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The effects of mirabegron used for overactive bladder treatment on female sexual function

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Abstract

Background/Aim: Overactive bladder (OAB) is a common condition, especially in middle-aged women and can frequently have negative effects on female sexual function (FSD). The aim of the study was to assess the impact of mirabegron on female sexual dysfunction in women affected by OAB.

Methods: In this cross-sectional study, 42 women with OAB and FSD were retrospectively enrolled. Patients were evaluated based on a detailed history, physical examination, uroflowmetry and residual urine measurements, 3-day voiding diary, visual analog scale (VAS), and Female Sexual Function Index (FSFI) questionnaire before and 12 weeks after treatment with mirabegron (50 mg/day).

Results: At the 12-week follow-up, OAB symptoms improved significantly in all patients. The mean (standard deviation [SD]) FSFI total score significantly improved in 34/42 patients (80.9%) from 16.8 (1.3) to 26.9 (1.6); $P<0.001$. Mean (SD) scores significantly increased in domains of desire (from 2.1 [0.6] to 4.8 [0.2]), arousal (from 2.6 [0.3] to 4.3 [0.5]), lubrication (from 3.1 [0.6] to 4,1 [0.2]), orgasm (from 3.1 [0.2] to 4.3 [0.1]), and satisfaction (from 2.8 [0.4] to 4.1 [0.5]) after 12 weeks of treatment with mirabegron. Also, mean VAS scores significantly improved from 4.4 (1.4) to 8.8 (1.1); $P<0.001$.

Conclusion: Treatment of OAB with mirabegron yields positive effects on sexual function of OAB patients.

Keywords: female, sexual function, overactive bladder, mirabegron

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Ethics Committee Approval
The study was approved by Gulhane Ethical Committee Ankara (date: 2023/01/17, approval number: 2023-36).
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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

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Introduction

Overactive bladder (OAB) is defined as urinary urgency, frequency, and nocturia with or without urgency incontinence in the absence of any obvious pathologies [1]. OAB affects approximately 12% of men and women aged >40 years [2]. OAB negatively affects the quality of life (QoL) in both sexes. Female sexual function is important for overall health and well-being. Urinary incontinence (UI) contributes to the development of female sexual dysfunction (FSD) [3]. The association between OAB and FSD was evaluated previously [4–8]. The frequency of sexual intercourse may decrease in about 25% of women with OAB [4]. Also, these women report lack of enjoyment of sexual activity [5]. Treating OAB improves female sexual dysfunction [8]. Antimuscarinics or mirabegron (β3-agonist) are the first-line medical therapy for OAB. Mirabegron has an efficacy similar to antimuscarinics [9]. Data regarding the association between mirabegron used for the treatment of OAB and FSD are limited. The aim of this study was to describe the effect of mirabegron used for OAB treatment on sexual function in sexually active women.

Materials and methods

PAnkara Gulhane Training and Research Hospital Ethical Committee approved the study (date: 2023/01/17, approval number: 2023-36). Our outpatient database was retrospectively searched between 01 January 1, 2021 and January 30, 2023. Sexually active women with OAB for at least three months, who received mirabegron therapy, and who were >18 years old were enrolled into the study. OAB was defined as stated by the International Continence Society [1]: (1) urgency ± urgency urinary incontinence (UUI), (2) frequency, and (3) nocturia. Exclusion criteria included several parameters: (1) recurrent urinary tract infections (UTI ≥3 episodes/year), (2) post-void residual (PVR) urine volume >100 ml (3), stress urinary incontinence (SUI), (4) depressive symptoms, (5) urethral stricture, (6) pelvic or bladder tumors, (7) previous incontinence or pelvic surgery, (8) neurological disease, (9) uncontrolled systemic diseases (such as diabetes mellitus), (10) pelvic prolapse (Pelvic Organ Prolapse Quantification [POPQ] ≥ stage II), and/or (11) any previous OAB treatment..

