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Paroxetine induced hyponatremia in a 52 years old male hypertensive patient

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Abstract

Introduction: Paroxetine is an antidepressant belonging to the class of SSRI. It is used in multiple psychiatric disorders including depression, anxiety and obsessive-compulsive disorder. Apart from being very efficacious, it causes some adverse effects too and hyponatremia is one of them. The association between the two is not well established, which makes this case worth of attention.

Case presentation: A 52 years old male hypertensive patient was brought to the ER after having an episode of seizure. Hyponatremia due to an unknown cause was made a provisional diagnosis. He was then referred to the psychiatric department for further assessment, where his detailed history was taken and mental state examination was performed. The patient was found to be suffering from chronic depression. The patient has been taking a combination of antipsychotics and antidepressants for this condition. Paroxetine, Olanzapine and Quetiapine were prescribed to him by his psychiatrist 10 years back, and since then he was taking it daily. His current medication was then immediately altered and paroxetine was replaced by mirtazapine.

Discussion/conclusion: Numerous studies have been done on the effects of SSRIs, but very few of them mentioned their association with hyponatremia. Electrolyte imbalances are common with many medications including antiepileptic and antidepressant drugs as well. Although some literature has shown the link between the two, drug induced hyponatremia remained one of the rarest adverse effect. In summary, paroxetine is very effective in the management of depression but its long-term use could result in an electrolyte imbalance in hypertensive patients.

Keywords: SSRI; Paroxetine; Hyponatremia; Depression; Advancing age; Hypertension.

Introduction

As an efficacious selective serotonin reuptake inhibitor (SSRI) paroxetine is widely used for the treatment of numerous psychiatric disorders including generalized anxiety disorder, post-traumatic stress disorder, depression, obsessive-compulsive disorder and panic disorder among others [1]. Among other groups of antidepressants; SSRIs, SNRIs and mirtazapine are more likely to cause hyponatremia in older adults [2].

Paroxetine has been shown to be more effective in the treatment of depression with least anticholinergic adverse effects compared to tricyclic antidepressants (TCA) [3]. The pharmacokinetics of paroxetine differ widely among different individual groups; conclusively slower elimination has been noted in the elderly with increased plasma concentrations. It has an elimination half-life of 21 hours and a variable dosing duration that is dependent upon indication [1].

The mechanism of SSRIs which causes hyponatremia is believed to be concomitant to that of the development of syndrome of inappropriate antidiuretic hormone secretion (SIADH). The groups of population at a higher risk for developing hyponatremia with SSRIs involve the people with lower serum sodium concentrations, the elderly, female gender and reduced body weight [4].

It has been established that there is a major link between treatment with SSRIs and hospitalizations due to hyponatremia. However, this risk decreases when TCAs or mirtazapine is used [5]. Antidepressants shown not to cause hyponatremia include; amoxapine, dosulepine, doxepine, trimipramine, iproniazide [6].

Despite the effectiveness of paroxetine, a significant link to its chronic use (about 10 years) and hyponatremia has not yet been established. Studies have been conducted and have shown to indicate incidence of hyponatremia in elderly patients taking antidepressants, nevertheless; there is a lack of evidence linking the chronic use of SSRIs with hyponatremia in middle age group people.

Case presentation

A 52-year-old male hypertensive patient resident of urban Karachi was brought to the emergency department after an episode of generalized tonic-clonic seizure accompanied by blurring of vision and fall. He was admitted to the medicine ward and was diagnosed with electrolyte imbalance and urinary tract infection (UTI), and was treated accordingly. His GCS (Glasgow Coma Scale) was 15/15 and he was vitally stable. However, later his lab workup indicated marked hyponatremia of unknown cause. The patient's detailed history and examination was done which revealed that he had been suffering from persistent depressive disorder for the past 10 years, since then he had been taking antipsychotics and antidepressants. Consequently, he was referred to psychiatry for further evaluation and assessment.

This anxious looking patient was brought to the psychiatric outpatient department where his thorough history and complete mental state examination deduced persistent depressive disorder for the past 10 years. Subjectively and objectively he had a low mood. Furthermore, some of his depressed episodes were defined as 'weeping spells' in addition to difficulty in sleeping by the attendant.

During the conversation the patient's speech seemed normal and relevant in tone, rate and volume. His thought process was comprehensive and the content of his thoughts did not contain any suicidal or homicidal tendencies apart from some concerns regarding his future. There was no history of thought interferences, delusions, hallucinations and/or obsessions present.

