



A STUDY TO FIND THE PREVALENCE, ETIOLOGY AND OUTCOME OF HYPONATREMIA IN CRITICALLY ILL PATIENTS IN A TERTIARY CARE CENTER

Anaesthesiology

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ABSTRACT

Background and Aims: Hyponatremia is the most common electrolyte disorder among hospitalized patients, and has been associated with increased mortality ranging from 5% to 50%. In this study, the primary objective was to find the prevalence of hyponatremia in critically ill patients and the secondary objectives were to find the aetiology of hyponatremia in critically ill patients and to find the outcome of these patients. **Methods:** This was a prospective cohort study of a series of critically ill patients during a 12-month period. **Results:** In our study there were 76 patients with hyponatremia (39.6%) and remaining 116 patients were within normal levels (60.4%). Among the 76 patients there were 30 patients (39.5%) with mild hyponatremia; moderate levels in 41 patients (53.9%) and severe hyponatremia in 5 patients (6.6%). The hyponatraemic patients admitted in the ICU were mostly due to post-operative cause (56.6%).

KEYWORDS

Hyponatremia; Critically ill patients.

INTRODUCTION

Hyponatremia is common in both inpatients and outpatients. It is the most common electrolyte disorder among hospitalized patients, and has been associated with increased mortality ranging from 5% to 50%, depending on severity and acuity of onset. Hyponatremia frequently develops in hospitalized patients. A thorough understanding of aetiology of hyponatremia is required to devise preventive as well as management measures. The treatment of hyponatremia depends on the duration of hyponatremia and the volume status of the patients. There is a serious neurologic sequel if hyponatremia is inappropriately treated. Limited data are available on whether the presence of hyponatremia on intensive care unit (ICU) admission is independently associated with excess mortality. This study was done to ascertain the frequency, aetiology, and outcome in critically ill patients admitted to the ICU with hyponatremia, one of the commonest causes for postponement of elective surgeries. Also, hyponatremia when associated with other electrolyte abnormalities can cause arrhythmias and adverse operative outcomes. Hyponatremia is a less studied topic in anaesthesiology and through this study we hope for a better clinical and operative outcome.

Objectives

Primary objective was to find the prevalence of hyponatremia in critically ill patients. The secondary objectives were to find the etiology of hyponatremia in critically ill patients and to find the outcome of these patients.

MATERIALS & METHODS

This was a prospective cohort study of a series of critically ill patients during a 12-month period. After applying inclusion and exclusion criteria, baseline data such as: age, sex, and admission serum Na⁺ of all critically ill patients were recorded and their osmolality was assessed and classified. Volume status was assessed in these patients, based on history (> 3% weight loss, vomiting, diarrhoea, drug use like diuretics, PPI, SSRI, diabetes, bleeding), physical examination findings (dry tongue, longitudinal tongue furrows, dry mucous membrane of mouth, upper body muscle weakness, confusion, speech difficulty, sunken eyes, BP, PR), medical history (water intake, fever, perspiration, tachypnoea, heat) and classified as hypovolemic, euvoletic and hypervolemic. Urine spot sodium was estimated and classified. The patients were divided into two groups: Hyponatremic (serum sodium level less than 135 mmol/L) and normal serum sodium (135-145 mmol/L) groups and both groups were followed up throughout their ICU admission days as well as hospital stay. Detailed drug history was recorded; especially the use of thiazides diuretics and selective serotonin reuptake inhibitors (SSRIs) and clinical evaluation of volume status was done. Parameters of patients including the need for mechanical ventilation and ventilator days, duration of ICU, and hospital stay (days) were recorded as observational data and were taken as the parameters for analysing the outcome of the patient with hyponatremia.

Statistical Analysis

The data of study subjects and the outcome were statistically analysed and the appropriate statistical test, was applied using the latest version of SPSS software. A P value less than 0.05 was considered significant.

RESULTS & OBSERVATION

Critical illness is a life-threatening multisystem process that can result in significant mortality. In total 192 patients were included in our study with the patients divided into two groups as Hyponatremia and normal serum sodium groups & both groups were followed up throughout their ICU admission days as well as hospital stay days and detailed drug history were recorded; especially the use of thiazides diuretics, selective serotonin reuptake inhibitors (SSRIs) and clinical evaluation of volume status.