Patients were evaluated based on a detailed medical and sexual history, urogynecological assessment to assess pelvic prolapse and SUI, urine culture, uroflowmetry, and PVR measurements. Visual analog scale (VAS) was used to score the impact of urinary symptoms on QoL (0=worse; 10=best). A 3-day voiding diary was used. Urgency, frequency, nocturia, UUI episodes, number of pads used, and voiding volume were recorded.

All patients completed the Turkish version of the Female Sexual Function Index (FSFI) questionnaire [10]. FSFI has been strongly recommended for assessing female sexual function [11]. FSFI contains several domains: (1) desire, (2) arousal, (3) lubrication, (4) orgasm, (5) satisfaction, and (6) pain. Higher scores are associated with better sexual function.

All patients underwent mirabegron (50 mg/day) treatment for 12 weeks. The 3-day voiding diary, uroflowmetry, PVR measurement, FSFI, and VAS were evaluated before and after the treatment.

Statistical analysis

The sample size required to achieve 90% power to detect post-treatment differences in FSFI scores, assuming an alpha of 0.05, was 40. SPSS 13.0 USA was used for statistical analysis. Continuous parametric and nonparametric variables were compared with Student's t- and the Mann–Whitney U tests. Continuous variables were reported as median and interquartile range (IQR) or mean (standard deviation [SD]). Relationships between differences in OAB parameters and FSFI were assessed using a Pearson's coefficient analysis. A *P*-value ≤0.05 was considered significant.

Results

Forty-two eligible patients were identified. Mean (SD) age was 43.5 (9.2) years. Patient characteristics are summarized in Table 1.

Table 1: Demographic characteristics of patients

	n=42
Age (years), (mean [SD])	43.5 (9.2)
Body mass index (BMI, kg/m^2), (mean [SD])	29.3 (4.3)
Postmenopausal, (n, %)	21 (50%)
Parity, (mean [SD])	2.9 (1.1)

SD: standard deviation; BMI: body mass index

Thirty-four out of forty-two patients (80.9%) reported significant improvements in sexual dysfunction as assessed by FSFI. The mean post-treatment FSFI score was significantly higher (26.9 [1.6]) compared to pre-treatment values (16.8 [1.3]) at *P*<0.001. All FSFI domains except pain improved after mirabegron treatment (Table 2). In addition, FSFI domains significantly improved both in continent and incontinent patients after treatment.

Table 2: FSFI domains in 42 female OAB + sexual dysfunction patients treated with oral mirabegron 50 mg/day

FSFI domains	Pre-treatment, Mean (SD)	12 weeks after treatment, Mean (SD)	*P*-value
Desire	2.1 (0.6)	4.8 (0.2)	<0.001
Arousal	2.6 (0.3)	4.3 (0.5)	<0.001
Lubrication	3.1 (0.6)	4.1 (0.2)	0.038
Orgasm	3.1 (0.2)	4.3 (0.1)	0.013
Satisfaction	2.8 (0.4)	4.1 (0.5)	0.021
Pain	2.7 (0.4)	3.1 (0.6)	0.51
Total	16.8 (1.3)	26.9 (1.6)	<0.001

FSFI: Female Sexual Function Index; OAB: overactive bladder

All patients had increased urinary frequency and urgency (100%), and 33 patients (78.5%) had UUI at baseline. Urinary symptoms improved significantly after treatment (Table 3). Seventeen (40.4%) patients were completely continent. A significant increase was found in mean (SD) VAS score (pre-treatment 4.4 [1.4], post-treatment 8.8 [1.1]; *P*<0.001). In addition, no side effects were reported during the treatment period.

