Urinary Retention Associated with Atomoxetine Use: A Case Report

Atomoksetin Kullanımına Bağlı Üriner Retansiyon: Bir Olgu Sunumu

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Özet

Atomoksetin en iyi değerlendirilmiş stimülan olmayan tedavi ajanıdır ve geleneksel Dikkat Eksikliği Hiperaktivite Bozukluğu tedavisinde stimülan olmayan ilaçlar arasında etkinliği ve tolere edilebilirliği ile ilk tercih ilaçtır. Ürolojik acillerden biri olan akut idrar retansiyonu, şiddetli idrar yapma hissiyle birlikte mesanenin dolu olmasına rağmen, idrar yapamama halidir. Üriner retansiyonun antikolinerjik etkinliği olan ilaçların kullanımıyla ortaya çıkabileceği bilinmektedir. Bu yazıda atomoksetin tedavisini takip eden süreçte akut üriner retansiyon gelişen 12 yaşında bir erkek olgusu sunulmuştur.

Anahtar Kelimeler

Atomoksetin; Yan Etki; Üriner Retansiyon

Abstract

Atomoxetine is a well-studied non-stimulant treatment agent, and is also the first-choice non-stimulant drug for the conventional treatment of Attention Deficit Hyperactivity Disorder owing to its effectiveness and tolerability. Urinary retention is a type of urological emergency that is associated with the inability to urinate despite the bladder being full and a strong urge to urinate. It is known that urinary retention can also develop due to the use of anticholinergic drugs. In this manuscript, we present a 12-year-old male case who developed acute urinary retention in the period following atomoxetine treatment.

Keywords

Atomoxetine; Side Effect; Urinary Retention

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Introduction

Atomoxetine is a well-studied non-stimulant treatment agent, and is also the first-choice non-stimulant drug for the conventional treatment of Attention Deficit Hyperactivity Disorder (ADHD) owing to its effectiveness and tolerability. By inhibiting the presynaptic reuptake of norepinephrine, atomoxetine leads to an increase in the level of norepinephrine. Atomoxetine has a limited effect on the reuptake of serotonin, and minimal affinity to the receptors of other neurotransmitters and carriers. Atomoxetine also affects cognitive functions by increasing the level of dopamine in the prefrontal cortex. Many previous studies have reported that atomoxetine is well tolerated, and that side effects are uncommon [1]. The reported half-life is 5 hours, and it is metabolized mainly by CYP2D6 in the liver. The most common side effects reported among children and adolescents include stomachache, decreased appetite, vomiting, somnolence, nervousness, asthenia, vertigo and dyspepsia [2]. Although it is known that use of atomoxetine at an early age can cause acute urinary difficulties, a review of the literature reveals only a single case in which atomoxetine use led to urinary retention in the child age group [3]. In this manuscript, we present a 12-year-old male case who developed acute urinary retention in the period following atomoxetine treatment.

Case Report

A 12-year-old male case was brought by his mother to our outpatient clinic due to the following complaints: "unwillingness to study at home, attention deficit, low performance in class, forgetfulness, hyperactivity, constant and excessive talking, improper behavior in class, impatience." Based on the case's history, the child's problems became even more pronounced after he began school. After being referred to the child psychiatry outpatient clinic by a school counselor while in 2nd class, the child was diagnosed with "ADHD" and started on short-acting methylphenidate 5 mg three times a day. In the following period, the child's treatment was changed to the long-acting form of methylphenidate. However, increased the dose to 36 mg/day led to complaints of excessive palpitations, after which the child's family discontinued the treatment and did not take their children to another psychiatric examination.

The medical history of the case further described that his motor and mental development stages were normal; that he did not experience and epileptic seizure/trauma or other important disease. No specific characteristics or traits were identified in the family history.

During the child's psychiatric evaluation, it was observed that his level of psychomotor activity was more than normally according to his age and developmental level, he had difficulty in focusing his attention, and his level of impulsivity was very pronounced. No further psychiatric signs were identified. Based on the child's psychiatric assessment, a diagnosis of ADHD-Combined Type was considered to patient according to the DSM-IV-TR criteria. As methylphenidate use was associated with complaints of palpitation, the child was referred to a Pediatrician for cardiac evaluation. The physical examination and ECG findings of the patient were within normal limits. And atomoxetine treatment was started. Based on the case's weight (55 kg), it was planned to give atomoxetine at a dose of 25 mg/day, and to raise the dose to 50 mg/day two weeks later; however, the case experienced a decrease in the frequency and quantity of urination on the first day following the beginning of the treatment, and urinary retention on the second day following the beginning of the treatment. The case reapplied to our outpatient clinic due to this complaint. The case was not taking any medication other than atomoxetine, and had no history of trauma, or any previous complaints of burning sensation during urination or urinary retention. No problem was identified in any of the case's biochemical parameters. The urology department was consulted. The physical examination and ultrasonography performed by the Urology clinic suggested acute urinary retention associated with atomoxetine, and that no relieving discharge was necessary. The case's atomoxetine was discontinued, and a control visit was scheduled with the patient on the following day. During this control visit performed one day later, it was learned that the patient's urination frequency had returned to normal, and that he no longer experienced difficulty in urination.

Discussion

Urinary retention is a type of urological emergency that is associated with the inability to urinate despite the bladder being full and a strong urge to urinate. Although urinary retention is quite uncommon among children [4]. The two main causes of urinary retention during childhood are neurological diseases and anatomic disorder [5]. It is known that urinary retention can also develop due to the use of anticholinergic drugs [6]. In our case, urinary retention developed immediately after atomoxetine use, and resolved after the atomoxetine treatment was stopped. As all other potential causes of urinary retention were excluded based on the case's medical history and various tests, the patient's urinary retention was determined to be associated with atomoxetine use.

The urinary storage and discharge processes are regulated by the balanced between the sympathetic and the parasympathetic pathways. However, the excessive activation of the sympathetic system may lead to urinary retention through the inhibition of the parasympathetic pathway. Atomoxetine leads to an increase in the level of norepinephrine by inhibiting the presynaptic reuptake of norepinephrine. Urinary retention caused by the use of atomoxetine, a noradrenergic agent, can be explained by the disruption of the sympathetic-parasympathetic balance involved in the process of urination due to the excessive activation of the sympathetic system. It has been reported that serotonin has an inhibitory effect on micturition, and that this effect becomes more pronounced in advancing ages [7]. It is believed that antidepressants which inhibit the reuptake of serotonin can also inhibit micturition by increasing the level of serotonin, and thus lead to urinary retention [8]. As atomoxetine has a certain (yet limited) effect on the reuptake of serotonin, we believe that this effect might have contributed to the urinary retention side effect. Desarkar et al. previously reported an adolescent case who developed urinary retention following the use of 25 mg/g atomoxetine on the 2nd day of treatment, who required relieving discharge, and whose clinical condition resolved following the discontinuation of the drug [3]. Our case similarly developed urinary retention following the administration of low dose atomoxetine; however, the case's urinary re-

tention required no clinical intervention, and resolved by itself following the discontinuation of the drug.

In conclusion; although urinary retention is a rarely observed side effect of atomoxetine, it can still lead to serious consequences. The current case is important in that it illustrates the necessity of clinicians to be cautious about the potential side effects which might develop following atomoxetine administration, as well as the importance of early intervention. However, urinary retention quickly responds to discontinuation of the drug and common clinical intervention for the condition (i.e. catheterization).

Competing interests

The authors declare that they have no competing interests.

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