clinics. We noticed a small group of patients who has lower postoperative pain scores and less indication of additional analgesics. This group of 15 patients (9 in CS and 6 in HS) had the additional local anesthesia injection just after or during the operation. This was done by individual basis mostly on complicated hemorrhoids and both internal and external large packages. This small group was included in overall analysis since they constituted a tiny percent of the patients. This inspires and encourages us in the use of local anesthetics after the operation, even though we have not tried this observation in a double blind prospective study. We are further encouraged by the studies published previously. For example, in a double blind study, the investigators compared ropivacaine to saline injection and they found that local infiltration with ropivacaine improved immediate postoperative pain control after hemorrhoidal surgery [25]. In a meta-analysis about post hemorrhoidectomy pain relief, Joshi et al [12] found that local anesthetic injection, either as a sole technique or as an adjunct to general or regional anesthesia are recommended, therefore, long-acting local anesthetics are recommended for all patients undergoing hemorrhoidal surgery. In a prospective study by Bansal et al [26] comparing local anesthesia with bupivacain/xylocaine with spinal anesthesia, they found out that postoperative analgesia had very excellent removal of postoperative pain seen in more than 90 % of the patients operated on under local anesthesia, while it was achieved in less than 50% of the patients operated on under spinal anesthesia ($p<0.05$). Additionally, they found that certain postoperative complications such as urinary retention and postoperative headache were always seen in the spinal anesthesia group [26].

The patients were questioned about involuntary leakage of flatus or stool and would be referred to anal manometry to evaluate anal incontinence. We did not encounter any anal incontinence in both groups based on the questioning. This is because of mostly anal continence is becoming rare and rare as hemorrhoidectomy is considered an old operation nowadays.

There are weak points in our study because of retrospective data collection, which resulted in loss of valuable data such as information of return to work of patients. Besides, the surgical interventions were not carried out by the same surgeon; therefore, we cannot be definite about the operation time difference between these two procedures. However, that disadvantage was softened by standardization of the surgical techniques, since our hospital serves as a big community in a city of 15 million of population, in addition to being a training center and consists of two large surgical departments working under supervision of one directory management both in patients' selection and correct grading of hemorrhoids. Therefore, the surgeons may have really very little individual variances in regard to their techniques, since there is a strong consensus over the surgical policy on hemorrhoids, which had standardized the surgical techniques and hindered unnecessary hemorrhoidectomies in the series. Hence the series constituted of only large hemorrhoids, because we all believe in preserving hemorrhoids to help continence and prevent chronic postoperative itching due to chronic postoperative anal fluid leakage. Even though the study was not a randomized one, clear information about the benefits of HS hemorrhoidectomy and the usage of local anesthesia to relieve pain in the early postoperative period has been gathered from the findings of the study.

In conclusion, hemorrhoidectomy using HS is advantageous and superior to conventional diathermy hemorrhoidectomy in regard to shorter operation time and earlier discharge from the hospital with no additional complications added.

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A retrospective analysis of restless legs syndrome in epileptic patients

Epilepsi hastalarında huzursuz bacaklar sendromunun retrospektif analizi

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Abstract

Aim: Restless legs syndrome is characterized by an abnormal sensation, a difficult-to-define type of dysesthesia in the extremities, especially in the legs. In our study, we aimed to determine the frequency of restless legs syndrome in patients with chronic epilepsy.

Methods: A total of 86 epilepsy patients were included in the study. Epilepsy grading of the study patients was performed based on the International League Against Epilepsy 1981 classification. Demographic data of the patients were collected and Turkish version of the questionnaire consisting of 4 questions of diagnostic criteria issued in 2014 by International Restless Legs Syndrome Study Group (IRLSSG), in addition to the other forms, were completed through face-to-face interviews.

Results: Restless leg syndrome prevalence among the patients included in the study was found to be 5.81% (5 patients out of 86). Mean score of IRLSSG evaluation scale was 17±6.5.

Conclusion: The results of our study showed that the prevalence of restless legs syndrome is lower in patients with epilepsy, a common neurologic disorder, compared to the general population.

Keywords: Epilepsy, restless legs syndrome, psychiatric disorders

Öz

Amaç: Huzursuz bacaklar sendromu, özellikle bacaklarda ve ekstremitelerde uyuşma ve tanımlaması zor anormal bir his ile karakterizedir. Çalışmamızda kronik epilepsi hastalarında huzursuz bacaklar sendromu sıklığını saptamayı amaçladık.

Yöntemler: Toplam 86 epilepsi hastası çalışmaya dahil edildi. Çalışma hastalarının epilepsi sınıflaması, 1981 International League Against Epilepsy sınıflamasına göre yapıldı. Hastaların demografik verileri toplandı ve diğer formlara ek olarak Uluslararası Huzursuz Bacaklar Sendromu Çalışma Grubu (IRLSSG) tarafından 2014 yılında yayınlanan 4 soruluk tanı kriterlerinden oluşan anketin Türkçe versiyonu hasta ile yüz yüze görüşülerek doldurduldu.

Bulgular: Çalışmaya dahil edilen hastaların huzursuz bacaklar sendromu prevalansı % 5.81 (86 hasta üzerinden 5 hasta) bulundu. IRLSSG değerlendirme ölçeği ortalaması 17 ± 6,5 idi.

Sonuç: Çalışmamızın sonuçları, yaygın nörolojik bir hastalık olan epilepsi hastalarında huzursuz bacaklar sendromunun prevalansının genel popülasyona göre daha düşük olduğunu gösterdi.

Anahtar Kelimeler: Epilepsi, huzursuz bacaklar sendromu, psikiyatrik bozukluklar

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Introduction

Restless legs syndrome (RLS) is a frequent sensorimotor disorder. By definition, RLS is a disorder characterized by a strong and irresistible urge to move the legs. This sensation increases during rest and at night time, and decreases by movement [1]. The prevalence of RLS varies between different populations and also by the presence of chronic disorders. Karl-Axel Ekbom, who was the first to define RLS, reported a prevalence of 5.2% [2]. Thereafter, several studies investigating RLS reported a prevalence ranging from 1% to 15% [3].

In our study, we aimed to determine the frequency of RLS in patients with chronic epilepsy.

Material and methods

In total, 86 patients with epilepsy, who were being followed-up by Epilepsy outpatient clinics of the Department of Neurology at Ankara Training and Research Hospital and of whom 61.6% (n=53) were women and 38.4% (n=33) were men with a mean age of 29.5±11.6 years were included in this study. Ethical approval was obtained from the ethical committee of the Ankara Training and Research Hospital. Informed consent could not be obtained from all patients due to the retrospective design of the study. All procedures were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later versions.

Epilepsy grading of the study patients was performed based on the International League Against Epilepsy (ILAE) 1981 classification [4]. Demographic data of the patients were collected and Turkish version of the questionnaire consisting of 4 questions of diagnostic criteria issued in 1995 by International Restless Legs Syndrome Study Group (IRLSSG), in addition to the other forms, were completed through face-to-face interviews [5].

Those patients with a psychiatric diagnosis were questioned and noted in the data. Moreover, serum ferritin, thyroid stimulating hormone (TSH), serum free thyroxine, vitamin B12 and folic acid levels were investigated as an etiological analysis for RLS. One patient, who had neuropathic complaints, underwent electromyography for electrophysiological investigation of polyneuropathy.

Analysis of data of the study was performed using SPSS 13.0 package program. Means were presented as mean ± standard deviation.

Results

RLS prevalence among the patients included in the study was found to be 5.81% (5 patients out of 86). Mean score of IRLSSG evaluation scale was 17±6.5. All patients had normal serum ferritin, TSH, serum free thyroxine, vitamin B12 and folic acid levels. Based on ILAE 1981 classification, seizure types of the patients were as follows; partial seizure in 24 (27.9%), secondary generalized in 41 (47.7%), myoclonic in 11 (12.8%), generalized tonic-clonic in 9 (10.5%) and absence in one patient (1.2%) (Table 1). Of all patients included to the study, 24.4% (n=21) received polytherapy and 75.5% (n=65) were on monotherapy. Among the patients with RLS, one patient was on valproic acid (VPA) and one patient was on carbamazepine (CBZ) therapy, and three patients were receiving polytherapy. Among the patients without signs of RLS, 34 (39.5%) and 18 (22.2%) were receiving VPA and CBZ, respectively, while 21 (24.4%) patients were on polytherapy. Mean medication dosages were as follows: 942 mg for VPA, 678.94 mg for CBZ, 662.94 mg for oxcarbazepine (OXC), 1500 mg for levetiracetam (LVT), 300 mg for phenytoin (PHE) (Table 2). Of all patients, 20.9% (n=18) had depression, 15.1% (n=13) had anxiety, 1.2% (n=1) had bipolar disorder and 1.2% (n=1) had psychotic disease, while 76.7% (n=66) did not have any psychiatric sign (Table 3).

Table 1: Patients' seizure types

Seizure Types	n (%)
Partial	24 (27.9%)
Secondary generalized	41 (47.7%)
Generalized tonic-clonic	9 (10.5%)
Absence	1 (1.2%)
Myoclonic	11 (12.8%)

Table 2: Antiepileptic medications and dosages

Medications	Mean Dosage (mg)	RLS (+)	RLS (-)
VPA (n =34)	942	1	33
CBZ (n=19)	678.94	1	18
OXC (n =8)	662.5	0	8
LVT (n=3)	1500	0	3
PHE (n=1)	300	0	1
Polytherapy (n=21)	--	3	18

RLS: restless legs syndrome, VPA: valproic acid, CBZ: carbamazepine, OXC: oxcarbazepine, LVT: levetiracetam, PHE: phenytoin

Table 3: Psychiatric disorders

Disorder	n	%
No psychiatric disorder	66	76.7
Depression	18	20.9
Anxiety	13	15.1
Bipolar disorder	1	1.2
Psychotic disorder	1	1.2

Discussion

RLS is characterized by an abnormal sensation, a difficult-to-define type of dysesthesia in the extremities, especially in the legs. This abnormal sensation / dysesthesia compels an urge to move in order to relieve the sensation and causes motor restlessness. Symptoms that develop and/or increase during rest and alleviate upon movement are typical and lead to the diagnosis of RLS. The term RLS was first defined by a Swedish neurologist, Karl A. Ekbom, on 1945. Up to 50 years after this definition, international restless leg syndrome study group developed diagnostic criteria which paved the way for studies investigating the epidemiology, genetic background, pathophysiology and treatment of RLS. Epidemiological studies indicate that RLS is present in 1-15% of the population. In the presence of chronic diseases such as diabetes, uremia and liver disease, its prevalence varies between 16-26.6% [6-8]. A study performed in 2005 to investigate RLS prevalence in the general population (REST study) reported a prevalence of 7.2% among 15,391 individuals [9]. In the present study, RLS prevalence was found to be 5.81% among patients with chronic epilepsy and mean score of IRLSSG assessment scale was 17±6.5. Interestingly, among the patients diagnosed with RLS, 0.2% and 0.3% were receiving mono- and poly-therapy, respectively. There are several treatment regimens used to relieve the symptoms of RLS and antiepileptic medications are one of the preferred treatment options [10]. These medications include gabapentin, CBZ and VPA. It is surprising that RLS is less common among the patients with epilepsy, when compared to its prevalence in the general population. In our study, the prevalence of RLS was shown to be lower than that of the general population according to the results published previously. The most important cause of this difference may be the use of antiepileptics, particularly gabapentin and CBZ, for the treatment of RLS. In other words, medications used to treat epilepsy were also beneficial for the treatment of RLS symptoms.

Psychiatric disorders may complicate epilepsy through their negative effects on quality of life, independent living ability and survival. Prevalence rates appear to be higher in individuals who experience seizures, particularly in those with resistant epilepsy, compared to the general population. Data obtained from community-based researches report that the prevalence rates of depressive disorders vary between 20-22% and in fact, depression is present in only 4% of the patients who do not experience seizures [11]. Data on anxiety disorders is limited as they essentially frequently occur concomitant to mood disorders, but the prevalence rates of these disorders are believed to be equal to or even higher than the prevalence rate of depression.

A study performed in Nigeria reported that 37% of 204 epileptic patients who referred to the hospital had a psychiatric morbidity. Among those with a psychiatric morbidity, 63% had neurosis, 30% had psychosis and 7% had a personality disorder [12]. In the present study, 20.9% of the patients had depression, 15.1% had anxiety, 1.2% had bipolar disorder and 1.2% had psychotic disease. The rates of patients with psychiatric disorders were consistent with those previously reported in the literature. It may be thought that psychiatric medications may deteriorate RLS, but in our work, the RLS rate is already lower than it is in the community.

In conclusion, results of our study showed that the prevalence of RLS is lower in patients with epilepsy, a common neurologic disorder, compared to the general population. This is probably associated with the effects of CBZ and VPA on the symptoms of RLS. Moreover, psychiatric disorders are more common among epilepsy patients compared to the general population. A careful evaluation of psychiatric symptoms in patients with epilepsy will prevent overlooking of disorders such as depression and anxiety disorder, which can be common in this patient population, and the consequently elevated risk of suicide.

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Evaluation of platelet and mean platelet volume levels in patients with liver cirrhosis

Karaciğer sirozlu hastalarda platelet ve ortalama platelet hacmi düzeylerinin değerlendirilmesi

Mustafa Genco Erdem [1], Eylem Özgün Çil [2], Tufan Tükek [2], Şerife Ayşen Helvacı [3]

Abstract

Aim: Liver cirrhosis isa process characterized by fibrosis and normal liver structure is replaced with diffuse nodular structure. Different laboratory values are used for diagnosis and prognosis of liver cirrhosis. To determine platelet and mean platelet volume levels of patients with liver cirrhosis and to find out if platelet or mean platelet volume levels have changed according to Child-Pugh classification or the etiology of cirrhosis.

