Research Paper

Volume : 5 | Issue : 4 | April 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Study of The Spectrum of Hyponatraemia Among Elderly Patients in The Emergency Department of A Tertiary Care Referral Centre in Uttar Pradesh

Medical Science

KEYWORDS : Emergency department, Elderly, Hyponatraemia, Mortality, Prevalence

Dr.Vishvanayak — Professor, Department of Medicine, Teerthankar Mahaveer Medical College & Research Centre, Moradabad, UP-244001

Dr. B. Kumar — Professor, Department of Medicine, Teerthanker Mahaveer Medical College & Research Centre Moradabad, UP-244001

ABSTRACT

Hyponatraemia is the most common electrolyte imbalance encountered in elderly patients. A study of 200 internal medicine patients aged ≥ 65 years presenting to the emergency department between 1 September 2014 and 31 August 2015 was performed to assess hyponatraemia and its prognostic significance. Twenty eight patients (12.6%) were hyponatraemic at presentation to the emergency department. The main causes were the use of diuretics, GI fluid loss, infections and the syndrome of inappropriate antidiuretic hormone secretion. Hyponatraemia, a common electrolyte disturbance among elderly internal medicine patients presenting to the emergency department, was associated with higher admission rates, longer hospital stay, and higher mortality rates.

INTRODUCTION

Hyponatraemia is the most common electrolyte disturbance encountered in clinical practice. The elderly are particularly susceptible to developing hyponatraemia, due to age-related physiological changes in water and electrolyte balance, the presence of comorbid conditions and polypharmacy. Mild stable hyponatraemia is often considered to be of little clinical significance, recent studies have identified an association between hyponatraemia and complications, such as falls due to gait instability, attention deficits, and an increased risk of fractures due to osteoporosis. Severe hyponatraemia is a marker of serious disease and an indicator of poor prognosis. The primary goal of our study was to gain insight into the prevalence, aetiology, clinical presentation, and treatment of clinically relevant hyponatraemia in elderly medical patients presenting to the emergency department.

MATERIALS AND METHODS

This study was conducted at a 500-bed teaching hospital on all visits of patients aged 65 years or older referred to the emergency department for internal medicine between 1 September 2014 and 31 August 2015. Patients were excluded if internal medicine was not the principle treating specialty in the emergency department. Clinical evaluation of all the patients was done. Complete haemogram, measurement of Blood urea, creatinine, glucose, lipid profile, TSH, liver function test, ECG & chest x ray besides serum electrolytes

Estimation was done in each patient. The presence of hyponatraemia was identified by laboratory investigations in the emergency department. Comorbidities consisted of the following categories: myocardial infarction, congestive heart failure, CKD, cerebrovascular accidents, pulmonary diseases, systemic infections, chronic liver disease & diabetes mellitus (with and without complications).

Outcomes

The objective of the study was to estimate the prevalence, etiology, treatment outcome as regards length of hospital stay as well as mortality.

RESULTS

200 patients aged 65 years and older presenting to the emergency department for internal medicine were identified. Twenty eight elderly patients were hyponatraemic (mean age 62.4 years), representing a prevalence of 14%. In 28 hyponatraemic patients, 63.7% were classified as moderate, and 36.3% as severe hyponatraemia. In 7.7% Patients, the main reason for the emergency department visit was hyponatraemia. Malaise was the most prevalent symptom, namely in 16.5% patients. Other reasons for the visit in hyponatraemic elderly patients included confusion or delirium in 7.7% patients, hyperglycemia in three patients (3.3%).

Aetiology and treatment

The use of diuretics was considered the primary cause (27.5%), followed by Hypovolemia (15.4%) and syndrome of inappropriate antidiuretic hormone secretion (SIADH) (14.3%). GI fluid loss resulting from gastritis, enteritis or gastroenteritis and various systemic infections of varying degrees was identified as an important cause (37.3%). Other causes were hyperglycemia (2.2%), renal insufficiency (2.2%), and heart failure (3.3%). In 83.5% of the hyponatraemic elderly patient's therapy to correct the serum sodium was started in the emergency department. The most frequently used method of correction (30.8%) was the infusion of isotonic sodium chloride (0.9% NaCl) ; 26.4% of elderly patients received 3% NaCl infusion. Other methods of correction were cessation of medication (6.6%), fluid restriction (7.7%), administration of Tolvaptan (4.4%), or other combination therapy (7.7%).