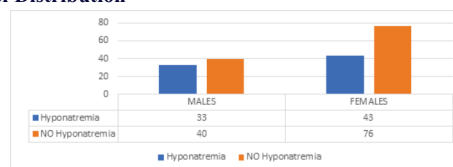
Distribution Of Hyponatremia

Hyponatremia	(n)	(%)	Mean sodium levels
NO	116	60.4	140.33±4.0
YES	76	39.6	126.62±5.1

Level Of Hyponatremia

Level of hyponatremia	(n)	(%)
Mild	30	39.5
Moderate	41	53.9
Severe	5	6.6

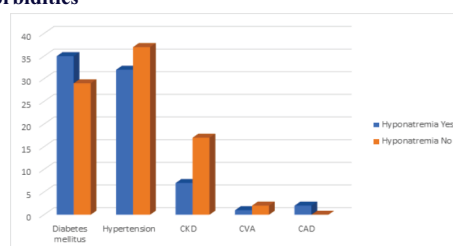
Gender Distribution



Age Distribution

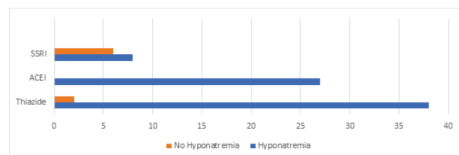
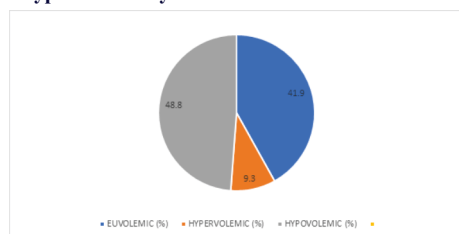
Age	Hyponatremia (n)	(%)	No hyponatremia (n)	(%)
61-70	35	46.1	47	40.5
71-80	32	42.1	52	44.8
81-90	7	9.2	17	14.7
>90 years	2	2.6	0	0
Mean age	73.39±6.3 years		73.50±5.4 years	

Co Morbidities



Cause Of Admission In The ICU

Cause of ICU admission	Hyponatremia		No hyponatremia	
	(n)	(%)	(n)	(%)
Medical causes	33	43.4	58	50
Post operative causes	43	56.6	58	50

Use Of Medications**Type Of Hypo Osmolality****Urine Sodium In Hypo Osmolality**

Urine sodium in hypo osmolality	(n)	(%)
Less than 20(mMol/L)	23	53.5
More than 20(mMol/L)	20	46.5

CONCLUSION

In our study, there were 76 patients (39.6%) with hyponatremia and the remaining 116 patients (60.4%) were with normal levels of serum sodium. Among the 76 patients with hyponatremia in our study population 30 patients (39.5%) showed mild hyponatremia; 41 patients (53.9%) showed moderate hyponatremia; and 5 patients (6.6%) showed severe hyponatremia. Gender distribution showed that females were highest in both groups compared to males. The age distribution showed patients with hyponatremia belonged to higher age group when compared to normal patients. The comorbidities among the patients showed patients without hyponatremia had more comorbidities in comparison to hyponatremic patients. The hyponatremic patients admitted to the ICU were mostly due to post-operative causes (56.6%). The use of medications showed there was statistically significant higher usage of thiazide, ACEI, and SSRI in patients with hyponatremia. The osmolality among the patients showed 56.6% with hypoosmolality, 35.5% with hyperosmolality and 7.9% with normo-osmolality. The urine sodium levels among hypo-osmolal patients showed less than 20 mMol/L in 23 patients (53.5%) and more than 20 (mMol/L) in 20 patients (46.5%). The ICU admission days showed patients with hyponatremia had more days of ICU admission when compared to normal 11 patients; this difference was statistically significant. Mechanical ventilation was required for more patients with hyponatremia which was statistically significant. The patient mortality showed a higher number of deaths in hyponatremic patients; however, this was not statistically significant.

Conflicts Of Interest: Nil**REFERENCES**

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