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Does Extracorporeal Shock Wave Therapy Used in the Treatment of Chronic Prostatitis and Erectile Dysfunction Help Premature Ejaculation?

Kronik Prostatit ve Erektil Disfonksiyon Tedavisinde Uygulanan Ekstrakorporeal Şok Dalga Tedavisi Prematür Ejakülasyona Fayda Sağlar mı?

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ABSTRACT

Background: We investigated the effect of extracorporeal shock wave therapy (ESWT) on premature ejaculation (PE).

Materials and Methods: This patient-based prospective survey study. A total of 60 male patients aged 18 years and older who underwent perineal ESWT for chronic prostatitis (CP) and penile ESWT for erectile dysfunction (ED) were included in the study. The ages of the patients were recorded. The patients underwent ESWT for a total of 12 sessions (2 sessions per week for 6 weeks) without any anesthesia method. Intravaginal ejaculatory latency time (IELT), International Erectile Function Form, and PE Diagnostic Tool (PEDT) were evaluated before and 3 months after ESWT. PE symptoms and sexual function values of the patients were analyzed separately for the CP and ED groups before and 3 months after ESWT, and the groups were compared.

Results: The average age of the CP group was 33.17±8.32 years and the ED group was 33.30±7.03 years. In the CP group, there was a significant improvement in erectile function, sexual and general satisfaction, and IELT and PEDT scores after ESWT treatment; In the ED group, there was a significant improvement in erectile function, orgasmic function, sexual desire, and sexual and general satisfaction scores after treatment. When the groups were compared, the treatment was found to be more effective in terms of sexual desire and orgasmic function in the penile ESWT group, whereas it was more effective in terms of IELT and PEDT scores in the perineal ESWT group.

Conclusion: Our study showed that; ESWT may be effective for the treatment of PE. It has been determined that this effect is more evident in perineal applications. Prospective, randomized, multicenter and high-participation studies are therefore needed.

Keywords: Chronic prostatitis, erectile dysfunction, extracorporeal shock wave therapy, premature ejaculation

ÖZ

Amaç: Preamatür ejakülasyon (PE) tedavisinde ekstrakorporeal şok dalga tedavisinin (ESWT) etkisini araştırdık.

Gereç ve Yöntemler: Hasta bazlı prospektif bir anket çalışmasıdır. Kronik prostatit (KP), için perineal ve ereksiyon bozukluğu (ED) için penil ESWT uygulanan 18 yaş ve üzeri 30'ardan total 60 erkek hasta çalışmaya dahil edilmiştir. Hastaların yaşları kaydedilmiştir. Hastalara herhangi bir anestezi yöntemi uygulanmadan haftada 2 seans olmak üzere 6 hafta, toplam 12 seans ESWT uygulandı. ESWT öncesi ve 3 ay sonrasında olmak üzere intravajinal ejakülatuvar latens süresi (IELT), Uluslararası Erektil İşlev Formu ve Prematür Ejakülasyon Değerlendirme Anketi (PEDT) ile değerlendirilmiştir. Hastaların ESWT öncesinde ve 3 ay sonrasında KP ve ED grupları için ayrı ayrı PE semptomları ve cinsel fonksiyon değerleri analiz edilmiş ve gruplar karşılaştırılmıştır.

Bulgular: KP grubunun yaş ortalaması 33,17±8,32 yıl ve ED grubunun ise 33,30±7,03 yıl olduğu tespit edilmiştir. KP grubunda ESWT tedavisi sonrası erektil fonksiyon, cinsel ve genel memnuniyet, IELT ve PEDT skorlarında anlamlı düzelme olurken; ED grubunda ise tedavi sonrası erektil fonksiyon, orgazmik işlev, cinsel istek, cinsel ve genel memnuniyet skorlarında anlamlı düzelme olmuştur. Gruplar karşılaştırıldığında penil ESWT grubunda cinsel istek ve orgazmik işlevde tedavi daha etkili iken, perineal ESWT grubunda ise IELT ve PEDT skorları açısından tedavi daha etkili saptanmıştır.

Sonuç: Çalışmamız gösterdi ki; ESWT PE tedavisinde etkili olabilir. Bu etki perineal uygulamalarda daha belirgindir. Prospektif, randomize, çok merkezli ve yüksek katılımlı çalışmalara ihtiyaç duyulmaktadır.

