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The Effect of Vulvar Lichen Sclerosus on Urogynecological Functions in Postmenopausal Women

Postmenopozal Kadınlarda Vulvar Liken Sklerozun Ürojinekolojik Fonksiyonlara Etkisi

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ABSTRACT

Aim: To examine the relationship between urinary symptoms and vulvar lichen sclerosus.

Materials and Methods: This cross-sectional study was performed in our clinic between January 2019 and March 2020. One hundred and ten patients were included in the study. They were all postmenopausal women and were divided into two groups: the study group comprised of women diagnosed with lichen sclerosus (n=59), and the control group comprised of postmenopausal women who sought a routine gynecological examination (n=51). In the study group, all patients were dermatopathologically diagnosed with biopsy. Both groups completed two validated questionnaires: the Urogenital Distress Inventory (UDI-6) and the Incontinence Impact Questionnaire (IIQ-7). The total scores from questionnaires and sub-groups of UDI-6 and IIQ-7 were also analyzed in detail.

Results: There were no differences in demographic features or in time from the onset of menopause for both groups. Total UDI-6 scores were significantly higher in the study group ($p<0.05$). Scores in the sections of the UDI-6 that included irritative symptoms and urinary incontinence were also higher in the study group ($p<0.01$). Total IIQ-7 scores were also significantly higher in the study group ($p<0.05$). The IIQ-7 sub-scores regarding physical activity and travel were significantly higher in the study group ($p<0.01$).

Conclusion: To the best of our knowledge, this is the first study in the literature reporting the association between vulvar lichen sclerosus and urinary incontinence symptoms through validated objective tests. We demonstrated that both UDI-6 and IIQ-7 scores were significantly higher in patients with vulvar lichen sclerosus.

Keywords: Postmenopause, urogynecology, vulvar lichen sclerosus, UDI-6, IIQ-7

ÖZ

Amaç: Üriner semptomlar ile vulvar liken skleroz arasındaki ilişkiyi incelemektir.

Gereç ve Yöntem: Bu kesitsel çalışma Ocak 2019 ile Mart 2020 tarihleri arasında kliniğimizde yapılmıştır. Çalışmaya 110 hasta dahil edildi. Hepsi postmenopozal kadınlardan oluşan hastalar iki gruba ayrıldı. Çalışma grubu liken skleroz tanısı alan kadınlardan (n=59) ve kontrol grubu rutin jinekolojik muayene isteyen menopoz sonrası kadınlardan (n=51) oluşuyordu. Çalışma grubundaki tüm hastalara dermatopatolojik olarak biyopsi ile tanı konuldu. Her iki grup da valide edilmiş Ürogenital Sıkıntı Envanteri (UDI-6) ve İnkontinans Etki Anketi (IIQ-7) anketlerini doldurdu. UDI-6 ve IIQ-7'nin anket ve alt gruplarından alınan toplam puanlar analiz edildi.

Bulgular: Her iki grup için demografik özelliklerde veya menopoz başlangıcından bu yana geçen sürede fark yoktu. Toplam UDI-6 puanları çalışma grubunda anlamlı olarak daha yüksekti ($p<0,05$). Ayrıca, UDI-6'nın irritatif semptomlar ve üriner inkontinans bölümlerinin puanları da çalışma grubunda daha yüksekti ($p<0,01$). Toplam IIQ-7 puanları da çalışma grubunda anlamlı olarak daha yüksek bulundu ($p<0,05$). Fiziksel aktivite ve seyahat ile ilgili IIQ-7 alt puanları çalışma grubunda anlamlı olarak daha yüksekti ($p<0,01$).

Sonuç: Bildiğimiz kadarıyla çalışmamız, vulvar liken skleroz ile üriner inkontinans semptomları arasındaki ilişkiyi valide edilmiş objektif testler aracılığıyla bildiren literatürdeki ilk çalışmadır. Vulvar liken sklerozlu hastalarda hem UDI-6 hem de IIQ-7 skorlarının anlamlı derecede yüksek olduğu bulunmuştur.