His cognition was intact in time, place and person and he was fully aware of his ongoing condition. The patient reported no history of any sort of substance abuse, smoking and alcohol consumption.

Patient was hospitalized a few years back due to similar psychiatric complaints and was then discharged after being advised to continue the same treatment. He had been taking a combination therapy of antipsychotics and antidepressants. When admitted to the medicine ward his current medications included paroxetine 20 mg, quetiapine 25 mg and olanzapine 5 mg; all taken orally at bedtime. The previous medication regime was altered when it was confirmed that his unknown hyponatremia was due to the long-term use of SSRI. Therefore, paroxetine was immediately discontinued and was then replaced with atypical antidepressant along with benzodiazepine. Hence, he was prescribed Tab. Mirtazapine 15 mg PO x HS and Tab. Clonazepam 0.5 mg ½ - HS.

Table 1: Laboratory investigations.

	Day 1	Day 2	Day 3	Day 4
Hb (g/dl)	13.3	13.4	13.9	13.7
MCV (fL)	86	86	89	89
MCH (pg)	32	32	35	35
TLC (x10^9/L)	7.2	7.2	7.4	7.5
PLT (x10^9/L)	254	254	272	251
Urea (mg/dl)	16	18	24	20
Creatinine (mg/dl)	0.7	1.1	1.8	1.1
Na^+ (mEq/L)	111	124	127	130
K^- (mEq/L)	3.7	4.3	4.8	4.1
Cl^- (mEq/L)	80	93	98	98
HCO_3+ (mEq/L)	18	23	21	23

Table 2: Vitals.

	Day 1	Day 2	Day 3	Day 4
Blood Pressure	140/100	122/70	122/83	120/78
Pulse	78	78	75	78
Temperature	98	98	98	98
Respiratory Rate	22	22	20	20
Central Venous Pressure	98	98	98	98

Table 1 outlines vitals of the patient which depicts that he remained vitally stable. The findings of his labs are summarized in the Table 2 which show that the patient had significant hyponatremia upon admission and his sodium levels increased from 111 mEq/L to 130 mEq/L during the course of his 4 days treatment in the medicine ward.

Discussion

Depression is one of the most common psychiatric disorders, affecting almost 350 million people around the world. It often leads to severe chronic functional impairment due to its symptoms [7]. Executive function, memory, attention, processing speed and psychomotor functions are the cognitive domains which usually get affected significantly [8]. American psychiatric association and other numerous guidelines have recommended both psychotherapy as well as pharmacotherapy for the management of depressive disorders. Selective serotonin reuptake inhibitors (SSRIs) are the preferred choice of pharmacotherapy in depression [9].

Paroxetine is a phenylpiperidine derivative, was prescribed to this patient 10 years back, and since then he has been taking it on a regular basis. Paroxetine is the most potent inhibitor in the class of SSRI, and is used in the treatment of multiple disorders like depression, anxiety, obsessive-compulsive disorders, post-traumatic stress disorder and panic disorders [1]. While being very efficacious, SSRI are known to have an association with increased chances of developing hyponatremia. The major risk factors that contribute to this adverse effect are the advancing age and the concomitant use of diuretics [10]. The incidence of developing hyponatremia with the use of SSRI is 1 out of 1600 cases [11].

Our patient was a 52 years old hypertensive male, who had been taking antidepressants along with antihypertensive drugs. Therefore, he was at an increased risk of developing electrolyte imbalance.

Conclusion

This case summarizes that hyponatremia is an unusual adverse effect of long-standing use of SSRIs in middle aged adults under treatment for depressive disorders. Conclusively, this report shows the evidence for providers to be more cautious in monitoring patients with depressive disorders when given SSRIs as antidepressant therapy more often when the treatment is expected to stretch up to 10 years. Red flags such as signs and symptoms of hyponatremia must immediately be taken notice of including fits, convulsions or seizures.

Declarations

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Author's contribution: AZ and RR collected and interpreted the data and also played the major role in manuscript writing. MU gathered the results and helped in the manuscript writing. RK played an important role in the diagnosis and the treatment of the patient along with the review of this case and manuscript editing.

Decleration of interest: None.

Competing interests: There is no competing interest between the authors.

Patient consnet: The signed consent form has been attached with the file.

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