Anahtar Kelimeler: Kronik prostatit, erektil disfonksiyon, ekstrakorporeal şok dalgası tedavisi, erken boşalma

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Introduction

Premature ejaculation (PE) is a prevalent sexual dysfunction observed in approximately 30% of men (1). It was formally defined by the International Society for Sexual Medicine (ISSM) in 2014, and it is currently classified into two subtypes. Life-long PE (L-PE): This definition has three main elements: (a) ejaculation always or almost always occurs before or within a minute after vaginal penetration, (b) the inability to delay ejaculation, and (c) this condition causes frustration, sadness, mental distress, and sexual avoidance. Acquired PE (A-PE): A-PE is differentiated from lifelong PE by the onset of PE in individuals with previously normal ejaculatory performance and ejaculation occurring within approximately three minutes (2). However, although the definition accepted by ISSM is valid for penile-vaginal sexual activities, we have limited information on how to define PE in homosexual activities (3). Neurotransmitter pathologies in the central nervous system, genetic pathologies, erectile dysfunction (ED), prostate diseases, thyroid diseases, and psychological factors have been emphasized as factors generally associated with the etiology of PE (4). Antidepressants, topical anesthetics, and cognitive behavioral therapies are used in these therapies, but their effectiveness is limited (5).

Extracorporeal shock wave therapy (ESWT) was previously used as a treatment method for chronic wounds and musculoskeletal diseases, in which the common pathology was tissue hypoxia (6). ESWT contributed to neovascularization by creating mechanical tension in the tissue and exerted a therapeutic effect (7). In recent years, it has also been used for the treatment of ED, Peyronie's disease (PD), and chronic prostatitis (CP). In the pathophysiology of treatment efficacy, neovascularization, progenitor cell activation, penile tissue proliferation and differentiation, and cavernous nerve regeneration due to vascular endothelial growth factor and receptor upregulation have been shown for ED; inflammation due to neovascularization and increased blood flow and plaque lysis with macrophage activity have been shown for PD; and hyperstimulation of nociceptor, pain reduction, and perineal spasticity have been shown for CP (8-10). ESWT treatment has been shown to strengthen pelvic floor muscles and increase control over the muscles, and it has been reported that it may also benefit PE through this mechanism (11). Recent studies have shown significant improvements in PE symptoms, especially in those with perineal ESWT (12). In particular, the combination of dapoxetine and ESWT has been shown to increase treatment efficacy (13).

In our study, we examined patients who were also diagnosed with L-PE and received ESWT treatment for CP or ED to compare the improvement in PE symptoms. Perineal ESWT for CP may facilitate ejaculation control by strengthening the pelvic floor muscles. However, penile ESWT for ED may also contribute to the control of ejaculation via neovascularization and nerve regeneration. The present study aimed to determine the potential efficacy of ESWT for the treatment of PE using two different methods.

Materials and Methods

The study population consisted of 60 male patients, 30 with EDs and 30 with CPs aged 18 years and older. The patients were admitted to the Medicana International Ankara Hospital, Clinic of Urology in 2024 due to ED or CP and had a history of L-PE. As medical treatment, ED patients were treated with tadalafil for 8 weeks, whereas CP patients were treated with ciprofloxacin for 4 weeks and tamsulosin for 12 weeks. Patients underwent ESWT when they did not respond to medical treatment. Two cup tests were conducted on patients exhibiting CP symptoms. The exclusion criteria were as follows: (i) having a psychiatric illness (ii) the symptoms had been present for less than three months, (iii) a proven urinary tract infection, (iv) abnormal testosterone levels.

The patients were treated with the Medispect Bold ESWT device for 12 sessions for six weeks, (2 sessions per week) without any anesthesia. In each session, 500 shock waves (3000 shock waves in total) were applied to six points in the perineum for CP and three on both lateral sides of the cavernosal tissue proximal-distal line for ED. The energy setting was a 3-Hz frequency, and the maximum total energy flow density was 0.25 mJ/mm^2. The intravaginal ejaculatory latency time (IELT), International Index of Erectile Function (IIEF), and PE diagnostic tool (PEDT) were completed before and 3 months after treatment.

The IIEF is a standardized instrument designed to assess male sexual dysfunction in accordance with the guidelines established by the European Urological Association. The form comprises 15 questions that evaluate sexual function. The sexual function is scored according to the answers given (14). The validity of this form in Türkiye has been evaluated and approved by the researchers (14,15).