Methods: A total of 201 patients with cirrhosis who have been followed by of an education and research hospital internal medicine out-patient clinic between the years of 2006 and 2013, were included. Platelet count <150,000 / µL was accepted as thrombocytopenia. Individuals with diseases that can cause thrombocytopenia, patients using drugs that can cause thrombocytopenia and who has pseudothrombocytopenia were excluded from the study.

Results: The number percantage ratios of patients according to underlying etiology for chronic liver disease were as follows Group 1 (alcoholic liver disease) with rate of % 16.9, Group 2 (hepatitis – B) with rate of % 25.4, Group 3 (hepatitis – C) with rate of % 23.4, Group 4 (cryptogenic) with rate of % 34.3.Average platelet value in the Group 1 was 130.2 ± 74 x 103/ µL, Group 2 was 104.8 ± 56.8 x 103/ µL, Group 3 was 100.6 ± 44.2 x 103/ µL, Group 4 was 104,1 ± 48.7 x 103/ µL;average platelet value in the control group (Group 5) was 247.7 ± 58.7 x 103 / µL. Average mean platelet volume values in the Group 1 was 9.19 ± 1.32 fL, Group2 was 9.21 ± 1.57 fL, Group 3 was 8.67 ± 1.25 fL, Group 4 was 8.85 ± 1.21 fL; average mean platelet volume value in the Group 5 was 8.05 ± 1 fL.

Conclusion: In this study, platelet levels of the cirrhotic patients were lower than the control group's platelet levels; MPV levels of the patients with cirrhosis were higher than the control group's mean platelet volume levels. Platelet and MPV values were not different according to Child-Pugh stage or cirrhosis etiology. Therefore, more and larger scaled studies are needed to clarify conflicting conclusions about the impact of platelet number and MPV on chronic liver inflammation.

Keywords: Cirrhosis, mean platelet volume, platelet, thrombocytopenia

Öz

Amaç: Karaciğer sirozu, fibrozis ile karakterize ve normal karaciğer yapısının diffüz nodül yapısıyla yer değiştirdiği bir süreçtir. Karaciğer sirozunun tanı ve prognoz öngörüsünde farklı laboratuvar değerleri kullanılmaktadır. Karaciğer sirozlu hastalarda platelet ve ortalama platelet hacmi düzeylerini saptamak; platelet veya ortalama platelet hacmi düzeylerinin Child-Pugh sınıflamasına veya siroz etiyolojisine göre değişip değişmediğini görmektir.

Yöntemler: Bir eğitim ve araştırma hastanesi iç hastalıkları kliniklerinde 2006 – 2013 yılları arasında yatışı yapılmış veya iç hastalıkları polikliniklerinde takibi yapılmış 201 karaciğer sirozlu hasta, vaka grubuna dâhil edildi. Platelet sayısı < 150000 / µl olması halinde trombositopeni olarak kabul edildi. Trombositopeni yapabilecek hastalığı olanlar, trombositopeni yapabilecek ilaç kullananlar ve psödotrombositopenik hastalar çalışma dışı bırakıldı.

Bulgular: Vakalar etiyolojik nedenlerine göre gruplandırıldığında yüzdelik dağılımlar: Grup 1 (alkolik karaciğer hastalığı kökenli siroz olguları) % 16,9, Grup 2 (hepatit - B kökenli siroz olguları) % 25,4, Grup 3 (hepatit - C kökenli siroz olguları) % 23,4, Grup 4 (Kriptojenik siroz olguları) % 34,3 olarak bulundu. Çalışmadaki farklı sirotik etiyolojilerden oluşan dört grubun ortalama platelet değerleri Grup 1 için 130,2 ± 74 x 103 / mikrolitre (µL), Grup 2 için 104,8 ± 56,8 x 103 / µL, Grup 3 için 100,6 ± 44,2 x 103 / µL ve Grup 4 için 104,1 ± 48,7 x 103 / µL olarak hesaplandı. Kontrol grubundaki (Grup 5) ortalama platelet değeri ise 247,7 ± 58,7 x 103 / µL idi. Gruplardaki ortalama platelet hacmi değerleri Grup 1 için 9,19 ± 1,32 femtolitre (fL), Grup 2 için 9,21 ± 1,57 fL, Grup 3 için 8,67 ± 1,25 fL ve Grup 4 için 8,85 ± 1,21 fL olarak saptandı; 5. Gruptaki ortalama platelet hacmi değeri ise 8,05 ± 1 fL idi.

Sonuç: Çalışmada sirotik hastalarda platelet değerleri, kontrol grubundan düşük; ortalama platelet hacmi değerleri ise kontrol grubundan yüksek saptandı. Platelet ve ortalama platelet hacmi değerleri, Child-Pugh evresi ya da siroz etiyolojisine göre farklı saptanmadı. Bu nedenle, trombosit sayısı ve MPV'nin kronik karaciğer inflamasyonu üzerindeki etkileri hakkında çelişkili sonuçları netleştirmek için daha geniş ölçekli çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Siroz, ortalama trombosit hacmi, trombosit, trombositopeni

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Introduction

The World Health Organization has described liver cirrhosis as a process characterized by fibrosis and displacement of the normal liver structure by diffuse nodule structure [1]. In etiology, the most common cause in developing countries and our country is chronic viral hepatitis; the most common causes in the United States of America are alcoholic liver disease and hepatitis C virus (HCV) [1]. The clinical basis is mainly the result of two major events: hepatocellular injury and portal hypertension. Cirrhotic patients have abnormalities in platelet number and function. Approximately 15-70% of cirrhotic patients have a platelet count below 100,000 / mm3 [2]. Platelet levels are also used as prognostic markers in cirrhotic patients [3].

Mean platelet volume (MPV) is a parameter measured in whole blood count analysis [4]; it is compatible with platelet function and activation [5-6]. Some studies have shown that MPV is a reflection of both proinflammatory and prothrombotic events. The intensity of systemic inflammation is a distinct factor in differentiating conditions associated with circulating large and small size platelets [7]. MPV has been associated with cardiometabolic risk factors such as obesity, hypercholesterolemia, diabetes, hypertension, and arterial stiffness [8-12].

In this study, it was aimed to determine platelet and MPV levels in patients with liver cirrhosis and to determine their association with Child-Pugh classification or cirrhosis etiology.

Material and methods

The ethical committee approval of this retrospective study was taken from the local ethics committee. This study has been conducted by the declaration of Helsinki. Informed consent could not be taken from the patients due to the retrospective design of the study.

Patients who had been admitted to internal medicine out-patient clinics between 2006 and 2013 or who had been followed up at the outpatient clinics of internal medicine; and patients whose etiology of cirrhosis were the alcoholic liver disease (Group 1), hepatitis-B (Group 2), hepatitis-C (Group 3) and cryptogenic (Group 4) were included in the study. Other etiologies of cirrhosis like autoimmune hepatitis (n = 5), cardiac cirrhosis (n = 4), hydatid cyst (n = 2), primary biliary cirrhosis (n = 2), Budd- Chiari syndrome (n = 1), Wilson's disease (n = 1) were excluded from the study. The files of the patients were retrospectively scanned. A total of 201 patients (72 females, 129 males) were included in the four groups of patients with cirrhosis; a total of 100 patients (52 women, 48 men) were included in the control group (group 5). Patients who were admitted to internal medicine out-patient clinic with complaint of abdominal pain and who could not be diagnosed as a chronic disease as a result of the evaluation were taken into the control group according to the order of application.

Anamnesis (patient's age and gender, history of hepatitis and alcoholism regarding cirrhosis etiology of the patient, current chronic diseases, possible causes of thrombocytopenia, history of chemotherapy in the last six months) and laboratory data (platelet count and MPV) were taken into consideration. For Child-Pugh score and classification, the patient's albumin, INR and bilirubin values, hepatic encephalopathy and acid presence and their grades were used. The total score was 5-6 in the Child-Pugh group A; 7-9 in the Child-Pugh group B; and 10-15 in the Child-Pugh group C. Thrombocytopenia was accepted if the platelet count was <150000 / μL. Patients who had diseases which can lead to thrombocytopenia; those who use drugs that could do thrombocytopenia; pseudothrombocytopenic patients and those whose data are missing were excluded from the study.

Arithmetic mean, standard deviation, median, minimum, maximum, ratio and frequency values are used in the descriptive statistics of the data. ANOVA and Kruskal Wallis tests were used for multiple group analysis. In the case of meaningful outcomes, the Post Hoc Tukey test was used to determine the groups from which the significance was derived. Pearson correlation test was used for correlation analysis. The statistical significance level was accepted as $p \leq 0.05$ in all analyzes. SPSS for Windows 21.0 statistical package program was used.

Results

When patients are grouped according to their etiology of cirrhosis; group 1 alcoholic liver disease (n=34, % 16.9); group 2 hepatitis-B (n=51, % 25.3), group 3 hepatitis-C (n=47, % 23.3), group 4 cryptogenic patients (n=69, % 34.3). A total of 201 (72 females, 129 males) patients were included in the four groups of the patients with cirrhosis; a total of 100 participants (52 females, 48 males) were included in the group 5 (control group) (Table 1). The age range of cirrhotic patients included in the study ranged from 25 to 93 years; control group's ages vary between 54 and 71 years.

When age groups were examined, there was a significant difference between the groups. This difference was between group 1 and group 3 (p = 0.0001), group 1 and group 4 (p = 0.019), group 2 and group 3 (p = 0.002), and group 3 and group 5 (p = 0.0001) (Table.1)

When the groups were examined regarding gender, the gender distribution of the patients in group 1 was significantly different from that of the other groups (p = 0.001, p = 0.0001, p = 0.005 and p = 0.0001, respectively) (Table 1).

When platelet counts and MPV values were examined, platelet counts and MPV values of groups 1, 2, 3, and 4 did not differ significantly (p> 0.05 for all). However, there was a significant difference in the platelet count and MPV value between these four groups (Group 1-4) and Group 5 (Table 2).

There was no significant difference between platelet counts and MPV values in all three groups (p > 0.05 for all) (Table 3) after the categorization of patients with cirrhosis according to the Child-Pugh classification.

Table 1: Age, sex, platelet count and MPV values of the study groups

Parameter	Group 1	Group 2	Group 3	Group 4	Group 5	p
n	34	51	47	69	100	
Age ¥ (years)	60.1±10	62.2±9	69.1±10.7	66±12.8	62.4±3.6	0.0001
Sex f/m	33/1	29/22	24/23	43/26	52/48	0.0001
Platelet count ¥ ($x10^3$/ μl)	130.2±74	104.8±56.7	100.6±44.2	104.1±48.7	247.7±58.7	0.0001
MPV ¥ (fl)	9.2±1.3	9.2±1.6	8.7±1.3	8.9±1.2	8.1±1	0.0001

¥: mean ± standard deviation

Table 2: Comparison of platelet and MPV values between Group 5 and Groups 1-4.

Parameter	Group 5	Group 1	p^a	Group 2	p^b	Group 3	p^c	Group 4	p^d
Platelet¥ ($x10^3$/ µL)	247.7±58.7	130.2±74	0.0001	104.8±56.8	0.0001	100.6±44.2	0.0001	104.1±48.7	0.0001
MPV¥ (fL)	8.1±1	9.2±1.3	0.0001	9.2±1.6	0.0001	8.67±1.3	0.042	8.9±1.2	0.0001

¥: mean ± standard deviation; p^A: Group 5 compared to Group 1; p^B: Group 5 compared to Group 2; p^C: Group 5 compared to Group 3; p^D: Group 5 compared to Group 4.

Table 3: Platelet and MPV values of groups according to Child - Pugh classification

Parameter	Child-Pugh A	Child-Pugh B	Child-Pugh C
Number	18	87	96
Platelet¥ (x 10^3/ µL)	117.0±57.3	112.5±53.1	102.5±57.3
MPV ¥ (fL)	9.4±1.2	8.8±1.2	9.0±1.5

¥: mean ± standard deviation

Discussion

In cirrhotic patients, platelet life is reduced, platelet counts decrease, and abnormalities in their function appear [2, 13]. Platelet levels are also used as prognostic markers in cirrhotic patients [3]. MPV is compatible with platelet function and activation [5-6]. Studies have shown that MPV is a reflection of both proinflammatory and prothrombotic events. MPV is reduced in cases where peripheral platelet degradation is increased, and where platelet production is impaired [14-16]. In hypersplenism, which is an exception to this rule, low MPV is detected because large platelets are caught and destroyed in the spleen.

When the etiology of cirrhotic patients examined in this study; cryptogenic cirrhosis was the largest group with 69 patients (30.9%), hepatitis - B acquired number of cirrhosis patients 51 (22.9%), hepatitis - C acquired number of liver cirrhosis patients 47 (21.1%) and alcoholic liver disease 34 cases (15.2%) were observed. When these results are examined, it can be concluded that a total of 98 patients (48.7%) were reached with the evaluation of viral hepatitis together and it is the most frequent etiological cause. This result is in line with studies of viral hepatitis in the first place in the cirrhosis etiology in developing countries [1]. Probably the reason for a large number of cases of cryptogenic cirrhosis was that the hospital where the study was conducted was one of the reference units in the gastroenterology field of Marmara region between 2006 and 2013. In addition, cases without a diagnosis were directed to this hospital for further examination. All but one of the cases of alcoholic liver disease is male, and this is compatible with the work of Corrao, who shares the knowledge that heavy consumption of alcohol is predominantly male gender specific [17]. However, it should be kept in mind that cirrhosis and similar outcomes are more likely to occur in women with severe alcohol consumption [18-20].

