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To cite this article: Esra Okyar, Leyla Bozatlı, Işık Görker & Serap Okyar (2019) Psychogenic polydipsia associated with sertraline treatment: a case report, Psychiatry and Clinical Psychopharmacology, 29:1, 117-119, DOI: 10.1080/24750573.2018.1445897

To link to this article: https://doi.org/10.1080/24750573.2018.1445897
Psychogenic polydipsia associated with sertraline treatment: a case report

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ABSTRACT
Psychogenic polydipsia (PP) is a clinical condition characterized by excessive fluid intake in the absence of physiological stimuli to drink. The etiology of compulsive water drinking is not known yet. It is common in people with chronic mental illness, especially in schizophrenia. Obsessive-compulsive disorder (OCD) is characterized by the presence of recurrent obsessions and compulsions which may cause anxiety in the person. The age of onset is bimodal, before puberty and early adulthood. In this case report, we will discuss the PP situation after the start of sertraline treatment in a case of 12-year-old girl who started sertraline treatment with the diagnosis of OCD.

ARTICLE HISTORY
Received 20 December 2017
Accepted 23 February 2018

KEYWORDS
Psychogenic polydipsia; sertraline; side effect

Introduction
Obsessive-compulsive disorder (OCD) affects approximately 1–3% of the world population and is a neuropsychiatric disorder characterized by the presence of obsessions and compulsions that are time consuming and distressing [1]. The average age of onset is 9–11 years, and 80% of adults experience symptoms in childhood or adolescence [2,3]. The serotonergic system takes place in the pathophysiology of OCD [1]. There are two treatments with an established evidence base in the treatment of pediatric OCD, namely cognitive behavioral therapy incorporating exposure with response prevention and selective serotonin reuptake inhibitors (SSRIs) [4].

Psychogenic polydipsia (PP) is a clinical condition characterized by excessive fluid intake in the absence of physiological stimuli to drink [5]. It rarely causes hypotremia in the presence of normal renal function, but it is known that it may have fatal consequences [6]. More than 20% of those with chronic mental illness are accompanied by PP. Polydipsia is common especially in schizophrenia [7]. Its pathogenesis is not fully known, but it is thought that antidiuretic hormone (ADH) is increased by non-osmotic stimuli [8]. It is also believed that anticholinergic side effects of antipsychotic drugs contribute to this [9]. Although PP is more common in schizophrenia, it is also seen in cases of bipolar disorder, anorexia nervosa, chronic alcoholism, mental retardation, autism, and dementia [10]. It has been reported in the literature that PP developed as a behavioral safety measure in a patient with panic disorder [11].

Studies investigate behavioral resemblance between compulsive water drinking of PP and compulsive acts of OCD and report the phenomenological and pharmacological similarities between PP and OCD, but there is not enough data to describe the neurobiological relationship between OCD and PP [12].

In this case report, we will discuss PP that developed after initiation of sertraline treatment in a patient who received sertraline due to OCD.

Case report
A 12-year-old girl presented to our outpatient clinic with complaints of uncertainty, repetition, checking, symmetry, changing the appearance of hair and clothes more frequently, restlessness, and irritability. It was learned that the complaints of the patient began two years ago and her academic success has decreased and her relationships with family and friends broke down in recent years. Developmental milestones were reached on time. She had no history of seizure, surgery, or systemic disease. There was no known disease in her family history. The patient was diagnosed with OCD according to DSM-5 diagnostic criteria. Sertraline was started at a dose of 25 mg/day and then was gradually increased up to 50 mg/day within a week. The second day of sertraline treatment, the patient started to drink a lot of water. The water intake was 2 liters per day in the past periods, but now it was 19 liters per day. For this reason, she was consulted to the pediatric endocrinology. The patient’s routine examinations showed that only urine specific gravity was slightly decreased, it was 1003. Diabetes insipidus was excluded by the fluid deprivation test. The cranial MRI of the patient was evaluated as normal.

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the tests were performed for the organic etiology, she was again directed to us because of PP. Sertraline treatment was discontinued and fluid restriction was recommended. Thus, the patient’s daily water consumption declined to 7–8 liters in two weeks period and to 3.5 liters at the end of the first month. In this period, the outpatient clinic follow-up continued, and medical treatment was not recommended. When the daily water consumption declined to 7 liters, fluoxetine was started at a dose of 10 mg/day and then was gradually increased up to 20 mg/day within a week due to OCD symptoms on admission. It was seen that OCD symptoms improved with this medication, there were no adverse drug effects, the complaint of drinking a lot of water did not maintain, and the daily water consumption was around 2–3 liters. Our case was considered as sertraline associated PP because the complaint of drinking a lot of water developed with the use of sertraline, the organic etiology was excluded by the pediatric endocrinology, and the complaint disappeared with the discontinuation of sertraline treatment.

Discussion

PP is a clinical condition in which the patient exhibits a compulsive consumption of fluids [5]. The development of hyponatremia is uncommon if there are no abnormalities in renal function. Sodium levels may decrease acutely or chronically. Acute hyponatremia is more severe and can threaten life by causing cerebral edema and brain death [6]. Hyponatremia can develop in 5–10% of patients with PP [10]. It has been reported in the literature that brain death occurred due to hypotonic hyponatremia by primary polydipsia in a 10-year-old male with mental retardation and attention deficit and hyperactivity disorder [13].

The regulation of the hypothalamic thirst center is thought to be impaired in the pathogenesis [8]. If the solute concentration in the extracellular fluid increases, the osmoreceptors in the hypothalamus generate an output signal to increase the release of ADH from the posterior pituitary. If the solute concentration in the extracellular fluid decreases, there is a decrease in the release of ADH [14]. It is thought that patients with PP have inappropriate ADH release or inadequate response of kidneys to ADH. While ADH levels are high in PP, the osmotic threshold for ADH release is reduced [8]. Hippocampal dysregulation of fluid consumption behavior is another cause of PP [15].

It is thought that anticholinergic side effects of antipsychotic drugs may cause PP or worsen symptoms [9]. Syndrome of inappropriate antidiuretic hormone secretion (SIADH) is another cause of polydipsia, which is caused by the use of psychotropic drugs such as carbamazepine, thioridazine, haloperidol, pimozide, chlorpromazine, amitriptyline, desipramine, and fluoxetine or due to use of anticholinergics [16]. Although it is known that SSRIs may cause SIADH, it is not known that which mechanism causes this situation [6]. Chlorpromazine increases the ADH release by inhibiting the alpha-adrenergic system and causes inappropriate ADH release [8]. It has been reported that olanzapine-induced hyponatremia occurred in an autistic patient [17]. Fluoxetine causes polydipsia in some individuals and treats polydipsia in some cases [16].

In our case, PP was thought to be associated with sertraline because the patient did not have excessive water drinking behavior before sertraline treatment, there was no organic cause that could lead to this according to the laboratory tests, and the complaint disappeared with the discontinuation of sertraline treatment. Sertraline may cause polydipsia by causing inappropriate ADH secretion. However, this patient’s urine density was not high enough to meet the criteria for the diagnosis of SIADH. Sertraline may have cause dysfunction in the thirst center in the central nervous system. The etiology of PP is not known yet. Further studies are needed to clarify the etiology of PP; we believe that reporting of rare side effects of drugs will help explain the unknown mechanisms. We recommend that clinician should keep in mind polydipsia associated with sertraline (SSRI); early diagnosis and treatment of PP is thought to be very important since it can cause lethal conditions in patients.

Disclosure statement

No potential conflict of interest was reported by the authors.

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