

Hyponatremia in the Elderly Induced by Risperidone: A Case Report

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Abstract

Hyponatremia due to risperidone is a rare complication that can be associated with drowsiness, confusion to coma and seizures. We report a case of a 92-year-old female with delirium combined with pulmonary infection who developed severe hyponatremia after 30 days of risperidone treatment, and the patient's blood sodium gradually increased to normal after administration of concentrated sodium chloride, tolvaptan and gradual reduction of risperidone dosage until discontinuation. Through clinical observation, the mechanism of hyponatremia caused by risperidone is related to the Syndrome of Inappropriate Antidiuretic Hormone (SIADH).

Keywords: Hyponatremia; Risperidone; Elderly

Introduction

Hyponatremia is a common electrolyte disturbance in internal medicine, the incidence of which increases with age and is associated with a variety of co-morbidities and medications [1]. Since it was first described by Whitten JR, et al. [2], only less than ten cases linking risperidone to hyponatremia were reported all over the world to date. It is assumed that the mechanism of hyponatremia is SIADH [3].

Case Report

The patient, a 92-year-old female, was hospitalized in February 2022 with "recurrent cough and sputum for 11 years and fever for 1 week" and diagnosed with "chronic obstructive pulmonary disease combined with pulmonary infection and chronic heart failure". Since 2021, the patient had fever recurrent. On February 4, 2022, the patient had fever again, with a temperature of 39°C, and was talking nonsense, suspecting that everyone was trying to harm her, unable to sleep, refusing to eat, and injuring her family and caregivers. Pulmonary CT and abdominal CT showed pulmonary infection. After 3 days, the patient's temperature was normal, but the above symptoms persisted. Antibiotics, diprophylline and ambroxol were infused intravenously. Bronchodilators and expectorants were inhaled by atomization. Her oral medications included metoprolol 47.5mg qd, digoxin 0.125g qd, nifedipine 10mg tid, fudosteine 0.4g tid, terazosin 2mg qn. The above intravenous drugs were stopped after 14 days. On February 11, she was started on risperidone orally 0.5mg/day, and this was increased to 1mg/day on February 18, to 1.5mg/day on February 25 and her delirium was relieved. During the month of her hospitalization, blood electrolytes remained in normal level of 135mmol/l. No other medication adjustments during this period. On March 13,

she was hyponatremia and vomited. Na⁺ was 109.6mmol/l, Cl⁻ was 81.4mmol/l, plasma osmolality was 273mosm/kg, blood potassium was normal. Water restriction was given immediately, intravenous hypertonic saline was supplemented, risperidone dosage was reduced to 1.5mg/day, tolvaptan 15mg/day was given from the third day onwards. Risperidone was stopped after 14 days. The patient's Na⁺ gradually recover to normal on the seventh day. Her Na⁺ fluctuated at 134-144mmol/l during 1 month follow-up.

Discussion

In this case, the patient was treated with risperidone after pulmonary infection combined with delirium, and the dosage of risperidone was increased once in 5 to 7 days. The patient's psychiatric symptoms improved and severe hyponatremia occurred after 30 days, which was related to the application of risperidone. Hyponatremia induced by risperidone is a rare adverse drug reaction that occurs mostly after a longer period of use, but in early stage has been reported occasionally. It has been previously reported to occur with 4-8mg of risperidone daily. Although the dose of risperidone applied in the patient was not high, the patient was a senior elderly and no clinical application of risperidone has been reported in patients of this age group.

A common cause of hyponatremia in the elderly population is SIADH [4], and high doses of risperidone leading to SIADH are the most commonly considered pathogenic mechanism by scholars. It was found that the efficacy and safety of V2 receptor antagonists in the treatment of hyponatremia in elderly patients with superior age by Chen J, et al. [5]. Here we have presented the application of tolvaptan was effective in the treatment of hyponatremia. We assume that the mechanism of hyponatremia is secondary SIADH.

Conclusions

Severe hyponatremia induced by risperidone in the elderly has not been reported in the literature to date. The elderly often suffer from a variety of diseases and their symptoms are not obvious, which can be easily ignored and may have critical consequences once occur. Therefore, we consider that the application of risperidone in the elderly should be started with a small dose, adjusted slowly, maintained with a lowest dose, and reduced the dosage after improvement [6]. At the same time, the blood sodium level should be monitored closely to detect abnormalities as early as possible and dealt with in time [7].

Abbreviation

SIADH: Syndrome of Inappropriate Antidiuretic Hormone

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