Thrombocytopenia is typical of cirrhotic patients, and it is one of the most sensitive and specific laboratory findings supporting cirrhosis. The first reason for the fall in platelet counts in circulation is the splenomegaly secondary to portal hypertension, the second is the immunologic breakdown of the platelets, and the third is the reduction in the production of hepatic thrombopoietin. In the study, the mean platelet count of cirrhotic patients was found to be thrombocytopenic and lower than the control group, regardless of etiology; this value was consistent with thrombocytopenic outcomes detected in similar studies of cirrhotic patients [1,2,13,21].

The detection of thrombocytopenia in cirrhotic patients has three basic clinical significances: First of all, fibrosis score may be an advanced stage, cause if the fibrosis score increases, the number of platelets decreases; hence thrombocytopenia is a parameter that predicts fibrosis [22]. Second, the patient may have large esophageal varices. Especially when the number of platelets falls below 68,000 /mm3, the sensitivity of detecting large esophagus varices increases to 71% and specificity to 73% [23]. Finally, thrombocytopenia may be a sign of poor prognosis; In studies conducted by Realdi et al, platelet level was found to be an independent parameter affecting the life span [3].

One of the remarkable features of the study was that the mean MPV of each group was significantly higher than the mean MPV of the control group regardless of cirrhosis etiology. This result was consistent with previous studies on chronic liver diseases, in which the increase in MPV value was correlated with inflammation [24-26].Also the results of recent studies by Kurt and Qi are compatible with our data [27-28]. In some previous studies, MPV was found to be lower in patients with hypersplenism than in the control group, and this has been shown to cause from spleen's destruction of large volumed platelets by holding them [21, 29]. The existence of two conflicting outcomes is an indication of the need for more and larger scaled studies in this area.

In comparison with cirrhosis etiology, the highest mean platelet value among the groups was found in the alcoholic liver disease group, but the difference between the groups was not statistically significant. When the mean MPV values were examined, the highest MPV value was found in patients with cirrhosis due to viral hepatitis - B and the lowest value was found in patients with cirrhosis due to viral hepatitis - C, but this difference was not statistically significant; which is consistent with the work of Giannini EG et al. [30].

Again, all cirrhotic patients in the study were grouped according to the Child-Pugh classification which used to evaluate the prognosis of cirrhosis regardless of their etiology; each group was compared with the other groups regarding mean platelet and MPV values. There were no significant differences between the groups, although there are studies that show the platelet value in cirrhotic patients is inversely proportional to the severity of the cirrhosis disease [3, 13]. There was no statistically significant difference between the MPV values of the Child-Pugh groups in accordance with the literature [30].

In conclusion, viral hepatitis and alcoholic liver disease were found to be most commonly etiology of cirrhosis patients in a manner consistent with developing countries. Also, thrombocytopenia was frequently observed in cirrhotic patients. Therefore, in the presence of thrombocytopenia in the full blood count, liver cirrhosis should be considered; viral hepatitis and alcoholism history must be questioned.

The mean MPV values of cirrhotic patients in the study were higher than the control group. There are conflicting conclusions about the possibility that chronic liver inflammation may be correlated with MPV value in previous studies, therefore more and larger scaled studies are needed in this area.

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Is the use of intraoperative nerve monitoring an effective method to reduce the rate of permanent recurrent laryngeal nerve paralysis?

İntraoperatif sinir monitorizasyonu kalıcı rekürren laringeal sinir paralizi oranının azaltılmasında etkili bir yöntem midir?

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Abstract

Aim: Recurrent laryngeal nerve (RLN) paralysis is a common complication of thyroid surgery. In recent years, intraoperative nerve monitoring (IONM) has been used to reduce the risk of RLN paralysis. The purpose of this study was to assess the role of IONM in reducing RLN paralysis.

Methods: A retrospective clinical study was conducted between January 2015 and January 2017 in a two-center-clinical trial at Lutfiye Nuri Burat State and Haseki Teaching and Research Hospitals. Patients who underwent thyroidectomy using IONM (Group A, n=100) or direct visual technique (Group B, n=232) were included. Patients' files were reviewed for age, body mass index, gender, American Society of Anesthesiologists score, calcium levels, complications, duration of operation and follow-up. Postoperative complications were regarded as the main outcomes.

Results: A total of 332 patients (52 male, 280 female) with a mean age of 46.4±12.9 years were enrolled. 30.1% of the patients were in Group A (IONM). Bilateral and unilateral thyroidectomies were performed in 70.8% and 29.2% of the operations, respectively. Operative time was shorter in Group A (76.9±12.0 minutes vs 97.7±27.6 minutes, p <0.001). There was no significant difference between the two groups in terms of preoperative and postoperative calcium levels (p=0.407).There was no statistically significant difference in early RLN paralysis rates between the two groups (for Group A and Group B, 10 (10%) and 34 (14%), respectively) (p=0.251) While it was not present in Group A, permanent RLN paralysis was found in 10 patients in Group B (4.3%) (p = 0.035).

Conclusion: The use of IONM may be useful in reducing the rate of permanent RLN paralysis.

Keywords: Thyroidectomy, Recurrent laryngeal, Nerve monitoring

Öz

Amaç: Rekürren laringeal sinir (RLN) paralizisi tiroid ameliyatının bilinen bir komplikasyonudur. RLN paralizisi riskini azaltmak için son yıllarda intraoperative sinir monitorizasyonu (İONM) yöntemi kullanılmaktadır. Bu çalışmanın amacı İONM kullanılmasının RLN paralizisinin azaltılmasındaki potansiyel rolünü değerlendirmektir.

Yöntemler: Ocak 2015-Ocak 2017 tarihleri arasında çift merkezli, retrospektif klinik bir çalışmada Lütfiye Nuri Burat Devlet Hastanesi ve Haseki Eğitim ve Araştırma hastanesinde yapılan troidektomi ameliyatları incelendi. Hastalar İONM kullanılarak yapılan troidektomi (Grup A, n=100) ve direkt görsel teknik kullanılarak yapılan troidektomi (Grup B, n=232) olarak çalışmaya dahil edildi. Hastaların dosyaları incelenerek yaş, vücut kitle indeksi, cinsiyet, ASA skoru, kalsiyum seviyeleri, komplikasyonlar, ameliyat süreleri, takip süreleri incelendi. Postoperatif komplikasyonlar esas çıktı olarak belirlendi.

Bulgular: Çalışmaya tiroid operasyonu yapılan yaş ortalamaları 46,4±12,9 yıl olan 52 erkek, 280 kadın toplam 332 hasta dahil edildi. Hastaların %30,1'i İONM kullanılan, %69,9'u kullanılmayan grupta idi. Operasyonların %70,8'i çift taraflı, %29,2'si tek taraflıydı. İONM grubunda ameliyat süreleri diğer gruptan daha kısa idi (76,9±12,0 dakika ve 97,7±27,6 dakika, p<0.001). Preoperatif ve postoperatif kalsiyum seviyeleri açısından iki grup arasında anlamlı bir fark saptanmadı (p=0.407). İki grup arasında erken dönem RLN paralizisi oranlarında istatistiksel olarak anlamlı fark saptanmadı (Grup A için 10 (%10) ve Grup B için 34 (%14) (p=0.251). İONM grubunda kalıcı RLN paralizi saptanmazken, direkt görsel teknikte istatistiksel olarak anlamlı fark oluşturan kalıcı RLN paralizi 10 hastada (% 4,3) tespit edildi (p=0,035).

Sonuç: İONM kullanımı, direkt görsel teknikle karşılaştırıldığında geçici paralizi oranlarında fark olmasa da, kalıcı RLN paralizi oranını azaltmada faydalı olabilir.

Anahtar Kelimeler: Tiroidektomi, Rekürren laringeal, Sinir monitorizasyonu

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Introduction

Thyroidectomy is the most common intervention of head and neck surgery. The paralysis of recurrent laryngeal nerve (RLN) is one grave complication of the thyroid surgery which impairs the quality of life. The average incidences of permanent and temporary RLN palsies after thyroid operations are high (2.3% and 9.8%, respectively) [1]. To keep the rate of nerve damage to the lowest, surgical exposure and anatomic identification of the nerve during the surgery has been shown to be the best way.

No other cancer of any organ can match the increase in the rate of thyroid cancer in the recent years. For example, in South Korea the rate of thyroid cancer has increased 15 times even though the mortality remained the same [2]. The increase in the thyroid cancer has made it a problem of the developed countries. In the recent 20 years, the developed countries have reported 15 fold increase in the cancer of the thyroid gland. Cancers which probably would not have been symptomatic have become detectable because of the advances in the screening programs and the wider use of ultrasound. This has inevitably led to the rise in thyroidectomies.

Surgical exposure and anatomic identification of the RLN during thyroid operations has been shown to provide the best way of keeping the incidence of nerve injury to a minimum [3]. However, even experienced surgeons may harm the nerve due to variability of nerve anatomy and difficulties in nerve identification that may occur under challenging conditions [4].

Intraoperative nerve monitoring (IONM) during thyroid surgery has gained universal acceptance as an adjunct, not only for localizing and identifying the RLN but also as a way to predict vocal cord function and clarify the mechanisms of RLN injury. Neuro-monitoring is a tool that helps to visually identify the RLN and predicts postoperative nerve function, which is a great advantage over visualization alone; this technique could help prevent bilateral palsy [5]. Despite its increasing use, IONM is still considered as an adjunctive tool during thyroid surgery, taking a secondary role behind the gold standard of direct RLN visualization. The RLN paralysis is also a concern for surgeons in lawsuits for malpractice, even though it has a low rate [6].

The objective of the present retrospective study is to evaluate the outcome of thyroidectomies with nerve monitoring versus those in which nerve detection is made visually, and compare the results to define advantages and disadvantages of both procedures, with or without nerve monitoring.

Material and methods

The study plan was evaluated and approved by our institutional ethics committee of our teaching and research hospital. Approval of the local ethic committee was obtained. All procedures were in accordance with the Helsinki Declaration of 1964 and later versions. All patients have already been informed and written consent was obtained from all patients before the surgery for years indicating that their data could have been used in scientific research in the future, since the present study was a retrospective study on patients who underwent thyroidectomy using either intraoperative laryngeal nerve monitoring or using the conventional method with direct visual inspection in the general surgery departments of Lutfiye Nuri Burat State Hospital ve Haseki Training and Research Hospital between January 2015 and January 2017.

Patients younger than 18 years of age or with a previous thyroid or laryngeal operation (vocal polyp, nodule or larynx cancer) or who had a cerebrovascular disease history or who underwent subtotal or unilateral thyroidectomy were excluded from the study. The patients underwent laryngeal examination prior to the surgery in order to confirm the presence of intact vocal cord mobility and laryngeal configuration and for any other vocal fold lesions that might impact the outcome. Patients who underwent bilateral total thyroidectomy for benign goiter as well as thyroid cancer, diagnosed with a fine needle aspiration, between 18 and 80 years of age were included in the study.

The patients' age, medical history and details of the surgery were obtained from the patients' medical files. The operations were performed by the same surgeons who were experienced in the field and by the surgery residents of at least in the fourth years of their surgical training of the 5 years under the direction and supervision of the previously explained surgeons who also assisted the operation.

The patients were grouped into two: Thyroidectomy operations using IONM (Group A) and using direct visual inspection technique (Group B). The patients in Group A were intubated without administration of neuromuscular blocking agents. Endotracheal-based monitoring system (Medtronic NIM, Jacksonville, FL, USA) was used to record electromyographic activity of the thyroarytenoid muscles during the operation. Two electromyography (EMG) recordings were obtained from the both recurrent laryngeal nerves. The first one was taken when the nerves were detected and identified. Another EMG recording was obtained after the thyroidectomy was completed and complete homeostasis was achieved. The age, weight, height, preoperative diagnosis, American Society of Anesthesiologists (ASA) score, specimen size, pathology report, operation time, length of the hospitalization period, preoperative and postoperative calcium levels, complications, nerve conduction velocities and electromyographic activity levels were recorded for comparison. The operation time is defined as starting from skin incision to closure.

The larynx and vocal cord examinations were performed for all patients both before the surgery and in the early postoperative period. If dysphonia or vocal cord injury were encountered, follow-up examinations with indirect laryngoscopy were performed on the 3rd and 9th months. If the dysfunction and clinical dysphonia lasted more than 12 months in the postoperative period, the case was considered as facing "persistent nerve palsy".

Statistically, the data was analyzed with SPSS 15.0 for Windows. The descriptive statistics were given as mean±standard deviation, with minimum and maximum for quantitative variables, and as percentages for categorical variables. When quantitative variables had normal distribution pattern, Student t Test was employed for 2 independent samples and One Way Analysis of Variance (ANOVA). If the data was non-normally distributed, Mann Whitney U test was used for two independent samples and Kruskal Wallis analysis for more than two independent samples. The subgroup analysis for the nonparametric group was carried out with Mann Whitney U test. The rates were compared with chi-square analysis. Monte Carlo simulation was applied when necessary. Results were considered statistically significant when p value was less than 0.05.

