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CASE REPORT

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Fluoxetine Related Urinary Retention in a 15-Year-Old Girl: a Case Report

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ABSTRACT

Fluoxetine is an effective and safe agent frequently used in the treatment of childhood depression and obsessive-compulsive disorder. Urinary retention is defined as the inability to empty the bladder completely. Drug use is one of the most important factors in the etiology of urinary retention. Urinary retention is an uncommon side-effect of fluoxetine use. We report a case of chronic urinary retention during fluoxetine monotherapy in a 15-year-old girl, resolving following the discontinuation of treatment.

Keywords: Fluoxetine, SSRI, urinary retention, adverse effect, adolescent

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INTRODUCTION

Fluoxetine is a selective serotonin reuptake inhibitor (SSRI) agent that blocks the serotonin transporter (SERT), exerts an antagonist effect on the 5-HT2 c receptor, and desensitizes 5-HT1a receptors. Fluoxetine is an effective and well-tolerated antidepressant used for the treatment of childhood depression and obsessive-compulsive disorder (1,2). Common side-effects include headache, nausea, insomnia, fatigue, and diarrhea. Other, rare side-effects such as apathy, suicidality, and urinary retention may also be seen (3). Urinary retention is defined as the inability to empty the bladder completely. While this condition can be acute or chronic, chronic urinary retention is painless retention associated with an increased residual urine volume (4). Patients with urinary retention may also present with complete voiding deficit or overflow incontinence (4). If left untreated, urinary retention may lead to severe complications such as urinary infection, acute renal failure, and urinary incontinence (4). Several factors may be involved in the etiology of urinary retention, one of the most important being drug use. Numerous drugs can cause urinary retention, including chlorpromazine, disopyramide, hyoscine butylbromide, biperiden, and diphenhydramine (5). However, to the best of our knowledge, there have been few case reports of urinary retention associated with the use of fluoxetine (6). This report describes the successful examination and diagnosis process of a 15-year-old girl developing urinary retention during fluoxetine therapy.

Highlights

- **Fluoxetine related urinary retention is a rare phenomenon.**
- **Urinary retention should be considered in the use of SSRIs.**
- **5-HT2, D2 receptors may have an effect on urination.**

CASE

A 15-year-old girl was brought to the outpatient clinic by her parents due to dizziness and shortness of breath. History taken from the parents revealed that her symptoms had commenced two months previously, after she had been sexually harassed by a neighbor while returning home from school. According to the parents, she frequently remembered the incident, dreamed of it, woke up from dreaming with a start, was unable to pass the street where the incident occurred, and was easily distracted, and her academic performance declined. At psychometric evaluation, she scored 27 on the DSM-5 Post-traumatic Stress Symptoms Severity Scale Child Form [Severity of Post-traumatic Stress Symptoms – Child Age 11–17 **National Stressful Events Survey PTSD Short Scale] (7). Total possible scores on this scale range between 0 and 36, with higher scores indicating greater severity of post-traumatic stress disorder (PTSD) (8). After evaluation, the patient was diagnosed with PTSD and started on fluoxetine 20 mg/day. A follow-up examination was scheduled for one month later. At the control examination, we learned that she had experienced difficulty urinating from the first week of drug therapy, that she experienced bladder pressure after urinating, and that these symptoms had persisted and worsened over the preceding month. The urology department was consulted on the basis of these symptoms. Urodynamic examination revealed decreased peak flow, delayed voiding onset (38 sec), and increased bladder capacity (645 ml). Ultrasonographic examination revealed no finding suggestive of any stone occlusion in the urinary tract. No infection was detected in urinary examinations, and the

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patient had no history of any urological diseases. She and her parents denied that she had used any other drug, herbal medication, or similar substances. Following consultation, the urology department diagnosed urinary retention and recommended discontinuation of fluoxetine therapy. This was discontinued, and the patient was followed-up without medication. The symptoms improved significantly after fluoxetine discontinuation. In order to treat the PTSD symptoms, sertraline was initiated at 25 mg/day and increased to 50 mg/day after one week. No urinary retention-related symptoms were observed during the three-month follow-up, and monthly controls were planned. Written consent to publish was obtained from the patient and her parents.

DISCUSSION

This report describes the successful examination and diagnosis process of urinary retention developed during fluoxetine therapy. To the best of the authors' knowledge, there have been very few case reports of the development of fluoxetine-related urinary retention. Bozikas et al. reported a case of urinary retention in a 46-year-old man after starting fluoxetine 20 mg/day while using risperidone 2 mg/day (9). Benazzi et al. reported a case of urinary retention developing with a combination of fluoxetine 20 mg/day and haloperidol 1 mg/day (10). Urinary retention in both cases was dose-dependent, as it is in the present report. However, while both cases were receiving polypharmacy, urinary retention in the present case developed during fluoxetine monotherapy. In addition, while both of those patients were adult men, the present case involved an adolescent girl. The adverse effect in this case was evaluated using the Naranjo Adverse Drug Reactions Probability Scale (NADRPS) (11). The NADRPS score in the present case was 8 (probable). The patient received fluoxetine as monotherapy. Onset of urinary retention occurred immediately after the start of fluoxetine therapy, and the side-effects resolved entirely after the discontinuation of fluoxetine, suggesting that urinary retention may be associated with fluoxetine therapy.