Anahtar Kelimeler: Postmenopoz, ürojinekoloji, vulvar liken sklerozus, UDI-6, IIQ-7

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INTRODUCTION

Lichen sclerosus is a chronic, progressive dermatologic condition characterized by inflammation, thinning of the epithelium, and a variety of dermal changes, accompanied by symptoms of pruritus, pain, dyspareunia, and dysuria. This condition occurs in the anogenital region (85 to 98%). It can also be observed on any skin surface[1]. The majority of cases in women are the vulvar type of lichen sclerosus, which can occur at any age, but the most significant two peaks of onset are during the prepubertal and postmenopausal periods. Additionally, lichen sclerosus has been reported to occur in up to one in 30 elderly women and one in 59 women in a general gynecology practice[2]. The etiopathology of lichen sclerosus remains unknown. It is histopathologically defined as infiltration of T lymphocytes and hyalinization of the upper dermis[3].

Urinary incontinence is a highly prevalent disease, especially among postmenopausal women, and it causes social problems, psychological stress, and decreased quality of life. In the literature, studies on postmenopausal women with urinary incontinence and other medical problems are increasing. However, studies regarding the association between vulvar lichen sclerosus and urinary incontinence are limited in the literature. A few studies have suggested that vulvar lichen sclerosus can cause pelvic floor problems in addition to vulvar symptoms, causing bladder or bowel problems[4]. In 2018, Christmann-Schmid et al.[5] found that lower urinary tract symptoms are four times more frequent in women with vulvar lichen sclerosus than in those without. Urinary incontinence or overactive bladder syndrome is reported in patients with vulvar lichen sclerosus, but the specific clinical features of urinary incontinence and its effect on the quality of life have not been analyzed in detail.

This study aimed to assess the severity of incontinence and its effects on the quality of life in postmenopausal patients with vulvar lichen sclerosus, via validated questionnaires, namely, the Urogenital Distress Inventory (UDI-6) and Incontinence Impact Questionnaire (IIQ-7) tests.

MATERIALS AND METHODS

This cross-sectional study was conducted to examine the relationship between urinary symptoms and vulvar lichen sclerosus. Ethical approval was obtained from the Bakırköy Sadi Konuk Training and Research Hospital, Institutional Review Board and Local Ethics Committee (protocol number: 2019-07-11, date: 04.04.2019), and the study was conducted on the patients who came to the outpatient vulva clinic of our tertiary referral hospital, between January 2019 and March 2020.

Patients were divided into two groups: a study group comprising of patients who were diagnosed with vulvar lichen sclerosus (n=59) and a control group (n=51). All the cases of vulvar lichen sclerosus were dermatopathologically diagnosed via biopsy. Two dermatopathologic diagnostic criteria were determined for vulvar lichen sclerosus: the first criterion was the appearance of white sclerotic plaques with well-circumscribed atrophy; the second was the formation of histopathological findings including hyperkeratosis, epidermal atrophy, liquefaction degeneration, intradermal edema, lymphocytic infiltration, and hyaline homogenization of collagen fibers. The disease was confirmed as vulvar lichen sclerosus if it satisfies both criteria. However, the following diseases should be excluded: local scleroderma, chronic eczema, chronic dermatitis, vitiligo vulgaris, and lichen planus[6]. Therefore, all the biopsies were reviewed by a pathologist to confirm the diagnosis as containing these diagnostic criteria for our study.

The exclusion criteria were as follows: history or current use of hormone therapy locally, systemically, or both; chemotherapy or pelvic radiotherapy for cancer; thyroid disease; Cushing's disease; premature menopause occurring before the age of 40 years or surgically induced menopause. The exclusion criteria also included coexistent or present local scleroderma, chronic eczema, chronic dermatitis, vitiligo vulgaris, psoriasis, and lichen planus. As a reason, patients with lichen sclerosus and other vulvar dermatopathologies, which are pathologically similar, especially women with lichen planus, are prone to receiving an incorrect diagnosis of lichen sclerosus as well. Therefore, to maintain the integrity of our vulvar lichen sclerosus cohort, we chose to exclude women with other dermal diseases. In addition to dermal diseases, patients who were diagnosed with atrophic vaginitis, which may be associated with the urinary symptom scale, were not specifically included in the study. Additionally, to distinguish predisposing conditions for the development of urinary symptoms, women with neurological diseases (such as multiple sclerosis), diabetes, arterial hypertension, symptomatic pelvic organ prolapse, or previous operative vaginal deliveries and uterine myomas were excluded.

