



“HOSPITAL BASED DESCRIPTIVE STUDY OF HYPONATREMIA IN ELDERLY PATIENTS”

General Medicine

Dr. Shaik Mahezabeen*

Final year post-graduate, Department of General Medicine, Santhiram Medical College and General Hospital, Nandyal. *Corresponding Author

Dr B. Siva Chandra Sekhar

M.D., Assistant Professor, Department of General Medicine, Santhiram Medical College and General Hospital, Nandyal.

Dr. G. Vijaya Kumar

M.D., HOD & Professor Department of General Medicine, Santhiram Medical College and General Hospital, Nandyal.

ABSTRACT

Background: Hyponatremia is a common electrolyte disturbance in the hospitalized elderly sick patient.

Objectives:

1. To study clinical features and etiology of hyponatremia in elderly hospitalized patients.
2. To classify severity of hyponatremia in hospitalized elderly and to correlate with outcome following treatment.

Methods: All elderly patients being admitted to ICU were screened for hyponatremia and 100 elderly hospitalized patients with severe hyponatremia were included in study, these patients were investigated as per protocol and were treated as per standardized regimen. **Results:** 100 patients with severe hyponatremia were studied. The common CNS symptoms were drowsiness, lethargy, confusion, seizures and unresponsiveness. There was female preponderance of cases (55%). The common co-morbid conditions were Hypertension (69) and diabetes mellitus (51). Females tolerated hyponatremia better than males with mortality of 9.09% in females and 33.33% in males ($p=0.0026$). In all 20 patients succumbed to their primary illness, with a possible contribution attributable to hyponatremia or its treatment. The common cause of Hyponatremia was SIADH (30) and drugs (24) of which diuretics is a major chunk. **Conclusion:** In general hyponatremia is common in females and they seem to better tolerate it than their male counterparts. Early detection, strict adherence to treatment protocol is required. Diuretics should be used with caution in elderly.

KEYWORDS

INTRODUCTION:

Hyponatremia:

Disorders of sodium and water metabolism are common in hospitalized patients and are occasionally encountered in outpatients. Both hyponatremia and hypernatremia can cause substantial morbidity and mortality, and ironically, incorrect treatment can add to the problem⁽¹⁾. Serum sodium concentration and serum osmolality normally are maintained under precise control by homeostatic mechanisms involving thirst, antidiuretic hormone (ADH), and renal handling of filtered sodium. Clinically significant hyponatremia is relatively uncommon and is nonspecific in its presentation⁽²⁾.

About 40% of the body's sodium is contained in bone. Approximately 2-5% occurs within organs and cells and the remaining 55% is in blood plasma and other extra cellular fluids. The amount of sodium in blood plasma is typically 140mmol/L, a much higher amount than is found in intracellular sodium (about 5 mEq/L).

This asymmetric distribution of sodium ions is essential for human life. It makes possible proper nerve conduction, the passage of various nutrients into cells, and the maintenance of blood pressure⁽³⁾.

Management of abnormalities in water homeostasis is frequently challenging. Because age-related changes and chronic diseases are often associated with impairment of water metabolism in elderly patients, it is absolutely essential to be aware of the pathophysiology of hyponatremia and hypernatremia in the elderly.

The sensation of thirst, renal function, concentrating abilities and hormonal modulators of salt and water balance are often impaired in the elderly, which makes such patients highly susceptible to morbid and iatrogenic events involving salt and water.

AIMS AND OBJECTIVES:

- To assess the incidence of hyponatremia in hospitalised patients in Medical wards and ICU.
- To describe the etiological factors responsible for hyponatremia in hospitalized patients.
- To describe clinical manifestations associated with hyponatremia.
- To describe treatment modalities for hyponatremia and document treatment related complications.

MATERIALS AND METHODS:

Source Of Data:

All the admitted patients in the Medical wards and ICU in Santhiram Medical College and hospital, Nandyal during the period from May 2021 to October 2021.

Sample Size: 100.

Type Of Study:

HOSPITAL BASED DESCRIPTIVE AND OBSERVATIONAL STUDY.

Inclusion Criteria:

1. All adult patients with age greater than 18yrs admitted in Medical wards and ICU with documented hyponatremia, defined as serum sodium concentration <135 meq/l were included in the study.
2. Patients who gave informed and written consent.

Exclusion Criteria:

1. Patients with PSEUDOHYPONATREMIA- defined by Hyponatremia in absence of any obvious etiology and presence of hypertriglyceridemia were excluded from the study.
2. Patients who didn't give informed and written consent.

Data Analysis:

1. The diagnosis was made based on clinical profile and Serum Sodium levels.
2. Statistical analysis was done using the chi-square test and Fisher's Exact test to compare proportions. Statistical results were considered significant at a P-value <0.05 .

