

To study the association between Hyponatremia and outcome in Acute Coronary Syndrome

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Abstract

Background: To study the association between Hyponatremia and outcome in Acute Coronary Syndrome.

Methods: A total of 68 patients were included in the study. A prospective ,single centre, observational study was carried out at IGMC Shimla during one year period. All the patients with ACS (STEMI, NSTEMI, USA) enrolled were patients with age >18 years, ACS confirmed on the basis of ECG, cardiac biomarkers and typical chest pain. Serum sodium levels were measured at the time of admission,at 24 hours and at the time of discharge.

Observations: The increased mortality rate among hyponatremic patients at follow up period i.e 20% as compared to 8% mortality in non-hyponatremic group (p 0.006) which was significantly higher

Conclusion: Hyponatremia was associated with the increased re-admission and mortality on follow up at day 90 after discharge from the hospital.

Keywords: Hyponatremia, ACS, Outcome

Introduction

Coronary heart disease is a major cause of death and is a global health problem reaching epidemic in both

developed as well as in developing countries. It is the highest killer in developed countries and is rapidly assuming a similar role in developing ones. Cardiovascular disease remains the leading cause of death in United States, responsible for 840,768 deaths (635,260 cardiac) in 2016, from 2006 to 2016, the US death rate from CVD decreased by 18.6% and from coronary heart disease by 31.8%¹⁻⁶.

The importance of hyponatremia in patients with ACS however has not yet been fully established. This study aimed to find the incidence of hyponatremia among all the patients admitted for Acute Coronary Syndrome and to study its association with the outcome of patients at day 30 and day 90.

Material and methods

Study design: Cross sectional observational study.

Setting: Tertiary care hospital

Study Period: One year from 1st July 2018 to 30th June 2019.

Study population

The study had been conducted in patients admitted to the Department of Medicine IGMC Shimla for acute coronary syndrome and who satisfied the inclusion criteria.

Study tool

A structured proforma was used to record the information ascertained .It included demographic information and a brief history regarding presenting complaints, relevant past history, personal history and family history was recorded .Patients were subjected to detailed clinical examination. Hematological and biochemical investigations were done as a part of routine workup. Serum sodium level was collected on day of admission, at 24 hours and at the time of discharge. Patients were telephonically contacted at day 30 and day 90 after discharge from the hospital for confirmation of the disease outcome.

Inclusion criteria

1. Patients with acute coronary syndrome admitted to Medicine Department IGMC SHIMLA.
2. Patients aged ≥ 18 years
3. Those who consent to participate in the study were included.

Exclusion Criteria

1. Patients with valvular heart disease, congenital heart disease and cardiomyopathy.
2. Patients with major non cardiovascular disorder which causes hyponatremia such as renal diseases,vomiting ,diarrhoea,SIADH.
3. Any systemic infection.
4. Patients not willing to give consent.

Observations

The present study was aimed to determine the prevalence of hyponatremia in the patients admitted with Acute Coronary Syndrome and its association with outcome of patients at 30days and 90days follow up. A total of 68 patients were included in the study at Department of Medicine, IGMC Shimla. Results of the study have been described below.

Table 1: Socio-demographic profile (n=68)

Mean age in Yrs	60.3824 \pm 13.8489
Male : Female	42 : 26
BMI	22.347 \pm 13.6068 kg/m ²

Of the total 68 patients admitted for ACS in Cardiac Care Unit of Medicine department - IGMC Shimla, most common age group affected at presentation was 40-60 years 31 (45.58%), with patients in age group between 61-80 were 28(41.19%). There were 5(7.35%) patients in age group between 20-40 years, and patients with age more than 80 years were 4 (5.88%). Mean age of the patients with ACS was 60.3824 \pm 13.8489 years. 42(62%) were males and remaining 26(38%) were females. The mean BMI of patients was 22.347 \pm 13.6068 kg/m².

Table 2.Follow up at Day 30

		Non-hyponatremic(n=48)	Hyponatremic (n=20)	P value
Stable and active	Day 30	43 (89.5)	19 (95)	0.473
	Day 90	41 (85.4)	11 (55)	0.433
Readmitted	Day 30	5 (11.5)	1 (5)	0.62
	Day 90	3 (6.3)	5 (25)	0.99
Died	Day 90	4 (8.3)	4 (20)	0.006

Day 30 of follow up

On day 30 of follow up 5(11.5%) patients re-admitted to the hospital in non-hyponatremic group. In hyponatremic group only 1(5%) patient re-admitted at day 30 of follow up (p 0.473) statistically insignificant..There was no mortality among study population at day 30 of follow up.

Day 90 of follow up

On follow up at day 90, of total 20 patients 5(25%) patients readmitted among the hyponatremic

group, where as in non-hyponatremic group 3(6%) of total 48 patients were re-admitted (p 0.433).

Mortality: Of total 20 patients in hyponatremic group, 4(20%) died where as in non-hyponatremic group 4(8%) of total 48 patients died. The difference in mortality at 90 day was statistically significant (p 0.006).

Discussion

The study was conducted at IGMC SHIMLA in the Department of Medicine during the year 2018-19. A total of 68 patients were studied, after excluding all the patients who fall in the exclusion criteria of the study.

Of total 68 patients 68% were males.

Most of the studies on hyponatremia in ACS showed that hyponatremia was associated with poor outcome of the patients. Studies conducted by Lu DY et al, Kimeera A⁷⁻⁹ et al, Singla I¹⁰⁻¹¹ et al, Goldberg¹²⁻¹⁴ et al showed that hyponatremia at admission was the independent predictor for the in hospital or after discharge mortality and morbidity. In our study of the 20 patients with hyponatremia, only one patient (5%) re-admitted at 30 days follow period and 5 out of 20(25%) patients re-admitted during the 3 month follow up period.

Of the total 68 patients included in the study, six patients re-admitted during the 30 day follow up period while 14 patients re-admitted during the whole 90 day follow up period. There was mortality of 8 patients during the 90 day follow up period, 4 each in hyponatremic as well as in non-hyponatremic group. Mortality rate was 20% among hyponatremic patients and it was 8% among non hyponatremic patients (p 0.006), which was statistically significant. The result was almost similar to that found by Aziz F et al study¹⁵⁻²⁴, where mortality among patients with hyponatremia at

admission was 19.8% and it was 16.8% in patients who developed hyponatremia after admission to hospital.

Conclusion

Hyponatremia was associated with the increased re-admission and mortality on follow up at day 90 after discharge from the hospital.

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