In this study, postmenopausal status was defined as having at least 12 consecutive months of amenorrhea with no other medical reason, and a level of follicle-stimulating hormone equal to or greater than 40 mIU/mL. The control group subjects, all healthy postmenopausal women scheduled for routine annual exams, were offered participation in the study at the time of registration in the clinic. Gynecological examinations of the healthy postmenopausal control patients were performed and those without vulvar and urogynecological findings were included in the study. These postmenopausal women were referred to specialists at our vulva outpatient clinic, and the study was explained to each patient. Therefore, from a total of 103 initially enrolled patients with vulvar lichen sclerosus, 59

patients were eligible for the final analyses during the study period, and 51 control group patients meeting the inclusion criteria were recruited to the study. Thus, after applying the inclusion and exclusion criteria, a total of 110 women were selected for inclusion in the study. Written informed consent was also obtained from each study patient.

The basic characteristics of the study population, such as age, gravidity, parity, and time period from the last menses, were recorded. The weight circumference and height measurements were obtained from the patients wearing light clothing and no shoes. The body mass index (BMI) was calculated as the ratio of weight (kg) to the square of height (m^2). Baseline demographic information of all study participants, such as age, gravidity, and parity, was analyzed.

The patients completed two validated questionnaires: the UDI-6, which screens for stress, irritative, and obstructive symptoms, and the IIQ-7, which reveals how these symptoms affect quality of life in terms of physical activity, travel, social relationships, and emotional health[7]. These are self-filled questionnaires that assess the degree of discomfort associated with urinary symptoms and assess their severity. These questionnaires were obtained after the diagnosis of vulvar lichen sclerosus and before its treatment. The total scores from the questionnaires and sub-groups of UDI-6 and IIQ-7 were also analyzed in detail.

Statistical Analysis

Data analysis was performed by using Statistical Package for the Social Sciences (SPSS) (version 20.0; SPSS, Inc., Chicago, IL, USA). Due to the cross-sectional study design and lack of pre-existing relevant validated objective test knowledge, the study by Christmann-Schmid et al.[5] was determined to be the most relevant study on the association between urinary tract symptoms and vulvar lichen sclerosus in the literature. A power analysis was performed to calculate the minimum sample size required for two independent study groups (alpha error=0.05 and 1-beta=0.95) by using the related study data, and at least 51 patients were required for each study group. All data were presented as the means and standard deviations. A one-sample Kolmogorov-Smirnov test was performed to analyze the distribution of the study variables. The Mann-Whitney U test was used to compare differences between nonparametric values. For all calculations, a p value of <0.05 was considered statistically significant.

RESULTS

Fifty-nine women with vulvar lichen sclerosus were included in our investigation. Demographic characteristics of these populations are shown in Table 1. There were no differences in mean age, gravidity, parity, BMI, or time from the onset of menopause between patients with lichen sclerosus and control patients.

Total UDI-6 scores were significantly higher in women with vulvar lichen sclerosus (p<0.05) (Table 2). The sections of the UDI-6 scores that included irritative symptoms and urinary incontinence were also higher in the lichen sclerosus group (p<0.01) (Table 2). Although the UDI-6 score of obstructive symptoms was higher in the vulvar lichen sclerosus group,

Table 1. Characteristics of patients with lichen sclerosus and control groups

	Lichen sclerosus (-) (n=51)	Lichen sclerosus (+) (n=59)	p value
	Mean±SD	Mean±SD	
Age (years)	57.53±6.66	60.19±10.62	0.13
Time since menopause onset (months)	10.18±5.31	10.97±7.31	0.91
Gravidity	3.37±3.54	3.51±3.21	0.24
Parity	2.55±3.51	3.01±1.95	0.21
BMI (kg/m^2)	28.86±3.53	29±4.29	0.93

Results are given in means±standard deviation. Student's t-test and Mann-Whitney U test were used for statistical analysis. A p value of <0.05 was considered significant.