Results

As a whole, the mean age was 46.4±12.9 years. Three hundred thirty two patients, of which 52 (15.7%) were males and 280 (84.3%) were females, had been included. While 100 (87 males, 13 females) were operated with IONM (Group A), the remaining 232 (193 males, 39 females) were operated without IONM (Group B). Average operation time was 90.7±25.7 (45-180) minutes. Two hundred and thirty five (70.8%) operations were bilateral, and 97 (29.2%) operations were unilateral.

The study group had no operative and postoperative mortality. There were 10 (3%) unilateral vocal cord paralysis at

9th month and there was no persistent hypocalcemia. Ten patients (3%) suffered non-life threatening hematomas, and 36 (10.6%) patients had transient hypocalcemia. The preoperative mean calcium level was 8.6±0.5 mg/dL when compared to the postoperative level which was 8.3±0.9 mg/dL (Table 1). The operation duration in Group A was shorter than Group B as 76.9±12.0 minutes vs 97.7±27.6 minutes, respectively (Table 2).

Table 1: Demographic and clinical features of the patients (n=332).

Parameter		
Age (year) [μ]		46.4±12.9
Operation time (min) [μ]		90.7±25.7
Preoperative calcium (mg/dL) [μ]		8.6±0.5
Postoperative calcium (mg/dL) [μ]		8.3±0.9
Gender [β]	Male	52 (15.7)
	Female	280 (84.3)
Usage of IONM [β]	IONM	100 (30.1)
	Non-IONM	232 (69.9)
Side [β]	Bilateral	235 (70.8)
	Unilateral	97 (29.2)
Vocal cord failure [β]	24 hours	44 (13.3)
	3 months	18 (5.4)
	9 months	10 (3.0)
Complications [β]	No complication	286 (86.1)
	Hematoma	10 (3.0)
	Hypocalcemia	36 (10.8)
Co-morbidities [β]		6 (1.8)

[μ]: mean±standard deviation, [β]: n(%), IONM: Intraoperative nerve monitoring

Table 2: Comparison of the groups

Parameter		With IONM (Group A) N	Without IONM (Group B) N	p
Operation time [μ] (minutes)		76.9±12.0	96.7±27.6	0.001
Preoperative calcium levels (mg/dl) [μ]		8.6±0.5	8.6±0.5	0.407
Postoperative calcium levels (mg/dl) [μ]		8.4±0.7	8.3±1.0	0.743
Gender [β]	Male	13 (13)	39 (16.8)	0.381
	Female	87 (87)	193 (83.2)	
Side [β]	Bilateral	78 (78)	157 (67.7)	0.058
	Unilateral	22 (22)	75 (32.3)	
Vocal cord failure [β]	24 hours	10 (10)	34 (14.7)	0.251
	3rd month	0 (0)	18 (7.8)	0.004
	9th month	0 (0)	10 (4.3)	0.035
Complications [β]	No complication	88 (88)	198 (85.3)	0.777
	Hematoma	3 (3)	7 (3.0)	
	Hypocalcemia	9 (9)	27 (11.6)	
Co-morbidity [β]		6 (6)	0 (0)	0.001

[μ]: mean±standard deviation, [β]: n(%), IONM: Intraoperative nerve monitoring

When we evaluated the patients according to the employment of IONM as a whole, there was significant difference between the overall operation duration between the groups. There was no difference among preoperative and postoperative calcium levels (p=0.407). There was also no difference between gender and the laterality of the operation between the two groups, either (p=0.381). Considering the postoperative complications, each group had a rate of 3% for development of hematomas and there was no difference between the incidence of hypocalcemia (9% vs 11.6%, p=0.777). However, there were 10 (10%) and 34 (14.7%) cases of vocal cord disturbances in Group A and Group B, respectively, in the early postoperative vocal cord examination within 24 hours after the operation (p=0.251).

On the vocal cord examination in the 3rd month, there was no persistent laryngeal nerve damage in Group A, but there were 18 (7.8%) patients with persistent laryngeal nerve damage in Group B (p=0.004). There were 10 (4.3%) patients who still had laryngeal nerve damage in Group B in the 9th month contrary to the absence of persistent laryngeal nerve damage in Group A (p=0.035).

Discussion

Since we are on the process of adopting IONM in our surgery departments, the present study was conducted by the cooperation of two surgical departments. Although there was no significant difference between the groups in the early postoperative nerve palsy rates (10% and 14.7%), in the follow-up, there were more persistent nerve palsy cases in the patients without IONM (0% and 4.3%).

The most important complications of thyroidectomy are recurrent nerve palsy and hypoparathyroidism among other potential surgical complications like hematomas. The nerve palsy may lead to voice alterations as well as aspiration and related health consequences.

The incidence of recurrent nerve palsy has been reported between less than 1% and up to 20% [7]. Even in experienced centers, the authors have reported rates of injury to the recurrent nerve causing persistent palsy around 1-2% [8, 9].

In a large multicenter study evaluating more than 27 000 nerves at risk for surgical trauma, it has been argued that the outstanding factor in the success of thyroid surgery is the surgeon's individual performance; the meticulous dissection, identification and preservation of the recurrent nerves [10]. In another study, which the surgeons were stratified according to their experiences, it has been shown that surgeons with experience more than a hundred thyroidectomies had lowest complication rates and shorter hospital stay [11].

In a prospective study about the thyroidectomies performed by experienced surgeons, 8% of the cases presented symptoms of nerve injury at early evaluation but only one in 301 patients had persistent symptoms in the long term follow up [12].

In addition to the surgeons experience, there are several factors which put the nerve at high risk, the underlying disease (substernal goiter, malignancy, Graves disease), as well as the extent of resection. Lahey et al [13] reported that careful dissection of the recurrent nerve decreased the number of injured recurrent laryngeal nerves hence advocating the dissection of the nerve almost in every case. However this may not be so easy under several circumstances such as cancer excision, anatomic distortion of large tumors, anatomic anomalies, history of radiation and inflammation [7].

Nerve monitoring has been introduced in order to help the surgeons to identify the recurrent nerve intraoperatively [14]. There are several arguments in favor of neuro-monitoring, the ability of the surgeon to correctly identify the nerve, to maintain reliable prediction about its functional integrity of the nerve before the end of the operations to cancel bilateral surgery, to aid the surgeon for guidance in difficult situations like cancer or recurrent operations [15].

Neuronal integrity method (NIM) requires a particular endotracheal tube with electrodes for the vocal cord embedded into the wall of the tube. NIM is one of the most common used methods of nerve monitoring [16]. However, it is not the surgeons' skills only; the endotracheal tube with the electrodes needs to be placed accurately by the anesthesiologist to be in contact with the vocal cords [17, 18].

Many attempts have been made in recent years to investigate the role of IONM as an essential tool for RLN identification, but there has been conflicting reports, not yet enough to establish the role of NIM as a confirmed tool to aid the surgeon in thyroidectomies.

One argument against the efficiency of NIM in several papers is that it does not reduce the operation time [1]. For example, Stevens et al [19] reported a longer mean operation time of 180 minutes of the IONM group vs 130.5 minutes for the visual nerve inspection only group. On the contrary, Sari et al.

[7] reported a shorter operation time as 65.4±31 minutes for the IONM group than 79.1±30 minutes for the visualization group. Chan et al [20] reported 119±51 minutes vs 116 ± 37 minutes, hence very close figures for the IONM and visual inspection groups, respectively. Dionigi et al [21] reported closer mean operation time results as 97.6 vs 95.0 minutes for IONM and without IONM groups, respectively. In our evaluation of the patients according to the employment of IONM, there was a significant difference between the overall operation duration time between the groups. The length of operation in IONM group was shorter than the non-IONM group as 76.9±12.0 vs 97.7 ±7.6 minutes. Thus, our study clearly confirms that in a setting where residents are trained and IONM has become somewhat habitual, the operation period might actually shorten because of spending less time for a meticulous and careful dissection of the nerve. This may be the result of saving extra time taken to assure the safety of the operation in a teaching hospital; however, any tool cannot be a substitute for the guiding hand of an experienced instructor.

In regard to RLN, several studies may be mentioned favoring or being against for the employment of IONM. In one study, the authors retrospectively compared 656 cases of thyroid cancer patients who underwent bilateral thyroidectomy with IONM and by visual detection. In this study, it has been shown that differences were not statistically significant [22].

In a famous large prospective German study, the authors found out that the use of IONM significantly decreased the early RLN palsy rates from 4.9% to 3.3%, and they reported that IONM was beneficial in high-risk procedures such as recurrent goiter, thyroid carcinoma and extended resections [16].

When the debate around the subject was becoming more complicated, several meta-analyses have been made and meta-analyses of those overlapping meta-analyses have been performed. In one meta-analysis of 9,203 patients and 17,203 nerves at risk, incidence of overall, transient, and persistent RLN palsy in IONM group were 3.15%, 1.82%, and 0.67%, respectively, whereas for the visual detection group, they were 4.37%, 2.58%, and 1.07%, respectively. The presented data showed benefits of reducing RLN palsy rate by using IONM, but without statistical significance for persistent RLN palsy rate. In addition, it was proposed that patients with thyroid cancer who undergo total thyroidectomy using IONM, the outcome may improved by reducing amount of residual thyroid tissue [23].

Wong et al [24] reviewed 10 studies for high risk thyroidectomies namely re-operation, thyroidectomy for malignancy, thyrotoxicosis or retrosternal goiter and found that IONM had significantly lower rate of overall (4.5% vs. 2.5%) and temporary (3.9% vs. 2.4%) RLN palsy in overall high-risk thyroidectomies than they are for the visual investigation group. They concluded that selective use of IONM during high-risk thyroidectomy decreased the rate of overall RLN palsy. IONM should be used for re-operative thyroidectomy and operations for cancer [24].

Another meta analysis based on five randomized clinical trials and 12 comparative trials evaluating 36,487 at-risk nerves were included. Statistically significant differences in terms of total recurrent laryngeal nerve palsy as 3.37% with intra-operative nerve monitoring and 3.76% without IONM and transient recurrent laryngeal nerve palsy as 2.56% with IONM and 2.71% without IONM were identified. The persistent incidence of recurrent laryngeal nerve palsy was 0.78% for IONM and 0.96% for visual nerve identification alone. Based on this meta-analysis, statistically significant differences were determined in terms of the incidences of total and transient recurrent laryngeal nerve palsy after using IONM during thyroidectomy. However, no statistically significant differences were identified regarding the incidence of persistent recurrent laryngeal nerve palsy between the groups [25].

Pisanu et al [26] found that there was no statistically significant difference in the incidence of RLN palsy when using IONM during thyroidectomy. The rates of overall RLN palsy per nerve at risk were 3.47% using IONM and 3.67% without using IONM. The rates of transient RLN palsy per nerve at risk were 2.62% and 2.72% in the groups with and without IONM, respectively. The rates of permanent RLN palsy per nerve at risk were 0.79% in patients with IONM compared to 0.92% without IONM [26].

Although there was no difference between the groups with and without IONM in the present study in the early postoperative nerve palsy rates (10% and14.7%, respectively), in the follow-up, there were more persistent nerve palsy cases in Group B (non-IONM group). According to these findings, it may be concluded that regeneration of some damaged nerves with time is easier due to the less traumatic effect of IONM.

Sanabria et al [27] could not find a statistically significant decrease in the risk of temporary or definitive RLN injury. The proponents of routine nerve monitoring claim that its use can still be justified for bilateral surgery stating that contralateral lobe resection must be avoided after loss of signal in the first lobe to avoid the risk of bilateral damage and tracheostomy [27].

Supplementary role of IONM is supported by the recommendations by the German Association of Endocrine Surgeons' guidelines for thyroid disease and supported by the International Intraoperative Monitoring Study Group's international standards guideline statement [28].

In conclusion, it may be proposed that NIM or IONM may be helpful especially in departments where thyroidectomy is performed with lower volumes. Since the high rate of endemic goiter in Turkey mandates and forces the performance of thyroidectomies even in smaller departments with lower volumes, thus IONM may be a useful tool to improve the quality of the surgery by using neuro-monitoring. In regard to improvement of all patients with transient nerve palsies using IONM, regeneration of some damaged nerves with time may be easier.

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Case Series: Familial Mediterranean fever and ankylosing spondylitis: A rare togetherness

Olgu serisi: Ailesel Akdeniz ateşi ve ankilozan spondilit: nadir bir birliktelik

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Abstract

Some seronegative spondyloarthritis cases with familial Mediterranean fever disease, ankylosing spondylitis may show clinical course. There are a limited number of publications in the literature regarding the association of sacroiliitis with Familial Mediterranean fever. In this study, four patients with clinical and radiological findings of ankylosing spondylitis were presented from 60 patients followed by familial Mediterranean fever between February 2015 and October 2016. It was aimed to emphasize the suspicion of ankylosing spondylitis in patients with familial Mediterranean fever with this case series, in case of clinical signs of gluteal pain and low back pain which can be evaluated in favor of sacroiliitis.

Keywords: Ankylosing spondylitis, Familial Mediterranean fever

Öz

Ailesel Akdeniz ateşi hastalığı ile birlikte olan bazı seronegatif spondiloartrit vakaları, ankilozan spondilit klinik seyri gösterebilir. Literatürde sakroileit ile ailesel Akdeniz ateşi birlikteliği ile ilgili sınırlı sayıda yayına rastlanmaktadır. Bu çalışmada Şubat 2015 ile Ekim 2016 dönemi arasında ailesel Akdeniz ateşi hastalığı tanısı ile takip edilen 60 hastadan, daha sonra ankilozan spondilit klinik ve radyolojik bulgularını gösteren dört olgu sunuldu. Bu olgu serisi ile ailesel Akdeniz ateşi tanılı hastalarda sakroileit lehine değerlendirilebilecek bel ağrısı ve gluteal ağrı klinik bulgularının olması halinde, ankilozan spondilit birlikteliğinden şüphelenilmesine vurgu yapılması amaçlandı.