RESULTS:

Table 1: Gender distribution of the Study Population

SEX	Frequency	Percent
Male	45	45
Female	55	55

Among the 100 patients who presented with hyponatremia 55 patients (55%) were females and 45 patients (45%) were males, which indicates preponderance of severe hyponatremia among elderly female patients.

Gender distribution



■ 1st Qtr ■ 2nd Qtr ■ 3rd Qtr

In the patients studied, the common co-morbid diseases were as follows. The commonest of them being HTN followed by DM, IHD, Renal failure.

Comorbidity

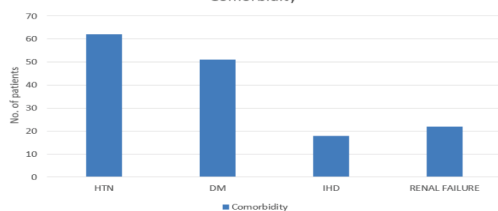


Figure 2: Co morbid diseases in the patients included in the study.

Figure 2: Co morbid diseases in the patients included in the study.

In this study 76 patients had CNS symptoms for which CT scan brain didn't reveal any structural abnormality attributable to the CNS symptoms, so the CNS symptoms were attributed to hyponatremia, 24 patients had no CNS symptoms. The CNS symptoms with which the patients presented are the following.

CNS symptoms

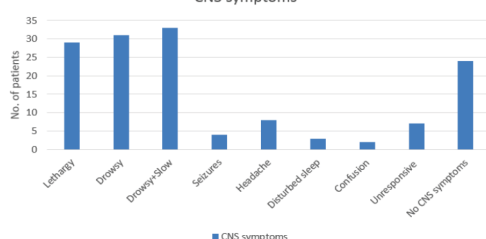


Figure 3: CNS symptoms at admission

DISCUSSION:

This study was conducted at a tertiary care referral centre. This study was undertaken keeping in view the frequent occurrence of hyponatremia in the elderly sick patients.

During this study a total of 100 elderly sick patients admitted to the ICU were screened, of whom 36 patients (36%) were detected to have hyponatremia (< 135 mEq/L) of various degree. & among them 100 patients (6.9%) had severe hyponatremia with a serum sodium levels < 125 mEq/L. 45% of these patients were male and 55% were females. The mean age of the patients was 72 yrs with a range of 60 yrs to 99 yrs. The elderly sick patients are at a higher risk of development of electrolyte disturbance as these people have Age related Physiological changes in the function of Kidneys and they also have multiple co morbid conditions. In our study the common co morbid conditions were Hypertension (62%), Diabetes mellitus (51%), Ischemic heart disease and heart failure (18%), and renal failure (22%), other conditions being chronic liver disease, cerebrovascular disease, and they are on multiple medications like ACE inhibitors, ARB, Oral hypoglycemic agents and diuretics which can interfere with metabolism of various electrolytes and predispose them to electrolyte imbalance. In the present study patients with serum sodium ranged between 125-135 mEq/L. were rarely having any symptoms referable to hyponatremia.. those patients who had serum sodium levels below 125mEq/L had varied CNS symptoms like lethargy, drowsiness with slow response or irrelevant talk, headache, disturbed sleep confusion, seizures or unresponsiveness. All these patients were evaluated with imaging studies of brain (CT brain plain & contrast where indicated) and there was no structural lesion attributable to the CNS symptoms, so these CNS symptoms were attributed to hyponatremia. This finding is consistent with the available literature.

CONCLUSION:

The mean age of patients with hyponatremia in our study was 72 years. There were 55 female patients and 45 male patients, showing slight preponderance of hyponatremia in elderl In this study 76 patients had presented with CNS symptoms attributable to hyponatremia and these symptoms were Lethargy (29), drowsiness with slow response or irrelevant talk (64), headache (8), disturbed sleep (3), confusion (2), unresponsiveness (7) and seizures(4). The common co morbid conditions were Hypertension (62), diabetes mellitus (51), renal failure (22) and ischemic heart disease sick females. The etiology of hyponatremia noted in our study, in decreasing order of occurrence is SIADH, drug induced, renal loss, GI loss, endocrinal, dilutional (Cardiac & cirrhosis) , cerebral salt wasting The commonest type of hyponatremia noted in our study was isovolemic hypo-osmolar hyponatremia The Mean serum sodium levels at admission were 113.89 mEq/L, with a range from 97 mEq/L to 125 mEq/L. The mean duration of ICU stay was 4.19 days for correction of hyponatremia& the mean serum sodium after correction was 129.54 mEq/L, with a range from 110mEq/L to 145 mEq/L. In this study 80 patients survived and 20 patients succumbed to their primary illness with possible significant contribution secondary to hyponatremia. Female patients had better tolerated hyponatremia and its correction with a mortality of 9.09% as compared to males with a mortality of 33.33%.

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