Table 3: Urinary symptoms in 42 female OAB + sexual dysfunction patients treated with oral mirabegron 50 mg/day

Urinary symptoms	Pre treatment Mean (SD)	12 weeks after treatment Mean (SD)	*P*-value
Frequency/day	13.8 (2.7)	6.7 (1.5)	<0.001
Nocturia/day	1.9 (1.1)	0.7 (0.4)	<0.001
Urgency episodes/day	5.7 (2.5)	2.8 (2.1)	<0.001
Incontinence episodes/day	2.2 (0.8)	0.9 (0.8)	<0.001

OAB: overactive bladder

Discussion

In our study, we showed that mirabegron used for the treatment of OAB provided significant improvements in sexual dysfunction. FSD is seen more frequently in women with UI than in the general healthy population. Approximately half of OAB patients have FSD [12]. First-line medical treatment of OAB includes antimuscarinics and the β3-adrenoceptor agonist, mirabegron. Mirabegron has demonstrated similar efficacy and lower adverse events compared to antimuscarinics [9]. OAB treatment produces positive effects on sexual function in women with OAB [13].

Although all domains of sexual function are adversely affected in women with UI, the most common sexual complaints are decreased desire, vaginal dryness, and dyspareunia. OAB is associated with decreased sexual activity, more interruption of intercourse due to urinary symptoms, and decreased lubrication, more dyspareunia, and more orgasmic problems compared to other types of UI [14–16]. In OAB patients, the most important symptom that impairs sexual function is UUI [17]. UI in OAB patients is unpredictable and unavoidable and leads to distress and discomfort. In addition, OAB patients may need to go to the toilet during sexual intercourse or may leak urine during intercourse or orgasm. Interrupting intercourse to urinate or having UI during intercourse can be a cause of great embarrassment and therefore lead to a decrease in sexual interest [18]. OAB is associated with decreased sexual satisfaction, decreased desire, decreased lubrication, and orgasm problems [15,19].

In this study, we showed that mirabegron (50 mg/day) for 12 weeks produces an improvement in both urinary symptoms and sexual dysfunction. Impaired QoL of the OAB patients also improved significantly as assessed by VAS. Following mirabegron treatment, FSFI total scores significantly improved. The most improved FSFI domains are desire, arousal, satisfaction, lubrication, and orgasm. On the other hand, pain domain results did not changed significantly.

Gubbiotti et al. [20] conducted a study on the effect of mirabegron (50 mg/day) on sexual function. They reported that mirabegron treatment provided significant improvement in total FSFI score and in all FSFI domains except pain. Our data are similar to the data in Gubbiotti's study. The authors also found that continent women after mirabegron therapy showed higher improvements in FSFI scores compared to incontinent women [20]. However, in our study we found that improvements in FSFI scores were similar between continent and incontinent women following mirabegron therapy. We believe that this improvement in sexual dysfunction is mainly related to the improvements urgency levels.

In the literature, data are limited with regard to the effects of OAB treatment on FSD. Zachariou et al. [21] demonstrated that extended release (ER) tolterodine used for the treatment of OAB led to improvements in sexual dysfunction in women. In a randomized placebo controlled study by Rogers et al. [7], both OAB symptoms and sexual health scores improved with tolterodine ER in sexually active women with OAB. Balzarro et al. [22] treated 32 OAB patients with100 U of onabotulinumtoxin-A. They found that the total FSFI score showed a significant improvement, but desire and pain domains showed no significant improvements before and after treatment.

When the available data in the literature are examined, it is clear that a relationship between the improvement of OAB symptoms and the improvement of sexual function is apparent. We think that the positive effect of OAB treatment on sexual function may be indirectly associated with the improvement of urinary symptoms and QoL Mirabegron is a safe and effective treatment option for OAB patients without causing any significant side effects [9]. As we have shown in our study, mirabegron also produced a positive effect on sexual function.

The main limitations of our study are the retrospective design and the short-term follow-up.

Conclusion

Pharmacological therapy is the most important option for treating of OAB. Sexual dysfunction is an important health problem. Sexual dysfunction in women may negatively affect the relationship between couples and may also erode psychological well-being and overall health. According to our study, mirabegron (50 mg/day) treatment can leads to improvements both urinary symptoms and sexual function in sexually active women affected by OAB. This improvement is mainly due to the improvement in OAB symptoms and QoL. The potential benefits of mirabegron for OAB treatment may be explained to the patients. However, prospective trials with larger patient population should be conducted.

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