The occurrence of urinary retention with the use of SSRIs is explained by several mechanisms. Serotonin is an important neurotransmitter involved in the central control of voiding. It facilitates the storage of urine by activating the sympathetic reflex pathway and inhibiting the parasympathetic voiding pathway. The Onuf's nucleus is located within the S2-4 sacral segment of the spinal cord and controls the external urethral sphincter tonus. Onuf's nucleus contains numerous α-receptors and 5-HT receptors. SSRIs increase external urethral sphincter activity by inhibiting serotonin reuptake in motor neurons in Onuf's nucleus (5).

Blockade of 5-HT1a receptors at the spinal level reduces bladder contraction. Fluoxetine facilitates the development of urinary retention by desensitizing 5-HT1a receptors and causing a decrease in bladder contraction (2,12). Unlike other SSRIs, fluoxetine has 5-HT2 c receptor antagonist effect and an inhibitory effect on the norepinephrine transporter (NET) (13). In animal experiments, the 5-HT2 c agonist lorcaserin has been shown to activate the external urethral sphincter (14). Accordingly, 5-HT2 c antagonism may exert a facilitating effect on urination. Fluoxetine may contribute to an increase in external urethral sphincter tonus and urinary retention by activating the sympathetic pathway and inhibiting the parasympathetic pathway with its inhibitory effect on the NET (5,13).

On the other hand, urinary retention is less likely with sertraline than it is with fluoxetine. In addition to the general features of SSRIs, sertraline has an α-adrenergic receptor antagonist effect and an inhibitory effect on the dopamine transporter (DAT) that fluoxetine does not possess (13). With its α-adrenergic receptor antagonist effect, sertraline can cause a decrease in internal urethral sphincter tonus, and with its DAT inhibitory effect, it can stimulate D2 receptors, which has a facilitating effect on voiding (5).

All these effects and interactions at the receptor level may explain why urinary retention is seen with fluoxetine but not with sertraline.

Fluoxetine-related urinary retention is a rare phenomenon. It will be useful for clinicians to consider the possibility of urinary retention developing during fluoxetine therapy in terms of early diagnosis and intervention.

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REFERENCES

1. Jain U, Birmaher B, Garcia M, Al-Shabbout M, Ryan N. Fluoxetine in children and adolescents with mood disorders: a chart review of efficacy and adverse effects. J Child Adolesc Psychopharmacol 1992;2:259–265. [Crossref]
2. Le Poul E, Boni C, Hanoun N, Laporte AM, Laaris N, Chauveau J, et al. Differential adaptation of brain 5-HT1A and 5-HT1B receptors and 5-HT transporter in rats treated chronically with fluoxetine. Neuropharmacology 2000;39:110–122. [Crossref]
3. Alınay H, Coşkun M. Prevalence of Bipolar Shift, Apathy and Suicidality in Children and Adolescents Receiving SSRI Treatment and Predicting Factors: A Chart Review Study. Istanbul University Istanbul Faculty of Medicine, Postgraduate thesis; 2018 [Turkish].
4. Selius BA, Subedi R. Urinary retention in adults: diagnosis and initial management. Am Fam Physician 2008;77:643–650. https://www.aafp.org/afp/2008/0301/afp20080301p643.pdf
5. Verhamme KM, Sturkenboom MC, Stricker B, Bosch R. Drug-induced urinary retention: incidence, management and prevention. Drug Saf 2008;31:373–388. [Crossref]
6. Karadag M, Gokcen C, Bayar H, Aksoy I. Urinary retention in an adolescent patient caused by fluoxetine alone. J Child Adolesc Psychopharmacol 2015;25:658–658. [Crossref]
7. American Psychological Association (APA). DSM-5, Severity of Post Traumatic Stress Symptoms, Child Age 11 to 17. https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM5_Severity-of-Post-Traumatic-Stress-Symptoms-Child-Age-11-to-17.pdf
8. LeBeau R, Mischel E, Resnick H, Kilpatrick D, Friedman M, Craske M. Dimensional assessment of posttraumatic stress disorder in DSM-5. Psychiatry Res 2014;218:143–147. [Crossref]
9. Bozikas V, Petrikis P, Karavatos A. Urinary retention caused after fluoxetine-risperidone combination. J Psychopharmacol 2001;15:142–143. [Crossref]
10. Benazzi F. Urinary retention with fluoxetine-haloperidol combination in a young patient. Can J Psychiatry 1996;41:606–607. [Crossref]
11. Naranjo CA, Busto U, Sellers EM, Sandor P, Ruiz I, Roberts EA, et al. A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther 1981;30:239–245. [Crossref]
12. Burgard EC, Fraser MO, Thor KB. Serotonergic modulation of bladder afferent pathways. Urology 2003;62:10–15. [Crossref]
13. Richelson E. Interactions of antidepressants with neurotransmitter transporters and receptors and their clinical relevance. J Clin Psychiatry 2003;64 Suppl 13:5–12. https://pubmed.ncbi.nlm.nih.gov/14552650/
14. Mbaki Y, Ramage AG. Investigation of the role of 5-HT2 receptor subtypes in the control of the bladder and the urethra in the anaesthetized female rat. Br J Pharmacol 2008;155:343–356. [Crossref]