Anahtar kelimeler: Ankilozan spondilit, Ailesel Akdeniz ateşi

Informed Consent: The author stated that the written consent was received from the patients who were presented in this study.
Hasta Onamı: Yazar çalışmada sunulan hastalardan yazılı onam alındığını ifade etmiştir.

Conflict of Interest: No conflict of interest was declared by the authors. Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

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Introduction

Familial Mediterranean fever is an autosomal recessive inherited disease which is usually characterized by recurrent and self-limiting acute fever, usually sterile peritonitis, pleuritis, monoarticular or oligoarticular arthritis with increased acute phase markers seen in Mediterranean people, especially in Turkish, Arabic and Spanish Sephardic Jews and Armenians [1]. It is caused by mutations in the MEFV gene located in the short arm of chromosome 16.In 85% of the carrier chromosomes, four mutations related to the disease have been identified as M694V, M680I, M694I and V726A [2]. According to the latest research, the actual cause of the disease is not known even if the mutation of the Pyrin gene leads to FMF [3].

Arthritis is the second most common type of acute attack [4]. This is usually an acute spontaneous restraint monoarthritis affecting the broad joints of the lower extremities and approximately 5% of FMF patients develop mostly arthritis of the hip or knees [5]. These features of the disease are similar to spondyloarthritis. However, available data on the role of human leukocyte antigen (HLA) B27 in the development of sacroiliitis in FMF patients should be discussed [6].

Ankylosing spondylitis (AS) is a chronic rheumatic disease of unknown etiology, and it is characterized by acute anterior uveitis, skin lesions and intestinal inflammation, as well as peripheral arthritis, peripheral oligoarthritis and enthesitis [7].Genetic factors play an important role in the pathogenesis of AS. This disease is strongly associated with HLA-B27 antigen and the major histocompatibility complex region containing the HLA-B locus is the most commonly involved in genetic predisposition [8]. In addition to the association with the major histocompatibility complex region, the association of the interleukin-1 gene complex with AS has been demonstrated by several research groups.

In this study, it was aimed to emphasize the suspicion of AS in the cases with clinical symptoms such as low back pain and gluteal pain in the patients with Familial Mediterranean fever.

Case Series

Patients and Methods

Between February 2015 and October 2016, patients with FMF from Malatya Education and Research Hospital Department of Physical Medicine and Rehabilitation were included in the study. The study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments. According to the Tel-Hashomer Criteria [9], 60 cases with a preliminary diagnosis of FMF were evaluated using hospital information system. We have identified a relationship between AS and FMF who admitted to our clinic in four of 60 patients with an incidence of 6.7%. Verbal and written consent of our cases were taken from each patient.

Table 1: Clinical features of the patients.

No	Sex	FMF diagnosis	FMF mutation	Sacroiliitis	HLA B27	Duration of inflammatory back pain
1	male	25 years	M694V heterozygote	+	+	5 years
2	female	15 years	R202Q heterozygote	+	-	10 years
3	male	2 years	E148Q	+	-	10 years
4	male	20 years	M694V	+	+	10 years

First case: 51-year-old male patient with peripheral arthritis, recurrent fever and abdominal pain episodes during his adolescence has been followed up with the diagnosis of FMF for the last 25 years. The patient described migratory gluteal pain and inflammatory back pain for the last five years. Sacroiliitis was detected with magnetic resonance imaging (Figure 1). The patient was followed up radiologically and clinically with a diagnosis of AS. The patient was HLA B 27 positive.M694V heterozygote mutation was detected in the gene analysis for FMF.

Figure 1: T1-A MRI of the sacroiliac joints showing significant narrowing of the joint spaces in both sides and hypointense changes on the iliac side of the joints.

Second Case: A 39-year-old female patient has been acquainted with FMF 15 years ago. She had (febrile fever), pain and swelling in her knee joint since her childhood. The patient has had back pain and hip pain for the last ten years. She was diagnosed as AS five years ago clinically and radiologically. The patient was HLA B 27 negative.R202Q heterozygote mutation was detected in all gene analysis of FMF.

Third Case: A 39-year-old male patient with a diagnosis of AS for the last ten years has described an abdominal pain associated with concurrent fever for the last two years. The patient was diagnosed as amyloidosis in the tests performed. FMF was considered in the patient due to positive results of the gene analysis for E148Q.

Fourth Case: A 35-year-old male patient with a diagnosis of FMF from his adulthood years was diagnosed as sacroiliitis after magnetic resonance imaging (Figure 2). He has had inflammatory back pain for the last ten years. He was HLA B27positive.

Figure 2: T1-1 MRI showing narrowing of the joint space in the left sacroiliac joint.

Discussion

The articular involvement of FMF presents as an abrupt onset of acute arthritis, accompanied by high fever, redness, warmth, tenderness, and swelling [10]. Another possible form of the joint involvement in FMF is sacroiliitis, which is the characteristic feature of seronegative spondyloarthropathy [10].

In patients with FMF, there is subclinical inflammation even in non-attack periods and ongoing inflammation due to an inflammatory cuff that can make FMF patients susceptible to other inflammatory diseases [10]. Some of seronegative spondyloarthritis cases, which present with FMF, can display a clinical scenario as in AS like our cases.

The exact relationship between FMF and AS is a challenging issue. Occurrence of FMF and AS in the same patients has been described by several authors. Majeed and Rawashdeh [12] reported only one case developed AS in a study group including 95 patients with chronic arthritis of FMF [12]. Four of our cases developed AS in a group including 60 patients with FMF.

Sacroiliitis and spondyloarthritis can be seen in patients with FMF [13]. However, the nature of this association and whether it is just a coincidence or an unexplained common etiology remains to be explored. In our four cases, sacroiliitis associated with FMF was detected.

The association of FMF and AS is frequently seen with negative HLA-B27 antigen. Langevitz et al. [14] proposed that the association of FMF and AS were seen in 11 patients in a series of 3000 patients with FMF. Further, there were nine patients who had negative HLA-B27 antigen in 11 patients with FMF and AS [14].Two of our cases HLA B 27 were positive. Kaşifoğlu et al. [15] studied the role of HLA-B27 and MEFV mutations in the development of sacroiliitis and sacroiliitis in patients with FMF. The incidence of sacroiliitis in all FMF patients was found to be 7%. HLA-B27 was found to be 4.7%

and 6.3% in patients with FMF and sacroiliitis [15]. In our patients, the incidence of sacroiliitis in 60 FMF patients was found to be 6.7%.

The back pain and hip pain in our cases appeared within the several years following the diagnosis of FMF. This situation led us not to think of FMF joint involvement but also to suggest the presence of AS. Amyloidosis was detected in addition to AS in one of the cases who were positive for gene analysis.

Retrospective nature and inclusion of small number of the patients as a case series were the major limitations of the study.

In conclusion AS is a rare situation in patients with FMF. Patients usually have recurrent enthesitis and inflammatory problems with unilateral or bilateral sacroiliac joints. MEFV gene variation may be associated in the pathogenesis of FMF and AS coexistence.

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Pseudoxanthoma elasticum: Case series of three siblings

Psödoksantoma elastikum: Üç kardeşten oluşan bir olgu serisi

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Abstract

Pseudoxanthoma elasticum (PXE) is a rare multisystemic genetic disease with dermatologic, cardiovascular and ocular involvement. PXE primarily affects the skin, and the ocular involvement is noted in almost 85% of patients. Cardiovascular complications caused by PXE often develop in adults. Since the prognosis of PXE is primarily dependent on extracutaneous organ involvement, early diagnosis of PXE is of prime importance for taking preventive measures. In this report, we present three siblings diagnosed with PXE.

Keywords: Pseudoxanthoma elasticum, retinal pigmentation, angioid streaks

Öz

Psödoksantoma elastikum deri, kardiyovasküler sistem ve göz tutulumu olan, nadir görülen multisistemik ve genetik bir hastalıktır. Etkilenen esas organ deridir. Hastaların yaklaşık %85'inde göz tutulumu vardır. Kardiyovasküler komplikasyonlar, genellikle erişkinlerde ortaya çıkar. Prognozu genellikle ekstrakutanöz organ tutulumuna bağlı olduğu için hastalığın erken tanınması, koruyucu önlemler alınması açısından önem kazanmaktadır. Burada psödoksantoma elastikum tanısı konulan üç kardeşten oluşan bir olgu serisi sunulmaktadır.

Anahtar kelimeler: Psödoksantoma elastikum, retinal pigmentasyon, anjioid çizgiler

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Informed Consent: The written consent was received from the patiens and parents.
Hasta Onamı: Hasta ve hasta anne babalarından yazılı onam alınmıştır.

Conflict of Interest: No conflict of interest was declared by the authors.
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Introduction

Pseudoxanthoma elasticum (PXE), also known as Grönblad–Strandberg syndrome, is a multi-systemic genetic disease with dermatologic, cardiovascular and ocular involvements, characterized by fragmentation and mineralization of elastic fibers [1, 2].

In this report, we present three siblings who presented to our clinic with yellowish papular lesions on the neck and were diagnosed with PXE.

Case Series

Case 1

A-14-year-old male sibling presented to our clinic with a 2-year history of yellowish papules on the neck. Family history indicated that his two siblings also had similar lesions on the neck. Skin examination revealed multiple yellowish papules measuring 1 to 2 mm in size on the neck (Figure 1a). Histopathological examination of the cutaneous lesions showed degeneration and fragmentation of elastic fibers in the dermis (Figures 1b,1c). A dilated fundus examination showed focal retinal pigment epithelium and angioid streaks in both eyes (Figure 1d). No additional pathology was found on cranial computed tomography (CT), transthoracic echocardiography (ECG), and upper gastrointestinal endoscopy. Depending on these findings, the patient was diagnosed with PXE.

The written consent was taken from the parents of the patient.

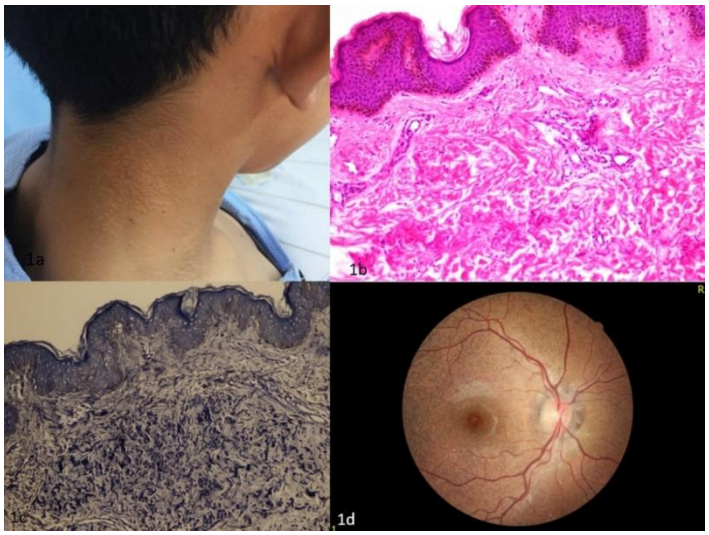

Figure 1: a) Multiple yellowish papules, measuring 1-2 mm in diameter, are observed on the neck, b) Destruction and globular configuration of dermal elastic fibers are noted (HE; X200), c) Degeneration and fragmentation are seen in elastic fibers (Verhoeff-van Gieson stain, x200), d) In color images of fundus, punctuate retinal pigmentation is noted in the right eye.

Case 2

A 20-year-old male sibling presented with a 3-year history of yellowish papules in the neck, similar to his siblings. Skin examination also revealed multiple yellowish papules measuring 1 to 3 mm in size in the neck (Figure 2a), histopathological examination also indicated degeneration and fragmentation of elastic fibers in the dermis (Figure 2b,2c), and a fundus examination also showed focal retinal pigment epithelium and angioid streaks in both eyes (Figure 2d). Depending on these findings, this sibling was also diagnosed with PXE.

The written consent was taken from the patient.

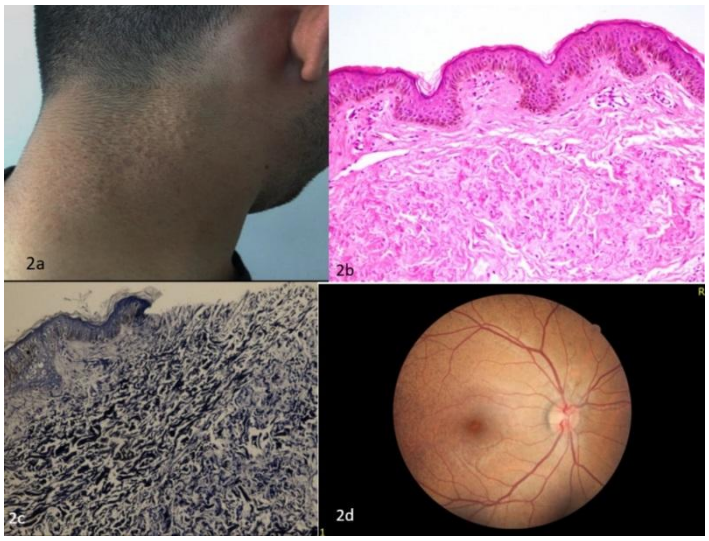

Figure 2: a) Multiple yellowish papules, measuring 1-3 mm in diameter, are observed on the neck, b) Destruction and globular configuration of dermal elastic fibers are noted (HE; X200), c) Degeneration and fragmentation are seen in elastic fibers (Verhoeff-van Gieson stain, x200), d) In color images of fundus, punctuate retinal pigmentation and angioid streaks are noted in the right eye.

