

Original Research

An Unusual Presentation of Hyponatremia in an Elderly Patient: Diagnostic and Therapeutic Challenges

¹Gayathri Boda, ²Atul Sadana

¹NRI Medical College and Hospital, India;

²Orel State University Medical Institute

ABSTRACT:

Hyponatremia is a common electrolyte disorder, particularly in elderly individuals, often presenting with nonspecific symptoms that can obscure the diagnosis. We report a case of an 81-year-old female who presented with progressive confusion, mild ataxia, and lethargy, with no evident underlying cause on initial examination. Laboratory investigations revealed profound hyponatremia (serum sodium 117 mmol/L). Her history revealed chronic thiazide use and poor oral intake. Through careful evaluation, syndrome of inappropriate antidiuretic hormone secretion (SIADH) was considered, and other causes such as adrenal insufficiency and hypothyroidism were ruled out. Fluid restriction, cessation of offending medications, and slow correction led to complete recovery. This case emphasizes the diagnostic challenges posed by nonspecific neurocognitive symptoms and underlines the importance of a systematic approach to hyponatremia. Recognizing drug-induced and multifactorial causes is especially critical in geriatric patients to avoid complications related to both the condition and its correction.

Keywords: Hyponatremia, Elderly, SIADH, Thiazide diuretic, Electrolyte imbalance

Received: 12 June, 2025

Accepted: 10 July, 2025

Published: 15 July, 2025

Corresponding author: Gayathri Boda, NRI Medical College and Hospital, India

This article may be cited as: Boda G, Sadana A. An Unusual Presentation of Hyponatremia in an Elderly Patient: Diagnostic and Therapeutic Challenges. *J Adv Med Dent Scie Res* 2025; 13(7):85-87.

INTRODUCTION

Hyponatremia, defined as a serum sodium concentration below 135 mmol/L, is the most frequently encountered electrolyte disorder in hospitalized patients, with higher prevalence in older adults due to multiple predisposing factors such as polypharmacy, comorbidities, and decreased renal function [1]. Mild hyponatremia may be asymptomatic or present with nonspecific signs like fatigue and nausea, but severe cases may cause confusion, seizures, or coma [2].

Elderly individuals are particularly vulnerable to the effects of low sodium levels due to age-related changes in renal function, altered thirst perception, and an increased tendency toward inappropriate antidiuretic hormone secretion [3]. Drugs such as thiazide diuretics, selective serotonin reuptake inhibitors (SSRIs), and proton-pump inhibitors (PPIs) are known contributors [4].

In this case, the absence of overt symptoms and the presence of chronic conditions complicated the diagnosis. This report discusses an uncommon

presentation of hyponatremia in an elderly patient, aiming to highlight the importance of thorough clinical assessment and careful management. Timely identification and cautious correction are critical to preventing irreversible neurological damage [5].

CASE PRESENTATION

An 81-year-old woman was brought to the emergency department by her family with a three-day history of progressive confusion, unsteady gait, and lethargy. There was no history of fever, head injury, seizure, vomiting, or diarrhea. Her past medical history included hypertension and osteoarthritis. She had been on hydrochlorothiazide 25 mg daily for over 8 years, and her family reported reduced appetite over the previous week.

On examination, she was oriented only to person, with no focal neurological deficits. Her blood pressure was 118/72 mmHg, pulse rate 76 bpm, and oxygen saturation was normal. There were no signs of dehydration or fluid overload. Neurological

examination showed mild ataxia and delayed verbal response.

Initial laboratory investigations revealed:

- Serum sodium: 117 mmol/L
- Serum osmolality: 260 mOsm/kg
- Urine sodium: 58 mmol/L
- Urine osmolality: 490 mOsm/kg
- Serum creatinine: 1.1 mg/dL
- TSH and cortisol levels were within normal limits.

CT scan of the brain ruled out any acute intracranial pathology. Based on the lab parameters and absence of hypothyroidism or adrenal insufficiency, a diagnosis of SIADH was made. Thiazide-induced contribution was also considered.

She was managed with fluid restriction (800 mL/day), thiazide discontinuation, and close monitoring. Slow sodium correction was ensured (not exceeding 8 mmol/L in 24 hours), and over the next 72 hours, her mental status improved. By day 5, serum sodium normalized to 133 mmol/L.

DISCUSSION

Hyponatremia in elderly patients often presents as a diagnostic enigma. Age-related renal changes, decreased total body water, and increased vasopressin activity impair free water clearance, making elderly individuals prone to hyponatremia [6]. Furthermore, polypharmacy, particularly the chronic use of diuretics and antidepressants, significantly increases the risk [7].

This patient presented with neurocognitive symptoms without obvious systemic signs. This aligns with literature suggesting that hyponatremia in older adults can manifest as subtle behavioral changes, often misattributed to dementia or normal aging [8]. A high index of suspicion is required, especially when laboratory results show profound hyponatremia without overt dehydration.

