

**SERTRALINE-INDUCED HYPONATREMIA**DHANANJAY BHAT H<sup>1</sup>, HARISH THANUSUBRAMANIAN<sup>2\*</sup>, BALAJI O<sup>2</sup><sup>1</sup>Department of Medicine, Kasturba Medical College, Manipal University, Manipal - 576 104, Karnataka, India. <sup>2</sup>Department of Pharmacology, Kasturba Medical College, Manipal University, Manipal - 576 104, Karnataka, India. Email: drharishthanu03@gmail.com

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**ABSTRACT**

A 53-year-old female patient with a history of carcinoma of the breast in remission and dilated cardiomyopathy on treatment was newly diagnosed with depression. She was started on sertraline 50 mg once a day. 2 days later she developed severe hyponatremia (serum sodium 114 mEq/L). Her condition further deteriorated and on the 6<sup>th</sup> day her medication was stopped and replaced with mirtazapine. Osmolality studies she was diagnosed with syndrome of inappropriate antidiuretic hormone secretion. She was treated with IV sodium chloride for her hyponatremia. At discharge serum sodium levels improved (127 mEq/L) and subsequent follow-up 4 weeks later showed normal sodium values (138 mEq/L).

**Keywords:** Sodium chloride, Syndrome of inappropriate antidiuretic hormone, Serum sodium, Serum osmolality.© 2017 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2017.v10i4.14334>**INTRODUCTION**

Hyponatremia affects 3-5% of in-hospital patients [1]. Syndrome of inappropriate antidiuretic hormone (SIADH) is an osmoregulatory disorder which is characterized by a euvolemic state with low plasma osmolality and an inappropriately raised urinary osmolality [2]. Sertraline, a selective serotonin reuptake inhibitor (SSRI), is frequently used to treat depression and can cause hyponatremia due to SIADH [3].

**CASE REPORT**

A 53-year-old female patient with a history of carcinoma of the breast in remission following surgery, radiotherapy and chemotherapy and dilated cardiomyopathy on treatment was newly diagnosed with depression. On admission baseline laboratory investigations including serum electrolytes were normal. She was started on sertraline 50 mg once a day. On the 6<sup>th</sup> day following admission she developed altered sensorium and severe hyponatremia (serum sodium 114 mEq/L). Tablet furosemide for underlying dilated cardiomyopathy was withheld and sodium correction with intravenous normal saline initiated. Her clinical condition and serum sodium levels failed to improve despite adequate correction and withdrawal of diuretic. Subsequent serum sodium was found to be 100 mEq/L, and osmolality studies revealed low serum and elevated urine osmolalities suggestive of SIADH due to sertraline. Sertraline was stopped on the 8<sup>th</sup> day following which increase in serum sodium values were observed. Intravenous 1.6% sodium chloride infusion was administered. Serum sodium was 127 mEq/L on discharge and oral furosemide was restarted. Subsequent follow-up 4 weeks later revealed a normal sodium level (138 mEq/L).

**Lab findings**

Day of admission	Serum sodium (mEq/L)	Other investigation
1	133*	
6	114	
8	100**	
9	102	
10	107	
11	121	Urine sodium (48 mmol/l)
12 (day of discharge)	127	
25 (days postdischarge)	138	

\*Before drug intake. \*\*Drug was stopped

**DISCUSSION**

Sertraline is one of the most common SSRI used in the treatment of depression among elderly. Various reports published in journals correlate the fact that it causes hyponatremia due to SIADH. A possible explanation for SSRI-induced SIADH is the stimulatory effect of serotonin on ADH secretion via the 5HT<sub>1</sub> and 5HT<sub>2</sub> receptors [4]. Criteria for diagnosis of SIADH includes (1) serum sodium below 135 mEq/L, (2) osmolality below 280 mosm/l, (3) no clinical hypervolemia or edema (4) hypertonicity of urine, and (5) absence of dehydration [1]. To confirm diagnosis of SIADH, thyroid, and adrenal gland function has to be normal. Our patient, in this case, fits the criteria of SIADH and her thyroid parameters and cortisol levels were within normal limits. Hyponatremia generally develops during the first month of therapy (3-120 days) and is reversible between 2 and 28 days after the suspension of the SSRI [5]. Our patient developed hyponatremia on the 3<sup>rd</sup> day and normal sodium levels was observed 25 days postdrug suspension. Risk factors implicated for the development of hyponatremia include old age, female gender, and a low BMI [5]. Various case reports are published regarding sertraline causing hyponatremia secondary to SIADH. One of the authors reported an 82-year-old man on sertraline 50 mg OD and developed hyponatremia 3 days later. He was diagnosed with SIADH and his serum level was 123 mEq/L at the time the drug was withdrawn [6]. Another case of sertraline-induced severe hyponatremia (serum sodium 100 mEq/L) in a patient following weeks treatment has also been reported [7]. Similar reports in relation to sertraline causing hyponatremia secondary to SIADH were reported which is similar to our case study [2,8]. In 1994, 116 cases of antidepressant-induced hyponatremia were reported and 88 of these involved SSRIs with a mean age of 73 years [9]. A search of Medline for reports of hyponatremia and SIADH associated was done with the use of fluoxetine, fluvoxamine, paroxetine or sertraline between January 1980 and May 1995. 86 cases of sertraline showed hyponatremia [5]. An audit of aged psychiatric patients using SSRI and SNRI showed that risk of hyponatremia is more with increasing age, female gender and more commonly associated with escitalopram and sertraline [10]. A very recent study has shown a higher prevalence of hyponatremia in patients with depression who are being prescribed SSRI and SNRI [11].

**CONCLUSION**

Sertraline is known to cause hyponatremia among patients on antidepressants. Routine monitoring of serum sodium levels should

be considered in these cases, especially the elderly and those receiving diuretics. In patients with hyponatremia on sertraline, workup for SIADH should be considered and managed at the earliest to prevent life-threatening hyponatremia.

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