Case 3

A-16-year-old male sibling presented with a 2-year history of yellowish papules in the neck, similar to his siblings. In a similar fashion, skin examination revealed multiple yellowish papules measuring 1 to 2 mm in size on the neck (Figure 3a), histopathological examination showed degeneration and fragmentation of elastic fibers in the dermis (Figure 3b,3c), and a fundus examination showed focal retinal pigment epithelium and angioid streaks in both eyes (Figure 3d). This sibling was also diagnosed with PXE.

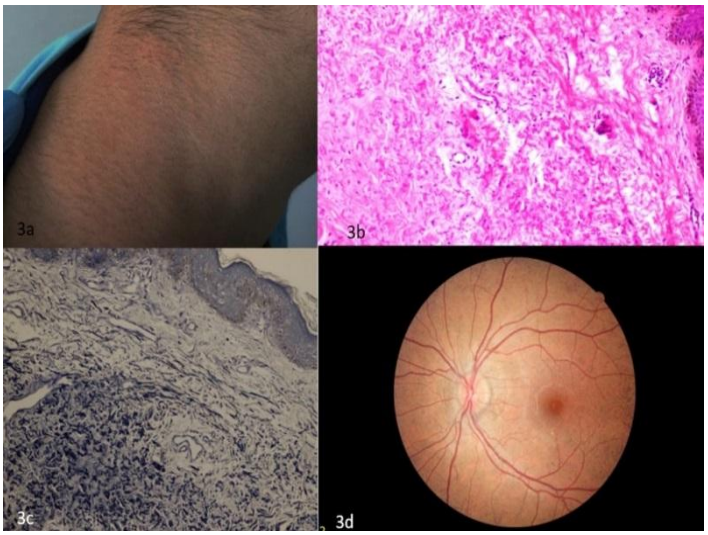

Figure 3: a) Multiple yellowish papules, measuring 1-2 mm in diameter, are observed on the neck, b) Destruction and globular configuration of dermal elastic fibers are noted (HE; X200), c) Degeneration and fragmentaton are seen in elastic fibers (Verhoeff-van Gieson stain, x200), d) In color images of fundus, punctuate retinal pigmentation and angioid streaks are noted in the left eye.

The written consent was taken from the parents of the patient.

Discussion

With an estimated prevalence of 1:50,000, PXE is a rare connective tissue disease. PXE is twice more common in women than in men and there is no geographical or racial predisposition reported in the literature [2,3]. PXE rarely manifests itself in infants and is usually recognized in the second or third decades of life. Although most cases are sporadic and the majority of familial cases exhibit autosomal recessive inheritance (90%), autosomal dominant inheritance can also be seen [1,4]. In our patients, PXE developed in the second decade of life, which was consistent with the literature.

The primary cause of PXE is considered to be the mutations in the ABCC6 gene that encodes the trans-membrane protein ABCC6 which has been reported with more than 300 mutations [5]. Since the symptoms of PXE vary even between the members of the same family, PXE is considered to be a disease that does not only show genetic inheritance but also interacts with genetic and environmental factors, hormonal status, and nutrition [1, 5].

Skin is the primary organ affected by PXE. Mean age at onset for the skin lesions is 13.5 years. In PXE, the skin is often loose and wrinkly and the lesions are usually characterized by yellowish papules or coherent reticular plaques measuring 1 to 3 mm in diameter, mostly localized in the neck, antecubital fossa, inguinal region, and periumbilical areas. Moreover, the lesions may also be seen in the oral, nasal, vaginal, and rectal mucosa. However, the absence of skin lesions does not rule out PE [2, 4, 5]. In our patients, the lesions were localized in the neck but no lesions were detected in any mucosa.

Ocular involvement has been reported in almost 85% of the patients with PXE. Ocular involvement is usually bilateral and develops between the ages of 20-40 years. PXE manifests its principal signs in the fundus by influencing the Bruch's membrane. The primary ocular sign is focal retinal pigment epithelium, followed by angioid streaks, peau d'orange, optic disc drusen, comet sign, and choroid neovascularization. In PXE patients, the visual function can often be preserved by laser therapy; therefore, early diagnosis of ocular disorders is crucially important [1, 6]. In our patients, both focal retinal pigment epithelium and angioid streaks were present.

Cardiovascular complications arising from PXE often develop in adults. Intermittent claudication is the most common and the earliest cardiovascular symptom. Moreover, PXE has also been shown to cause angina pectoris, arterial hypertension, restrictive cardiomyopathy, mitral valve prolapse, mitral stenosis, and sudden cardiac death. On the other hand, the damage in the elastic fibers of the blood vessels may result in gastrointestinal hemorrhage which is often recurrent and has gastric origin and is mostly seen in pregnant patients [7,8]. In our patients, no cardiovascular complications and gastrointestinal hemorrhage were observed.

The histological examination of cutaneous lesions is essential for the definitive diagnosis of PXE. The primary histological feature of PXE is progressive mineralization and fragmentation of mid-dermal elastic fibers, resulting in a histological image pattern known as elastorrhexis [2, 9]. In line with the literature, the histological examination of the lesions in our patients showed degeneration and fragmentation of elastic fibers in the dermis.

The main dermatological diseases considered in the differential diagnosis of PXE include cutis laxa, fibroelastolytic papulosis, PXE-like papillary dermal elastolysis, late-onset focal dermal elastosis, and perforating calcific elastosis [2, 7]. In our patients, no such diseases were detected.

No specific or effective treatment is currently available for the systemic mineralization and fragmentation of elastic fibers in the skin, eyes and arterial blood vessels caused by PXE [10]. However, regular exercise, weight control, and treatment of hypertension and hyperlipidemia are mandatory for the treatment of cardiovascular symptoms. Moreover, drugs that may cause gastrointestinal bleeding and hormone replacement therapies should be avoided. Laser therapy is performed for choroidal neovascularization [4, 10]. In a similar fashion, it is logical to advise patients to perform regular exercise and weight control, to avoid drugs that may cause gastrointestinal bleeding, and to undergo regular eye examination for the early diagnosis of ocular disorders.

The prognosis of PXE is primarily dependent on extracutaneous organ involvement; therefore, early diagnosis of PXE is of prime importance for taking preventive measures and to decrease the morbidity rate. PXE should be considered in the family members presenting with the same xanthomatous lesions and systemic screening should be performed for all the family members.

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An interesting case of acute bilateral upper motor weakness: A case report

İlginç bir vaka olarak bilateral üst motor zayıflık: Bir olgu sunumu

Shamsudeen Moideen [1], N.A. Uvais [2]

Abstract

Malaria, the world's third-ranked infectious killer, is caused by the bite of a female anopheline mosquito which is infected a protozoan from the genus 'Plasmodium'. More than 35% of all malaria cases are caused by the falciparum malaria species. Several neurological manifestations of malaria have been reported, especially with severe falciparum infection, which in- clude altered level of consciousness, repeated seizures and coma. Here, we report a unique case of acute bilateral upper motor neuron weakness due to P. Falciparum malaria in a previously healthy young adult, who is a migrant worker in Kerala/India.

Keywords: Upper motor neuron, Malaria, Cerebral, Non-endemic

Öz

Dünyanın üçüncü enfeksiyöz ölümcül hastalığı olan sıtma, plazmodyum türü protozoon tarafından enfekte edilmiş dişi anofel cinsi sivrisineği ısırığından kaynaklanır. Tüm sıtma vakalarının %35'ten fazlası falciparum malaria türü kaynaklıdır. Sıtmanın bazı nörolojik semptomları, özellikle şiddetli falciparum enfeksiyonu ile beraber olduğunda; şuur değişikliği, tekrarlayan nöbetler ve koma olarak bildirilmiştir. Burada, Hindistan'ın Kerela bölgesinde göçmen işçi olarak çalışan, önceden sağlıklı genç bir erişkinde plasmodyum falciparum kaynaklı sıtmaya bağlı akut bilateral motor nöron zayıflığı hakkında özgün bir vaka sunuyoruz.

Anahtar kelimeler: Üst motor nöron, Sıtma, Beyin, Endemik olmayan

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Introduction

Malaria is the world's third-ranked infectious killer disease after Human Immunodeficiency virus / Acquired Immune Deficiency Syndrome (HIV/AIDS) and tuberculosis [1]. Every year malaria causes clinical illness in over 300-500 million people globally and over 1 million people die from it every year [2].

Malaria is caused by the bite of a female anopheline mosquito which is infected a protozoan from the genus 'Plasmodium' of which there are four human species: Plasmodium vivax, Plasmodium falciparum, Plasmodium ovale and Plasmodium malaria [3]. More than 35% of all malaria cases is caused by the falciparum malaria species [3]. Several neurological manifestations of malaria have been reported, especially with severe falciparum infection.

Cerebral malaria is characterized by dysfunction of any organ system, which includes neurological involvement leading to altered level of consciousness, repeated seizures and coma.

Malaria has been a problem in India for centuries. According to the World Malaria Report 2014, 22% (275.5m) of India's population live in high transmission (> 1 case per 1000 population) areas, 67% (838.9m) live in low transmission (0–1 cases per 1000 population) areas and 11% (137.7m) live in malaria free (zero cases) areas [4]. The state of Orissa contributes about 25% of the total annual malaria cases, more than 40% of P. falciparum malaria cases and nearly 20–30% of deaths caused by malaria in India, followed by Meghalaya, Mizoram, Maharashtra, Rajasthan, Gujarat, Karnataka, Goa, southern Madhya Pradesh, Chhattisgarh, and Jharkhand [5].

Here, we report a unique case of acute bilateral upper motor neuron weakness due to P. Falciparum malaria in a previously healthy young adult, who is a migrant worker in Kerala/India. This case report highlights the uncommon presentations of falciparum malaria which clinicians should be aware of while making differential diagnosis even in non-endemic zones for malaria.

Case report

A 25-year-old gentle man from Rajasthan (Northern India) who was working in a granite industry in Kerala (South India) presented to the hospital with complaints of fever for 5 days. The fever was sudden in onset, high grade with chills and rigor. Headache and vomiting developed the next day. He had several episodes of vomiting which was non projectile and non-bilious in nature. It was learned that he had developed sudden deterioration of his level of consciousness three days prior to admission. One day prior to the admission he developed breathing difficulty and was taken to a nearby hospital, where he was intubated. There was no history of cough, chest pain, palpitation, abdominal pain, loose stools or seizures. A detailed history was elicited which suggested no significant past illnesses or any significant illnesses in the family. He had a history of travel to a native state, Rajasthan, recently.

On clinical examination, it was seen that he was intubated and on T piece. He was conscious and obeyed commands. His breathing was spontaneous with a respiratory rate of 24/min. His pulse rate was 76/min and blood pressure was 110/80 mmHg. His body temperature was 98.6 °F and SpO2 was 98%.

Central nervous system examination showed grade 1 power in both up- per and lower limbs, with exaggerated deep tendon reflexes, and bilateral extensor plantar response. There was no cranial nerve involvement, neck stiffness or extrapyramidal signs. Skull and spine was normal. Physical examination finding in relation with cardio vascular, gastro intestinal and respiratory systems were all normal. His laboratory results are summarized in Table 1. Routine urinary examination was normal.

Study of cerebrospinal fluid was unremarkable. Malaria card test was positive and peripheral smear showed plasmodium falciparum. Magnetic resonance imaging (MRI) of the cervical spine done to rule out spinal pathologies was normal. MRI of the brain showed hyper-intensity over the splenium, the corona radiata and the basal ganglia, with mild diffuse brain edema (Figure 1, 2). Blood cultures showed no bacterial growth.

Patient was admitted in medical intensive care unit and treated with intravenous injection Artesunate 2.4 mg/kg IV at 0 and 12 hours, along with other supportive measures including intravenous mannitol. The next day, the patient became well and his level of consciousness improved. He was extubated on the same day and shifted to the ward on day 3. Intravenous injection Artesunate 2.4 mg/kg was continued once a day for the next five days. At the time of discharge, he was fully conscious and oriented with full power in all four limbs. Written consent was taken from the patient.

Table 1: Patient's laboratory tests

Tests	Values	Normal range
Hemoglobin (gm%)	10.1	14-18
Total count (cells/mm^3)	8,400	4,500-11,000
Differential count (%)		
Neutrophils	74	50-70
Lymphocytes	18	25-50
Monocytes	7	0-10
Eosinophils	1	0-5
Platelets (lakhs per mm^3)	75,000	1.5-4.5
Blood urea (mg/dl)	73	19-43
Serum creatinine (mg/dl)	1.1	0.8-1.5
Total bilirubin (mg/dl)	3.83	0.20-1.30
Direct bilirubin (mg/dl)	2.4	0.00-0.40

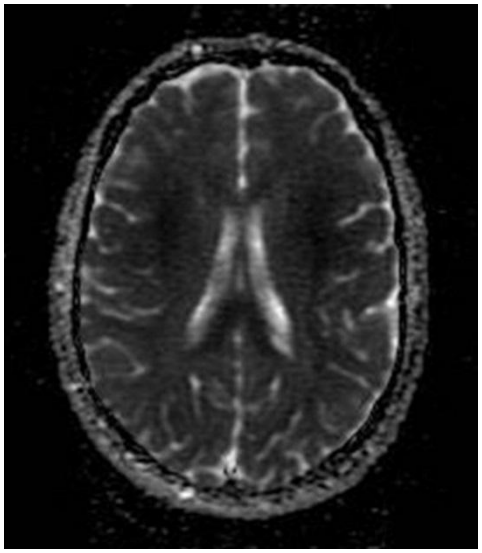

Figure 1: T2-weighted image of the brain showing hyper-intensity over the splenium, the corona radiata and the basal ganglia, with mild diffuse brain edema.