The evaluation of hyponatremia necessitates determining serum osmolality, urine sodium, and urine osmolality. Our patient had a low serum osmolality and inappropriately concentrated urine, favoring SIADH [9]. The exclusion of hypothyroidism and adrenal insufficiency is essential before confirming this diagnosis [10].

SIADH in the elderly is commonly idiopathic or drug-induced. Thiazide diuretics, although typically causing hypovolemic hyponatremia, may also mimic euvolemic hyponatremia by impairing sodium reabsorption in the distal nephron and increasing ADH sensitivity [11]. In this case, long-term thiazide use along with poor oral intake and low solute diet possibly precipitated the condition.

Treatment includes identifying and discontinuing the offending agent, fluid restriction, and careful monitoring to avoid rapid sodium correction. Overcorrection can lead to osmotic demyelination syndrome (ODS), a rare but devastating complication [12]. Guidelines recommend a correction rate not exceeding 8–10 mmol/L in 24 hours and 18 mmol/L

over 48 hours [13]. Our patient responded well to conservative measures, and her recovery was complete with no neurological sequelae.

This case reinforces the importance of meticulous evaluation in elderly patients with unexplained neurocognitive decline. Clinicians must remain cautious about prescribing long-term thiazides, especially without routine electrolyte monitoring [14]. Additionally, clinicians should avoid attributing all cognitive decline in older adults to neurodegenerative diseases without ruling out reversible metabolic causes such as hyponatremia [15].

CONCLUSION

This case highlights an atypical presentation of hyponatremia in an elderly patient, emphasizing the need for a structured diagnostic approach. Despite the subtlety of symptoms, prompt identification and safe correction of the electrolyte imbalance led to favorable outcomes. Long-term use of diuretics, poor dietary intake, and aging physiology can contribute synergistically to hyponatremia. Clinicians must maintain vigilance for this condition in geriatric patients presenting with altered mental status and ensure safe correction to prevent complications like ODS. Early recognition, proper evaluation, and tailored treatment remain the cornerstone of managing hyponatremia in the elderly.

REFERENCES

1. Upadhyay A, Jaber BL, Madias NE. Incidence and prevalence of hyponatremia. *Am J Med.* 2006;119(7 Suppl 1):S30–5.
2. Adrogue HJ, Madias NE. Hyponatremia. *N Engl J Med.* 2000;342(21):1581–9.
3. Miller M, Morley JE, Rubenstein LZ. Hyponatremia in a nursing home population. *J Am Geriatr Soc.* 1995;43(12):1410–3.
4. Clayton JA, Le Jeune IR, Hall IP. Severe hyponatremia in medical in-patients: aetiology, assessment and outcome. *QJM.* 2006;99(8):505–11.
5. Liamis G, Milionis HJ, Elisaf M. Hyponatremia in the elderly: challenges and solutions. *Clin Interv Aging.* 2008;3(4):683–7.
6. Spasovski G, Vanholder R, Allolio B, et al. Clinical practice guideline on diagnosis and treatment of hyponatraemia. *Nephrol Dial Transplant.* 2014;29(Suppl 2):i1–i39.
7. Mannesse CK, van Puijenbroek EP, Jansen PA, et al. Hyponatremia as an adverse drug reaction of antiepileptic drugs. *J Clin Pharm Ther.* 2010;35(4):437–43.
8. Hoorn EJ, Zietse R. Diagnosis and treatment of hyponatremia: compilation of the guidelines. *J Am Soc Nephrol.* 2017;28(5):1340–9.
9. Ellison DH, Berl T. The syndrome of inappropriate antidiuresis. *N Engl J Med.* 2007;356(20):2064–72.
10. Kumar S, Berl T. Sodium. *Lancet.* 1998;352(9123):220–8.
11. Filippone EJ, Ruzieh M, Foy A. Thiazide-associated hyponatremia: clinical manifestations and pathophysiology. *Am J Kidney Dis.* 2020;75(2):256–62.

12. Verbalis JG, Goldsmith SR, Greenberg A, et al. Hyponatremia treatment guidelines 2007: expert panel recommendations. *Am J Med.* 2007;120(11 Suppl 1):S1–21.
13. Sterns RH. Disorders of plasma sodium—causes, consequences, and correction. *N Engl J Med.* 2015;372(1):55–65.
14. Renneboog B, Musch W, Vandemergel X, et al. Mild chronic hyponatremia is associated with falls, unsteadiness, and attention deficits. *Am J Med.* 2006;119(1):71.e1–8.
15. Waikar SS, Mount DB, Curhan GC. Mortality after hospitalization with mild, moderate, and severe hyponatremia. *Am J Med.* 2009;122(9):857–65.