Table: Etiology of Hyponatrmia

Etiology	**Percentage**
Systemic including gastrointestinal infections	33.4%
Diuretics	22.8%
Hypovolaemia	17.2%
SIADH	12.2%
Hyperglycemia	3.95%
Renal insufficiency	3.4%
Heart failure	3.4%
Other	3.4%

The primary cause of severe hyponatraemia was the systemic infections including gastrointestinal infections (33.4%), use of diuretics (22.8%), followed by hypovolaemia (17.2%).Treatment was started in the emergency department in 97.0% of the patients with severe hyponatraemia, and 75.9% of the patients with moderate hyponatraemia (p = 0.015). Admission rates were similar in both hyponatraemia categories.

DISCUSSION

Our study confirms previous findings by other re-

searchers that hyponatraemia is an indicator of poor prognosis, such as longer hospital stay and higher mortality rates. In particular, patients with moderate hyponatraemia had the highest mortality rate compared with the reference group, We found no relationship between mortality in moderate hyponatraemia and the presence of an acute critical illness at emergency department presentation. The increased mortality risk in elderly patients with moderate hyponatraemia may be due to a lack of guideline adherence, leading to under diagnosis and under treatment of elderly patients with moderate hyponatraemia. In addition, moderate hyponatraemia was frequently an additional finding in other underlying disorders. The therapy indicated for these disorders may not be appropriate for hyponatraemia. Moreover, the failure of physicians to identify the increased health risk associated with asymptomatic hyponatraemia in this frail population may contribute to adverse patient outcome. Hyponatraemia, especially moderate hyponatraemia, is probably a good marker of frailty and a poor prognostic indicator in older patients as is consistent with previous research. It emphasizes the need to adequately assess and treat hyponatraemia in elderly patients, in addition to careful monitoring of their general condition. Hyponatraemia is common among elderly internal medicine patients visiting the emergency department and is associated with adverse outcome. Around 6.3% to 7% patients were hyponetremic at presentation irrespective of various causes like use of diuretics, Hypovolemia, SIADH, Hyperglycemia renal insufficiency, Heart failure etc.

REFERENCES

1. Renneboog B, Musch W, Vandemergel X, Manto MU, Decaux G. Mild chronic hyponatremia is associated with falls, unsteadiness, and attention deficits. Am J Med 2006;119:71.e1-71.e8.
2. Chawla A, Sterns RH, Nigwekar SU, Cappuccio JD. Mortality and serum sodium: do patients die from or with hyponatremia? Clin J Am Soc Nephrol. 2011;6:960-5.
3. Chua M, Hoyle GE, Soiza RL. Prognostic implications of hyponatremia in elderly hospitalized patients. Arch Gerontol Geriatr. 2007;45:253-8.
4. Waikar SS, Mount DB, Curhan GC. Mortality after hospitalization with mild, moderate, and severe hyponatremia. Am J Med. 2009;122:857-65.
5. Tierney WM, Martin DK, Greenlee MC, Zerbe RL, McDonald CJ. The prognosis of hyponatremia at hospital admission. J Gen Intern Med. 1986;1:380-5.
6. Frenkel WN, van den Born BJ, van Munster BC, Korevaar JC, Levi M, de Rooij SE. The association between serum sodium levels at time of admission and mortality and morbidity in acutely admitted elderly patients: a prospective cohort study. J Am Geriatr Soc. 2010;58:2227-8.
7. Christ M, Grossmann F, Winter D, Bingisser R, Platz E. Modern triage in the emergency department. Dtsch Arztebl Int. 2010;107:892-8.
8. Mackway-Jones, K. Manchester Triage Group. Emergency Triage. 2nd ed.: Bmj Publishing Group; 2005.
9. Needham DM, Scales DC, Laupacis A, Pronovost PJ. A systematic review of the Charlson comorbidity index using Canadian administrative databases: a perspective on risk adjustment in critical care research.J Crit Care. 2005;20:12-9.
10. Gnjidic D, Hilmer SN, Blyth FM, et al. Polypharmacy cutoff and outcomes: five or more medicines were used to identify community-dwelling older men at risk of different adverse outcomes. J Clin Epidemiol. 2012;65:989-95.