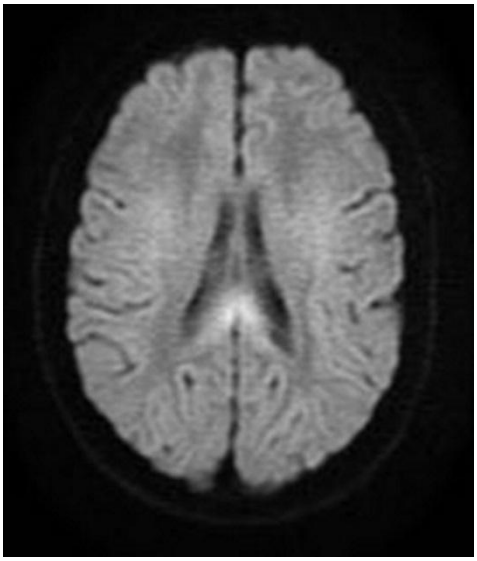

Figure 2: FLAIR MRI sequence showing hyper-intensity over the splenium, the corona radiata and the basal ganglia, with mild diffuse brain edema.

Discussion

Cerebral malaria is a potentially life threatening neurological complication of P. Falciparum infection. It is characterized by rapid onset of loss of consciousness leading to unarousable coma, associated with convulsions including status, especially in children [3]. Though localizing signs are rare, it

may presents with generalized hypertonia, opisthotonous, posturing and bruxism. Internuclear ophthalmoplegia is often found in such cases. It can also presents with ‘symmetric encephalopathy’ characterized by the presence of symmetrical upper motor neurone signs, like in our case [3,6]. The cause of death is not apparent most of the time. Progressive deterioration of brainstem function may lead to cardiac and respiratory arrest.

The pathology of cerebral malaria is found to be the sequestration of parasitized erythrocytes in the cerebral microvasculature, causing rupture of endarterioles proximal to the occlusive plugs, resulting in petechial ring hemorrhages in the white matter. The role of cytokine 'tissue necrosis factor' mediated up regulation of nitric oxide synthetase activity has also been shown in the pathogenesis of coma in cerebral malaria [7].

To summarize, if a patient from an endemic area of malaria, even if living in non-endemic area, presents with fever and neurological complications it is crucial to have the patient worked up for malaria. Considering globalization and large scale migration across countries, our case can have relevance in similar clinical situations involving migrant population in non-endemic countries for malaria.

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DOI: 10.25000/acem.369509 Olgu Sunumu / Case Report

Malignant transformation of dental material-induced oral lichenoid contact reaction: A case report describing outcomes after amalgam removal

Dental materyal ilişkili oral likenoid kontakt reaksiyonun malign dönüşümü: Amalgam çıkarımı sonrası sonuçların ortaya konulduğu bir olgu

Ahu Yorulmaz [1], Başak Yalçın [1], Ayşe Boyvat [2], Ömür Ataoğlu [3], Önder Bozdoğan [4]

Abstract

Oral lichen planus (OLP) is a chronic immune-mediated dermatosis of unknown origin. Considered as one of the most common diseases of the oral mucosa, OLP has been subject of intense interest since its first identification as a premalignant condition. Oral lichenoid contact reactions (OLCRs) are distinct analogs of OLP lesions, in that they are nearly indistinguishable from OLP both clinically and histologically. There is an on-going debate about whether the underlying condition causing OLP-induced malignant oral squamous cell carcinoma is OLP or OLCR. Even currently, a considerable number of patients with OLCR are diagnosed and managed as OLP without searching for specific causative agents. Dental restorative materials are one of the most common inducers of OLCR. Here, we describe a case with dental material-induced OLCR, who had previously undergone marginal mandibulectomy and neck dissection with a diagnosis of invasive well differentiated squamous cell carcinoma associated with OLP. We emphasize the need for investigation of possible etiological factors in every case of OLP or OLCR, as a basal patch test may completely change the course of the disease.

Keywords: oral lichen planus, oral lichenoid contact reactions, oral squamous cell carcinoma, dental restorative materials, patch test

Öz

Oral liken planus (OLP), etiyolojisi henüz tüm yönleriyle aydınlatılamamış kronik immün aracılı bir dermatozdur. Oral mukozanın en sık hastalıkları arasında kabul edilen OLP, premalign bir durum olarak tanımlanmasından bu yana çok daha fazla ilgi gören bir hastalık haline gelmiştir. Oral likenoid kontakt reaksiyonlar (OLKR), OLP'den gerek klinik, gerekse histopatolojik olarak neredeyse ayırt edilemez, bu nedenle OLP lezyonlarının analoğu olarak görülürler. Hali hazırda, OLP ilişkili malign oral skuamöz hücreli karsinomaya neden olan tetikleyici hastalığın, OLP ya da OLKR'den hangisinin olduğu konusunda süregelen tartışmalar vardır. Dahası, günümüzde halen kayda değer sayıda OLKR tanılı hasta, altta yatan spesifik etiyolojiler araştırılmadan OLP olarak kabul edilmekte ve tedavi görmektedir. Dental restoratif materyaller OLKR'ın en önemli tetikleyicileri arasındadır. Biz de burada, dental restoratif materyal ilişkili OLKR tanısı koyduğumuz ve bize başvurmadan önce OLP'nin neden olduğu oral mukozanın iyi diferansiye malign oral skuamöz hücreli karsinoma tanısıyla marjinal mandibulektomi ve boyun diseksiyonu uygulanan bir olguyu sunmak istiyoruz. Biz, her OLP ve OLKR olgusunda olası etiyolojik faktörlerin aydınlatılması gerektiği kanaatindeyiz, çünkü yapılacak bir bazal yama testi hastalığın klinik seyrini tamamıyla değiştirebilir.

Anahtar kelimeler: oral liken planus, oral likenoid kontakt reaksiyonlar, oral skuamöz hücreli karsinom, dental restoratif materyaller, yama testi

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Introduction

Lichen planus is a common chronic inflammatory dermatosis affecting skin, mucous membranes, and nails [1]. Oral lichen planus (OLP), which is one of the most common diseases of the oral mucosa, generally occurs in middle-aged women [2, 3]. Oral lichenoid contact reactions (OLCRs), also called as oral lichenoid lesions (OLLs), represent a spectrum of lesions, in which findings are indistinguishable from OLP both clinically and histologically. The main difference between these conditions is the presence of an identifiable initiating factor in OLCR [3-5]. Moreover, although both OLP and OLCR have been assumed to be potentially malignant, it has been suggested that the one which has the premalignant nature is OLCR [3, 5-7].

Here, we report a case with OLCR, who had undergone marginal mandibulectomy and neck dissection with a histopathology report of invasive well-differentiated oral squamous cell carcinoma (OSCC). She had been diagnosed and managed as OLP and several years after we have performed a patch test with dental screening series, which have confirmed the contact allergy to dental restorative materials.

Case report

A 56-year-old woman came to our outpatient clinic with several years' history of an intractable oral ulcer. Her medical history revealed that she had been diagnosed with erosive OLP several years ago and treated for many times without improvement. Two years ago, she was diagnosed as having invasive well differentiated OSCC associated with OLP and finally undergone marginal mandibulectomy and neck dissection. On the other hand, after the operation the oral ulcer recurred. There was no family and past history of any other diseases, medication. In addition, she did not have a history of smoking. On oral examination, we observed a round ulcer with clearly defined margins, measuring 1x1 cm in diameter on right posterior buccal region (Figure 1). We also observed dental fillings adjacent to the ulcer. The patient did not want any other invasive procedure including oral mucosa biopsy. The pathological specimens of the patient, which were readily available were reexamined and reevaluated in our institute. Examination of the specimens revealed that it was consistent with invasive OSCC (Figure 2). We questioned the diagnosis of OLP and regarded OLCR as the primary disease. Thus, we established a patch test with dental screening series. According to 48, 72 and 96 hour readings, positive patch test reactions to sodium tetrachloropalladate hydrate (+3), nickel sulfate hexahydrate (+3) and palladium chloride (+2) were observed. Based on history and clinical findings, we made a diagnosis of dental material-induced oral lichenoid contact reaction. The patient was referred to a dentist for removal of the dental fillings. We prescribed the patient oral acitretin 20 mg daily. After acitretin treatment and replacement of dental fillings with non-allergen containing products, a dramatic resolution of lesions was observed within months (Figure 3). The patient was taken under follow-up with oral acitretin 20 mg daily. Currently, the patient is disease-free at six months follow up. Written consent was taken from the patient.

Figure 1: Ulcer on right posterior buccal region

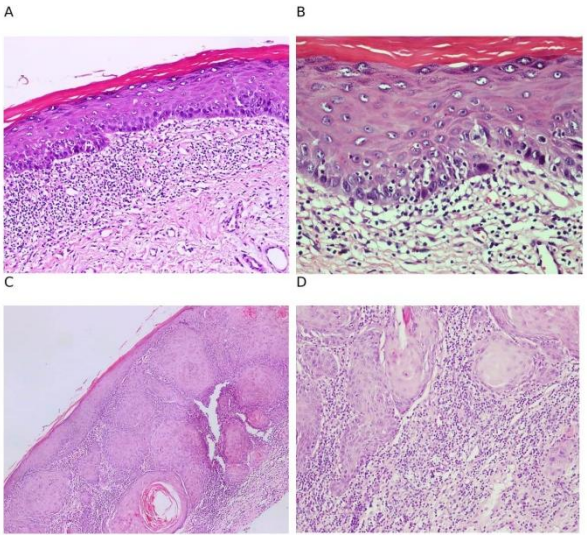

Figure 2: Lichenoid infiltration and basal cell atypia in oral mucosa (a and b). Invasive well-differentiated squamous cell carcinoma (c and d) with significant inflammatory reaction around tumor islands (d) (a and d: ×100, c: ×40, b: ×200)

Figure 3: Dramatic resolution of the ulcer after removal of dental material (3rd month of acitretin treatment)

Discussion

OLCR constitutes a group of lesions mediated by delayed-type hypersensitivity response. Dental restorative materials, particularly mercury-containing amalgam, are one of the most common causative factors for OLCR. Even several months to years after contact with mercury, a cell-mediated immune response is initiated in susceptible individuals. Although the exact pathophysiological mechanism of OLCR is still obscure, it has been suggested that patient's human leukocyte

antigen type is a fundamental determinant in shaping the delayed type immune response, which is carried out by both CD8+ cytotoxic and CD4+ helper T cells [3, 4, 6, 8].

The clinical presentation of OLCR is typical with lesions identical to lesions of OLP. White reticular papules and patches, white plaque-like appearance, erythematous erosions and ulcerations may be found both in OLP and OLCR. On the other hand, while OLP generally affects multiple sites in the oral cavity bilaterally and symmetrically, OLCR lesions, which are usually erosive in nature, tend to be unilateral and localized to the site of contact with dental material [3-5, 8]. Although there are several reports in the literature describing malignant potential of OLP, it has been suggested that only OLCR, but not OLP, has the malignant potential and if an OLP like lesion is associated with malignancy, it should not be termed as OLP, as it is indeed OLLs, which includes OLCR [6, 7, 9-13]. Accordingly, some authors use the term OLL, when the lesion has an attributable causative factor and a malignancy potential [5, 6].

Patch test is utmost important in the diagnosis of OLCR. A lichenoid lesion with a topographical relationship with dental restorative materials implies a diagnosis of OLCR and a patch test with dental screening series ascertains contact allergy to amalgam-related allergens. Although the patch test has disadvantages such as a relatively long period required for testing and the risk of sensitization, in the setting of a unilateral recalcitrant lesion, which has a typical topographic association with dental restorations, patch testing is a must to be considered [3, 4, 8]. In patients with positive results, replacement of dental restorations induces significant improvement in lesions [3, 4, 8, 14, 15].

Our case represents an exceptional case of malignant transformation of dental material-induced OLCR. She had been diagnosed and managed as treatment resistant OLP for several years without administration of a prerequisite, which was a basic patch testing with dental screening series in this particular instance. The fact that she had undergone marginal mandibulectomy and neck dissection was another drawback. In addition, patch test results were also remarkable in our patient. It is known that the most common culprit allergen in OLCR is mercury [4, 8, 15-17]. However, our patient did not have a positive reaction to mercury, instead, a strong positive reaction was observed to palladium chloride, and extreme reactions were elicited by sodium tetrachloropalladate hydrate and nickel sulfate hexahydrate, which are other dental allergens. We highlight the importance of patch testing, which is indeed practical and when outcomes of the patients are taken into account has inestimable results. On the other hand, we recognize the truth that malignancy is a multifactorial process. We can't assume that the single causative factor in our patient was OLCR. We suggest that OLCR is the triggering component in the tumorigenesis. Case reports like ours would contribute to a better understanding of the importance of the patch test and consequences of dental materials induced contact reactions.