The PEDT is a 5-item instrument designed to facilitate the systematic application of the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition criteria for the diagnosis of PE (16). In the PEDT score evaluation, a score of ⩽8 is indicative of the absence of PE, a score of 9 or 10 suggests the possibility of PE, and a score of ⩾11 is indicative of the presence of PE. The definition of probable PE directs physicians to conduct further examinations to confirm the presence of PE. The PEDT is employed as a screening criterion for PE rather than a means of evaluating treatment

efficacy. The validated Turkish version of the PEDT, which comprises five questions, is a reliable instrument for use with patients, particularly given its positive correlation with IELT (17).

Statistical Analysis

In the analysis of the data, descriptive statistical measures (median, mean, and standard deviation) and skewness and kurtosis coefficients for the normal distribution of the measurements obtained from the measurement tool were employed. The independent samples t-test and dependent samples t-test were used to determine differences between groups. The data analysis was conducted using the SPSS Statistic (IBM Corp, 25 Version, Chicago, USA) package. The alpha level was set at 0.05 to assess statistical significance.

Ethical Approval

Ethics committee approval for the study was given by Niğde Ömer Halisdemir University Non-Interventional Clinical Research Ethics Committee (approval number: 2024/42, date: 01.07.2024). The study was conducted in accordance with the Declaration of Helsinki, and each participant was informed about the research at the beginning of the study, provided an informed consent form, and was then included in the study.

Results

The study group of the research consisted of 60 L-PE patients (CP 30 and ED 30) selected using purposive sampling. To measure the effect of ESWT, measurements were taken twice, before and 3 months after the treatment. The mean age of the CP group was 33.17±8.32 years, and the mean age of the ED group was 33.30±7.03 years, and they were statistically similar (t=0.07; p=0.947). No significant difference was observed between the groups in terms of average age.

Skewness and kurtosis coefficients were calculated to determine the normality of the measurements obtained from the scales used in this research. The findings are presented in Table 1. The skewness and kurtosis values of the measurements obtained from the scales examined within the scope of this research were within the range of ±3. Accordingly, it was determined that the measurements were close to a normal distribution, and parametric tests were used in the statistical analysis (Table 1).

In the context of this study, the initial objective was to present the findings related to the comparison of sexual function and PE parameters among patients classified according to their baseline scores. Upon examination

Table 1. Normality analysis of the measurements obtained from the scales

Chronic prostatitis				
	1st measurement		**2nd measurement**	
Variables	**Skewness**	**Kurtosis**	**Skewness**	**Kurtosis**
Erectyl function	-0.54	0.70	-0.33	0.21
Orgasmic function	-0.45	1.09	0.35	-0.17
Sexual desire	-0.09	1.35	-0.10	0.89
Sexual satisfaction	-0.45	-0.97	-1.08	2.36
General satisfaction	0.38	-0.91	-1.26	2.78
PEDT	0.26	-0.15	0.16	-0.24
IELT	0.22	1.02	0.11	-0.35
Erectyl dysfunction				
	1st measurement		**2nd measurement**	
Variables	**Skewness**	**Kurtosis**	**Skewness**	**Kurtosis**
Erectyl function	-0.14	-0.39	0.03	-1.19
Orgasmic function	-0.40	0.98	0.24	-0.25
Sexual desire	-0.76	0.63	0.50	0.03
Sexual satisfaction	-0.27	1.07	0.17	0.66
General satisfaction	-0.53	0.63	0.00	-0.12
PEDT	1.04	0.76	0.90	0.79
IELT	0.15	0.78	0.71	3.00

IELT: Intravaginal ejaculation latency time, PEDT: Premature ejaculation diagnostic tool

of Table 2, it becomes evident that there is a statistically significant difference in sexual function between the two groups prior to ESWT (p=0.000). Upon examination of the averages, the mean sexual function was higher in the CP group than in the ED group (p=0.000). The significant difference had a notable impact on practice. The findings revealed that the PE and IELT parameters of both groups were comparable (Table 2).

After comparing the sexual functions and PE parameters of both groups prior to ESWT, measurements were performed again after ESWT. The second measurements were then compared and are presented in Table 3. Upon examination of Table 3, upon examination of the averages, it was determined that the mean sexual function was higher in the CP group than in the ED group (p=0.000). Significant differences were found to have medium and large effects in practice. The data indicated that the PE and IELT parameters of both groups were comparable (Table 3).