BMI: Body mass index, SD: Standard deviation

Table 2. Symptom-related scores of the UDI-6 questionnaire in patients with lichen sclerosus and in controls

	Lichen sclerosus (-)	Lichen sclerosus (+)	p value
	Mean±SD	Mean±SD	
Irritative symptoms	1.37±1.86	3.02±2.36	**<0.01**
Urinary incontinence	0.71±1.28	1.59±2.02	**0.01**
Obstructive symptoms	0.37±0.77	0.59±1.49	0.97
UDI-6 total	2.45±3.44	5.21±5.18	**0.02**

Results are given in means±standard deviation. Student's t-test and Mann-Whitney U test were used for statistical analysis. A p value of <0.05 was considered significant for all bold values.

UDI-6: Urogenital Distress Inventory

Table 3. Symptom-related scores of the IIQ-7 questionnaire in patients with lichen sclerosus and in controls

	Lichen sclerosus (-)	Lichen sclerosus (+)	p value
	Mean±SD	Mean±SD	
Physical activity	0.76±1.35	2.08±2.33	**0.002**
Travel	0.41±1.01	1±1.52	**0.01**
Social relationship	0.24±0.58	0.39±0.89	0.56
Emotional health	0.06±0.23	0.22±0.91	0.56
IIQ-7 Total	1.47±2.82	3.69±4.93	**0.07**

Results are given in means±standard deviation. A p value of <0.05 was considered significant for all bold values.

IIQ-7: Incontinence Impact Questionnaire, SD: Standard deviation

there were no statistically significant differences between the study groups (p>0.05) (Table 2).

The IIQ-7 scores include physical activity, travel, social relationships, and emotional health questions. The total IIQ-7 scores were significantly higher in women with lichen sclerosus (Table 3). The IIQ-7 scores regarding physical activity and travel were significantly higher in the disease group (p<0.01) (Table 3). No statistically significant difference was seen in terms of the scores for social relationships and emotional health between the study groups (p>0.05) (Table 3).

DISCUSSION

To the best of our knowledge, this is the first study in the literature reporting the association between vulvar lichen sclerosus and urinary incontinence symptoms with validated objective tests. We demonstrated that both UDI-6 and IIQ-7 scores were significantly higher in vulvar lichen sclerosus patients.

When the scores were examined in more detail, the total UDI-6 scores for irritative, urinary incontinence, and obstructive symptoms were found to be higher in the vulvar lichen sclerosus group, and only the obstructive symptoms score was not significantly different between the study groups. Interestingly, the score for obstructive symptoms was lower than the scores for irritative symptoms and urinary incontinence. It is known that urinary incontinence symptoms can lead to irritative vulvar findings. Therefore, we think that urinary incontinence in vulvar lichen sclerosus patients may also affect the significant irritative symptoms score, which was determined in our study. There is a scarcity of data on the obstructive symptoms of vulvar lichen sclerosus due to erosions, labial fusions, and introital stenosis, all of which have a significant impact on the life of a woman[8,9]. Although it is thought that erosions, labial fusion, and stenosis, which may occur in vulvar lichen sclerosus patients, may increase obstructive symptoms, no significant difference was found in terms of the obstructive symptoms score between the groups in our study. Therefore, we may speculate that the pathological tissue changes of vulvar lichen sclerosus may explain the increasing irritative and urinary symptoms; however, more detailed studies should be performed in terms of the obstructive symptoms scale. Additionally, it is a known fact that the urinary system is negatively affected in the postmenopausal period. Our study significantly showed that patients with postmenopausal vulvar lichen sclerosus were predisposed to urinary incontinence. The coincidence of the vulvar lichen sclerosus natural age peak and the postmenopausal period, which particularly affects the urinary system, suggests the importance of the relationship between vulvar lichen sclerosus and the urinary symptoms.