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Unilateral ovarian leiomyoma in a 14-year-old adolescent: A rare case report

14 yaşında bir adölesanda unilateral ovaryen leiomyom: Nadir bir olgu sunumu

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Abstract

Leiomyomas are benign mesenchymal tumors mostly seen in the uterus. Uterine leiomyomas are one of the most common reasons of pelvic masses seen in women whereas ovarian leiomyomas are so rare that among all benign ovarian tumors, it accounts only 0.5-1%. It is mostly seen between ages of 20 to 65 years which premenopausal women consist almost 85% of them.

In this case, we aimed to present a 14-year-old girl who was admitted to our clinic with a six months history of bilateral lower quadrant abdominal pain. In ultrasonographic evaluation, there was a solid mass with uterine echogenity extending from the posterior side of the uterus towards to the right adnexial area with diameters of 6 cm x 5.5 cm. The origin of the tumor could not be evaluated with ultrasonography and magnetic resonance imaging. Therefore, diagnostic laparoscopy with an intention to excise was performed. The tumor arising from the left ovary was removed with laparotomy and the final pathology was compatible with ovarian leiomyoma.

When we checked the literature our case is one of the youngest of all reported cases that was 14 years old and with unilateral feature differently from the most of the other published cases under age of 20.

Keywords: Adolescent, Ovarian leiomyoma, Pelvic pain, Unilateral

Öz

Leiomyomlar sıklıkla uterusta rastlanan benin mezenkimal tümörlerdir. Uterin leiomyomlar kadınlarda görülen pelvik kitlelerin en sık nedenlerinden olsa da, over kaynaklı leiomyomlar oldukça nadir görülmekle birlikte bütün over kaynaklı benin tümörlerin yalnızca %0,5 ila %1'ini oluşturmaktadır. Genellikle 20-65 yaş grubunda görülmekte olup, %85'ini premenopozal dönemdeki kadınlar oluşturmaktadır.

Bu olguda kliniğimize 6 aydır devam eden bilateral alt kadran karın ağrısı nedeniyle başvuran 14 yaşındaki bir kız çocuğunu sunduk. Ultrasonografik görüntülemede uterus arka duvar komşuluğundan sağ adneksiyal bölgeye uzanım gösteren, uterin ekojenitesi olan solid görünümde 6x5,5 cm boyutlarında bir kitle izlendi. Kitlenin kaynağının ultrason ve magnetik rezonans görüntüleme ile net belirlenememesi üzerine tanısal laparoskopi uygulandı. Sol over kaynaklı kitle laparotomi ile çıkarılıp patolojiye gönderildiğinde patoloji sonucu ovaryen leiomyom ile uyumlu çıktı.

Bildirilen vakalar içinde 14 yaşında olarak en genç vakalardan biri olma özelliği yanı sıra 20 yaş altı olup, genelde rastlanandan farklı olarak unilateral karakter taşıması ile farklılık göstermektedir.

Anahtar kelimeler: Adölesan, Ovaryen leiomyom, Pelvik ağrı, Unilateral

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Introduction

Ovarian leiomyomas are seen so rare that among all benign ovarian tumors, it accounts only 0.5-1 % [1]. They are mostly unilateral, small and asymptomatic tumors and seen between ages of 20 to 65 years in which premenopausal women consist 85% of them. The youngest age reported being 3 years, only 7 cases were reported under the age of 20 [2,3]. Ovarian leiomyomas are mostly asymptomatic and are detected accidentally during physical examination, imaging or operation for other pathologies [1]. Since ovarian leiomyomas are rare and have gross and histological similarities with other spindle cell tumors like thecoma/fibroma, sometimes the diagnosis could be difficult [4]. When compared with older patients, pediatric / adolescent patients mostly present with bilateral disease and uterine leiomyomas do not usually co-exist [5]. In contrast to older patients, ovary-preserving surgery is also a crucial issue in adolescent patients [6]. In this case, we aimed to present a unilateral ovarian leiomyoma in a 14-year-old girl adolescent patient.

Case report

A 14-year-old girl with a body mass index of 27 kg/m2 was admitted to our clinic with a 6 months history of lower quadrant abdominal pain which especially increases during menstrual periods. She has regular menses and constipation from time to time. She had no abdominal guarding and rebound tenderness on her abdominal examination. The patient had a fatty waist and no abdominal mass was felt with palpation at the supine position. Rectal examination at lithotomy position was performed and a solid and fixed mass at the pouch of Douglas was palpated. Complete blood count and laboratory parameters were normal. Serum tumor markers i.e. CA-125 and CA19-9 were within the normal reference range and β-hCG was negative.

In pelvic ultrasonography, the uterus and both ovaries were found to be normal in size. There was a solid mass with uterine echogenity extending from the posterior side of the uterus towards to the right adnexial area with diameters of 6cm x 5.5 cm. Magnetic resonance imaging (MRI) scan with contrast was done with an initial diagnosis of pedunculated subserous leiomyoma or adnexial mass. MRI showed a 6.5x5.5 cm well-circumscribed mass at the right adnexial area with unknown origin that exhibited iso-hyper intense on T1-weighted imaging, hyper-intense and mostly heterogeneous signal intensity on T2-weighted imaging and there was no intensity loss when evaluated with fat-suppression. In dynamic contrast evaluation, post-contrast MRI showed irregular peripheral contrasted tumoral lesion. The lesion had areas containing fat density and in the central part, fluid density was detected. MRI could not differentiate the origin of the tumor as well and it was reported that the mass had an echogenity of a leiomyoma but could as well be a teratoma (Figure 1).

Diagnostic laparoscopy was performed. When inspected, the pedunculated mass was located at the right side of the pouch of Douglas arising from the left ovary showing band like adhesions to both the left ovary and posteriorly to the pouch of Douglas. Due to the solid mass showing adhesions to the neighboring structures, laparoscopic surgery was converted to laparotomy to avoid any potential risks. A lower midline incision was made and peritoneal washing sample was collected. The adhesions were separated by sharp and blunt dissection. In inspection, the uterus was normal in size and both the Fallopian tubes and the ovaries were normal. There was a solid mass with a diameter of 7 cm attached to the left ovary with a 3 cm long and 1 cm thick peduncule (Figure 2). The mass was grabbed, cut and tied from its peduncule and examined via frozen pathological analysis. Due to the benign pathological features of the mass, the operation was ended with abdominal closure. During the postoperative period, there was no complication and the patient was discharged uneventfully.

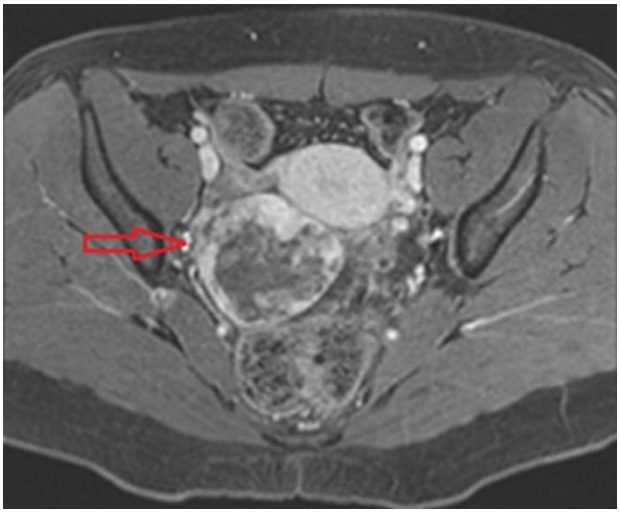

Figure 1: Pre-operative MRI showing the mass located at the right adnexial area (red arrow).

Figure 2: Peroperative view of the ovarian mass.

Pathology

The specimen was 7x6x5 cm in size with lobular contour and the cut surface was grey-white colored, whorled macroscopically. In histopathologic examination, a mesenchymal tumor was observed with irregular bundles and whorling of spindle shaped cells with no atypia or mitotic activity. Immunohistochemically, the tumor cells were strongly positive for desmin and smooth muscle actin and negative for calretinin and inhibin immunoexpression (Figure 3). Final pathology was compatible with leiomyoma.

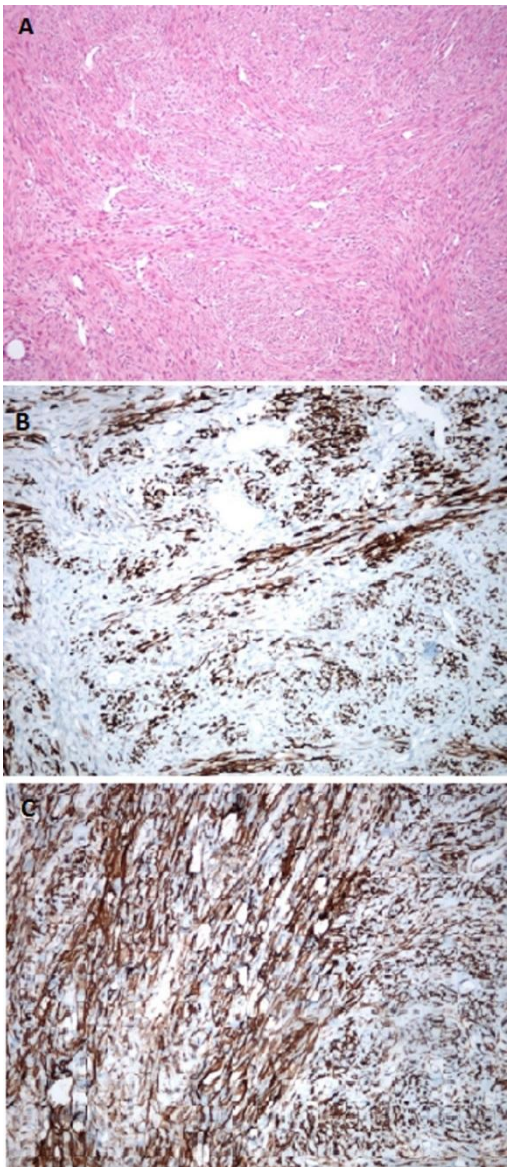

Figure 3: (a) Histopathological interlacing bundles of spindle shaped cells with no atypia nor mitotic activity, fascicles of smooth muscle cells (HEx100), (b) desmin immunoexpression in neoplastic cells (x200), (c) marked immunoreactivity for smooth muscle actin (x200).

Discussion

Ovarian leiomyomas are benign tumors which are seen so rare that it consists about 0.5-1% of all ovarian neoplasms [1].The strongest theory about their origin is smooth muscle cells in the vessels of ovarian hilar body whereas it might also arise from smooth muscle cells or multipotential cells in the ovarian stroma, cells in the ovarian ligament, cortical smooth muscle metaplasia or undifferentiated germ cells [6].

About 80 cases have been reported in the literature worldwide till 2012 mostly being premenopausal [7]. The youngest age reported being 3 years, only 7 cases were reported under the age of 20 [2,3]. Our case is one of the youngest among all reported cases as being 14 years old.

Most of these tumors do not cause any complaints so they can be detected during a routine physical examination or incidentally during surgery or autopsy [8]. Clinical presentations for symptomatic cases can be abdominal pain varying from mild to severe, palpable mass, acute symptoms due to torsion or necrosis, hydroureteronephrosis due to the great-size of the tumors [4]. Our patient was admitted to our clinic with a six months history of bilateral lower quadrant abdominal pain which especially increases during menstrual periods.

Usually there is an associated uterine leiomyoma in older patients whereas mostly no co-existing uterine leiomyoma is seen in pediatric/adolescent group [5]. Ultrasound visualizes ovarian leiomyomas as isoechoic with the myometrium hence making it difficult to distinguish them from uterine leiomyomas and other solid tumors. In diagnosis of indistinct pelvic masses, MRI can be useful [9]. In our case, the uterus was normal but MRI also could not distinguish the mass well enough to state a clear diagnosis. Also the mass was reported as located at the right side of the uterus even though it was originated from the left ovary. It was due to pedunculated feature of the tumor. Other smooth muscle processes that can involve the ovary include intravenous leiomyomatosis, parasitic uterine leiomyomas, leiomyomatosis peritonealis disseminata and ovarian smooth muscle metaplasia [5].

Ovarian leiomyomas mostly show a unilateral character in overall whereas in most of the cases in literature, patients at pediatric/young adult group have bilateral ovarian leiomyomas [5]. Our case showed a unilateral feature with only left ovarian leiomyoma.

Hysterectomy and bilateral salpingo-oophorectomy can be the ideal surgical approach for middle-aged or older women whereas ovarian sparing techniques can be chosen for younger patients [6]. In most of the case reports in literature, laparotomy was performed for the removal of the mass, whereas in some cases laparoscopic approach was successfully performed [5,6]. In our case, because of the dense adhesions of the tumor to the surrounding tissues and need of ovary preservation due to patient's young age, we performed laparotomy after diagnostic laparoscopy. In our case, the pedunculated feature of the mass helped us to preserve the ovarian tissues.

In conclusion, a primary unilateral ovarian leiomyoma is a rare condition especially in adolescents and can be difficult to diagnose. Sometimes the imaging techniques like ultrasound and MRI can be inadequate to differentiate the origin of the tumor. We think that with or without any symptoms, immediate evaluation and removal of the solid masses with an unknown origin should be made when seen especially in young patients in order to avoid the risk of potential malignancy and ovarian torsion that makes preservation of the ovaries impossible when lately diagnosed.

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