Table 4 presents the comparison of pre-and post-ESWT score differences according to the groups. The analysis revealed that the scores for orgasmic function, sexual desire, and PE were statistically significant, whereas the other variables were not. When the averages were examined, it was found that the difference between the post-ESWT and pre-ESWT measurements of the ED group for orgasmic function (p=0.000) and sexual desire (p=0.001) was higher than that of the CP group. When the PE scores were analyzed, it was found that the difference between the CP and ED groups before and after ESWT was higher than that of the ED group (p=0.000). In other words, ESWT treatment was more effective against the PE status of the CP group (Table 4).

Following the comparison of the two groups, an analysis was conducted to identify the changes within each group. First, the two measurements of the CP group were compared, and the findings are presented in Table 5.

Upon examination of Table 5, it was determined that variables other than orgasmic function (p=0.662) and sexual desire (p=0.662) exhibited statistically significant differences between the pre-and post-ESWT puns of the CP group (p=0.000). Upon examination of the averages, the scores of the CP patients following ESWT treatment were higher than those before ESWT. A comparison of the PE scores revealed that the mean scores after ESWT were lower than those before ESWT (p=0.000), whereas the IELT was higher (p=0.000). Perineal ESWT contributed significantly to PE symptoms (Table 5).

Upon examination of Table 6, it was determined that the variables other than PE (p=0.104) exhibited statistically significant discrepancies between the pre-and post-ESWT scores of the ED group (p=0.000). Upon examining the averages, we determined that the sexual function scores of the ED patients following ESWT treatment were higher than their scores prior to ESWT. Upon examination of the PE scores, it was determined that the post-ESWT and pre-ESWT scores were similar and exhibited no statistically significant difference. In light of these findings, it can be concluded that ESWT treatment is not an effective intervention for PE,

Table 2. Comparison of sexual functions and premature ejaculation parameters between patients with CP and those with ED compared with initial values

Variables	Group	N	$\overline{X}$	SD	sd	t-value	p-value	Cohen-d
Erectyl function	CP	30	22.30	2.68	58	6.67	0.000	1.72
	ED	30	15.77	4.64				
Orgasmic function	CP	30	7.37	0.85	58	6.54	0.000	1.69
	ED	30	5.53	1.28				
Sexual desire	CP	30	7.37	0.85	58	5.82	0.000	1.51
	ED	30	5.70	1.32				
Sexual satisfaction	CP	30	11.10	1.21	58	6.99	0.000	1.81
	ED	30	8.20	1.92				
General satisfaction	CP	30	6.97	0.89	58	4.28	0.000	1.10
	ED	30	5.83	1.15				
PEDT	CP	30	13.13	3.84	58	0.21	0.838	-
	ED	30	12.93	3.71				
IELT	CP	30	35.27	7.32	58	0.09	0.931	-
	ED	30	35.10	7.54				

CP: Chronic prostatitis, ED: Erectyl dysfunction, PEDT: Premature ejaculation diagnostic tool, IELT: Intravaginal ejaculation latency time, N: Number of cases, $\overline{X}$: Mean, SD: Standard deviation, sd: Degree of freedom

although it does result in a partial increase in IELT in the ED group (Table 6).

Discussion

ESWT is an effective treatment for ED and can even partially improve PE symptoms (13). Additionally, it has been shown to positively affect both pain and sexual function during the treatment of CP (12). As far as we have scanned the literature, no study has attempted to measure and compare the effectiveness of perineal and penile ESWT for PE. The objective of this study was to investigate the effect of ESWT treatment applied to different regions that have been demonstrated to contribute to sexual functions in PE. Although there was no significant change in sexual

Table 3. Comparison of sexual function and premature ejaculation parameters between patients with CP and ED after ESWT

Variables	Group	N	$\overline{X}$	SD	sd	t-value	p-value	Cohen-d
Erectyl function	CP	30	24.37	3.48	58	6.25	0.000	1.61
	ED	30	18.77	3.46				
Orgasmic function	CP	30	7.40	0.81	58	3.35	0.001	0.87
	ED	30	6.50	1.22				
Sexual desire	CP	30	7.33	0.88	58	2.36	0.022	0.61
	ED	30	6.57	1.55				
Sexual satisfaction	CP	30	12.43	1.98	58	5.32	0.000	1.37
	ED	30	9.70	2.00				
General satisfaction	CP	30	8.23	1.30	58	3.61	0.001	0.93
	ED	30	7.00	1.34				
PEDT	CP	30	10.37	4.06	58	1.92	0.060	-
	ED	30	12.37	4.02				
IELT	CP	30	42.67	10.70	58	1.63	0.108	-
	ED	30	38.63	8.26				