The majority of data on vulvar lichen sclerosus focus on vulvar pruritus and irritation; however, this pathologic situation may affect urinary symptoms, and urologic symptoms may cause problems in physical activity, and in social and emotional health. The relationship of urinary symptoms, sexual dysfunction, and other social and emotional problems with vulvar lichen sclerosus is poorly understood, and only limited data are available regarding these symptoms in patients who have lichen sclerosus. Pinelli et al.[10] reported that sexual impairment could be a common consequence of lichen sclerosus, but further prospective, randomized studies are needed to delineate the management of this disease in postmenopausal women. Additionally, Burrows et al.[11] demonstrated the severity of emotional and sexual problems along with vulvar lichen sclerosus. When we analyzed the IIQ-7 scores, we observed that the physical activity and travel scores were significantly higher in women with lichen sclerosus. Interestingly, we found no statistically significant difference in the social relationship and emotional health scores between the study groups. However, Nieuwenhof et al.[12] reported that there were statistically more emotional issues than other problems in patients with vulvar lichen sclerosus. It is known that pelvic tissues are supported by an interconnected network that includes muscles, ligaments, endopelvic fascias, and skin. The structures that form this pelvic floor are in close anatomical and physiological association with each other. Unfortunately, the effect of vulvar lichen sclerosus on the pelvic floor is not fully understood. A study has found that vulvar lichen sclerosus can cause problems in organs near the pelvic floor, such as bowel and bladder[4]. Although these pathological changes may explain the urinary problems observed in vulvar lichen sclerosus patients, the effect on social and emotional problems is not clear. Therefore, social and emotional health issues linked to vulvar lichen sclerosus and the sociopsychological aspects of vulvar lichen sclerosus must be investigated by further studies.

Study Limitations

There are several limitations of our study. We had no access to the educational status of patients as a demographic variable. Additionally, mode of delivery type and history of episiotomy, which might affect urinary symptoms, were not included in the study analysis. The history of vaginal, vulvar, or urethral laceration during labor could not be analyzed because we could not get clear information from the anamneses of the postmenopausal patient group. Validated urogynecological tests such as UDI-6 and IIQ-7, which are widely used in studies, can create biases on total scores by further increasing irritative sub-scale scores in the progression of vulvar lichen sclerosus, which can lead to irritative symptoms by the very nature of the lichen sclerosus. Another major weakness of this study is the possibility of the coexistence of other vulvar pathologies, such as lichen planus or lichen chronicus, with

a proven lichen sclerosus diagnosis[13,14]. Future studies will be designed with a control group of different postmenopausal cohorts, on issues that might affect the urinary system and that could be analyzed, such as vulvar lichen planus, vulvar candidiasis, or atrophic vaginitis. Despite these limitations, our study highlights the need for increased attention to urinary symptoms when managing patients with vulvar lichen sclerosus.

CONCLUSION

In conclusion, our findings suggest that women with vulvar lichen sclerosus have more disturbed urinary symptoms than healthy women, and thorough management of vulvar lichen sclerosus requires a greater attention to these urologic symptoms. Additionally, the change in urogynecological problems after the routine treatment of vulvar lichen sclerosus must be investigated by further laboratory and clinical studies.

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Ethics

Ethics Committee Approval: The study were approved by the Bakırköy Sadi Konuk Training and Research Hospital, Institutional Review Board and Local Ethics Committee (protocol number: 2019-07-11, date: 04.04.2019).

Informed Consent: Consent form was filled out by all participants.

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Authorship Contributions

Surgical and Medical Practices: S.K., Ş.Y., L.Y., Concept: S.K., Design: S.K., L.Y., Data Collection or Processing: S.K., Ş.Y., Analysis or Interpretation: S.K., L.Y., Literature Search: S.K., Ş.Y., Writing: S.K., Ş.Y.

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