CP: Chronic prostatitis, ED: Erectyl dysfunction, IELT: Intravaginal ejaculation latency time, PEDT: Premature ejaculation diagnostic tool, N: Number of cases, $\overline{X}$: Mean, SD: Standard deviation, sd: Degree of freedom

Table 4. Comparison of difference scores for sexual function and premature ejaculation parameters between patients with CP and ED after and before ESWT

Variables	Group	N	$\overline{X}$	SD	sd	t-value	p-value	Cohen-d
Erectyl function	CP	30	2.07	1.82	58	1.45	0.153	-
	ED	30	3.00	3.03				
Orgasmic function	CP	30	0.03	0.41	58	3.90	0.000	1.01
	ED	30	0.97	1.25				
Sexual desire	CP	30	-0.03	0.41	58	3.67	0.001	0.95
	ED	30	0.87	1.28				
Sexual satisfaction	CP	30	1.33	1.37	58	0.46	0.650	-
	ED	30	1.50	1.46				
General satisfaction	CP	30	1.27	0.94	58	0.34	0.733	-
	ED	30	1.17	1.29				
PEDT	CP	30	-2.77	2.46	58	3.92	0.000	1.01
	ED	30	-0.57	1.85				
IELT	CP	30	7.40	10.09	58	1.80	0.077	-
	ED	30	3.53	6.07				

CP: Chronic prostatitis, ED: Erectyl dysfunction, IELT: Intravaginal ejaculation latency time, PEDT: Premature ejaculation diagnostic tool, N: Number of cases, $\overline{X}$: Mean, SD: Standard deviation, sd: Degree of freedom

Table 5. Comparison of pre- and post-ESWT scores in the CP group

Variables	Measurement	N	$\bar{X}$	SD	sd	t-value	p-value	Cohen-d
Erectyl function	2nd measurement	30	24.37	3.48	29	6.23	0.000	1.14
	1st measurement	30	22.30	2.68				
Orgasmic function	2nd measurement	30	7.40	0.81	29	0.44	0.662	-
	1st measurement	30	7.37	0.85				
Sexual desire	2nd measurement	30	7.33	0.88	29	0.44	0.662	-
	1st measurement	30	7.37	0.85				
Sexual satisfaction	2nd measurement	30	12.43	1.98	29	5.32	0.000	0.97
	1st measurement	30	11.10	1.21				
General satisfaction	2nd measurement	30	8.23	1.30	29	7.35	0.000	1.34
	1st measurement	30	6.97	0.89				
PEDT	2nd measurement	30	10.37	4.06	29	6.16	0.000	1.13
	1st measurement	30	13.13	3.84				
IELT	2nd measurement	30	42.67	10.70	29	4.02	0.000	0.73
	1st measurement	30	35.27	7.32				

IELT: Intravaginal ejaculation latency time, PEDT: Premature ejaculation diagnostic tool, N: Number of cases, $\bar{X}$: Mean, SD: Standart deviation, sd: Degree of freedom

Table 6. Comparison of pre- and post-ESWT scores in the ED group

Variables	Measurement	N	$\bar{X}$	SD	sd	t-value	p-value	Cohen-d
Erectyl function	2nd measurement	30	18.77	3.46	29	5.43	0.000	0.99
	1st measurement	30	15.77	4.64				
Orgasmic function	2nd measurement	30	6.50	1.22	29	4.25	0.000	0.78
	1st measurement	30	5.53	1.28				
Sexual desire	2nd measurement	30	6.57	1.55	29	3.71	0.001	0.68
	1st measurement	30	5.70	1.32				
Sexual satisfaction	2nd measurement	30	9.70	2.00	29	5.64	0.000	1.03
	1st measurement	30	8.20	1.92				
General satisfaction	2nd measurement	30	7.00	1.34	29	4.96	0.000	0.91
	1st measurement	30	5.83	1.15				
PEDT	2nd measurement	30	12.37	4.02	29	1.68	0.104	--
	1st measurement	30	12.93	3.71				
IELT	2nd measurement	30	38.63	8.26	29	3.19	0.003	0.58
	1st measurement	30	35.10	7.54				

IELT: Intravaginal ejaculation latency time, PEDT: Premature ejaculation diagnostic tool, N: Number of cases, $\bar{X}$: Mean, SD: Standard deviation, sd: Degree of freedom

desire and orgasmic function after ESWT in the CP group, significant improvements were observed in erectile function, sexual and general satisfaction, PE, and IELT parameters. In the ED group, although there was no significant change in PE after ESWT, there was a significant improvement in erectile function, orgasmic function, sexual desire, sexual and general satisfaction, and IELT parameters. A comparison of the ED and CP groups after treatment revealed that penile ESWT had a significantly greater impact on orgasmic function and sexual desire, whereas perineal ESWT demonstrated greater efficacy in addressing PE.

The etiology of PE remains unclear (18). The etiology of L-PE, which occurs symptomatically from the first sexual experience, is suggested to be the disruption in the structure of neurotransmitters (19). Specifically, it is considered a neurobiological issue linked to neurotransmission irregularities in serotonin and 5-hydroxytryptamine receptors (20). Furthermore, selective serotonin reuptake

inhibitors (SSRIs) have been demonstrated to be effective in the treatment of PE through this mechanism (21). Furthermore, ED (22), prostate diseases such as CP (23), hormonal pathologies (24), and genetic diseases (25) also contribute to the pathophysiology of PE. The treatment of PE remains a significant challenge, and ongoing research is aimed at identifying the most effective therapeutic approach for this condition (3). Topical anesthetics and SSRIs are currently used to treat this condition (26). Adherence to topical anesthetics is relatively low (27), whereas the efficacy of SSRIs is rapidly lost when treatment is discontinued (1). Furthermore, cognitive behavioral therapies are employed to enhance self-assurance and mitigate anxiety and depression by meticulously instructing men in the acquisition of sexual abilities that can extend ejaculation duration. However, the success rate of this approach is approximately 50% (28). In the pathophysiology of PE, pelvic floor muscles, particularly the ischiocavernous and bulbar spongiosus muscles, play a pivotal role in the expulsion phase of ejaculation, as evidenced by an increase in electromyographic activity during ejaculation (29). The objective of physiotherapy and electrostimulation is to reinforce pelvic floor muscles and to facilitate a more comfortable control over ejaculation. Significant improvements in IELT were observed in the treatment groups that received physiokinesitherapy and electrostimulation (30). ESWT has also been demonstrated to enhance the strength of pelvic floor muscles, thereby facilitating greater control over these muscles and potentially improving the management of PE (31). A recent study demonstrated that the combination of dapoxetine and ESWT was more effective than dapoxetine alone for the treatment of L-PE (13). In our study, a statistically significant improvement was observed in IELT and PE symptoms following perineal ESWT through similar mechanisms. Although a slight increase in IELT was observed following the application of ESWT to the penis, no therapeutic effect on PE was identified.

ESWT applied to the penis enhances blood flow and optimizes endothelial function by stimulating angiogenesis in the corpus cavernosum (7). The precise mechanism of action of shock waves remains unclear; however, the mechanical stress and microtrauma produced by shock waves appear to initiate a biological cascade that promotes the release of angiogenic factors, leading to neovascularization and increased blood flow (32). ESWT applied perineally for CP has been demonstrated to induce the synthesis of nitric oxide (NO), which is essential for inflammatory reactions (33). Furthermore, NO has been shown to mediate neuromuscular junction formation, including synaptic plasticity and neurotransmission in the peripheral nervous system. Moreover, interruption of the flow of nerve impulses via stimulation of nociceptive receptors and reduction of muscle tone represent additional potential mechanisms of action (34). ESWT is employed in the management of ED, CP, and chronic pelvic pain (CPP) syndrome via different pathophysiologic mechanisms (8). A review of the literature revealed that perineal ESWT improves sexual function in patients with CPP (18). The present study demonstrated that both perineal and penile ESWT resulted in significant improvements in sexual function. Of particular note is the observation that ESWT applied to the penis had a more pronounced impact on both orgasmic function and sexual desire.

Study Limitations

Our study also has some limitations. This was a single-center survey study. The sample size was relatively small. There is only a 3-month control period. Chronic diseases and medications were not evaluated. Multicenter studies with longer follow-up periods are required for ESWT treatment of PE.

Conclusion

Our study showed that; ESWT may be effective in treating PE when applied perineally. Although it is more evident in penile application, it also contributes to sexual functions in perineal application. However, prospective, randomized, multicenter and high-participation studies are needed to obtain clearer results.

Ethics

Ethics Committee Approval: Ethics committee approval for the study was given by Niğde Ömer Halisdemir University Non-Interventional Clinical Research Ethics Committee (approval number: 2024/42, date: 01.07.2024).

Informed Consent: Informed consent was obtained.

Authorship Contributions

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

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