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Hyponatermia and hypoalbuminemia as a poor prognostic marker in chronic liver disease patients

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Abstract

Background: To study the hyponatermia and hypoalbuminemia as a poor prognostic marker in chronic liver disease patients

Methods: The study was conducted in the department of Medicine, S P Medical College, Bikaner. Patients with chronic liver disease were recruited from medical wards after obtaining ethical clearance and written informed consent from the patient.

Result: Serum albumin were lower among patients who died than survivors. Serum sodium were lower among patients who died than survivors. Serum potassium were higher among patients who died than survivors.

Conclusion: We concluded that hyponatermia and hypoalbuminemia was a poor prognostic marker in chronic liver disease patients

Keywords: K, Na, Albumin.

Introduction

Abnormally low serum sodium is the most common electrolyte disturbance in cirrhosis, occurring in approximately 30% of this patient population. Hyponatremia, defined as serum sodium below 130 mmol/L, usually occurs in those with advanced cirrhosis. The development of hyponatremia portends poor prognosis and is associated with increased mortality from liver disease, hepatic decompensation, and decreased quality of life. Therefore, determining an effective and efficient means of correcting hyponatremia in the hospitalized patient with cirrhosis is of paramount importance.[1-4]

Hyponatremia in advanced cirrhosis results from the hemodynamic complications associated with worsening portal hypertension, primarily intravascular hypovolemia and renal hypoperfusion in the setting of total body volume overload. Furthermore, the hepatic synthetic dysfunction associated with cirrhosis leads to abnormally low serum levels of albumin, a negatively charged protein that helps maintain adequate plasma oncotic pressure. Albumin therapy for intravascular volume expansion in cirrhosis was introduced as early as the 1950s, and has been shown in small studies to be superior to normal saline or fluid restriction for correcting serum sodium in cirrhotics.[5]

Material and Methods

Patients with chronic liver disease were recruited from medical wards after obtaining ethical clearance and written informed consent from the patient.

Study Design: Observational longitudinal follow up study.

Sample size: 171patients.

It was calculated on the basis of formula $n=z^2 PQ/d^2$ where n is a desired sample size, P isexpected proportionof accurate etiology and spectrum of chronic liver disease, Q is 1-P with the level of significance (0.05) and15% relative error. With these assumptions calculated sample size is 171.

Selection of Subjects

Inclusion Criteria

- Patients of more than 18 years of age.
- Adult patients diagnosed with chronic liver disease.

Exclusion Criteria

- Patients with ascites due to tuberculosis or malignancy.
- Patients with malignancies other than hepatocellular carcinoma.

Data analysis

Interpretation and analysis with comparison of obtained results was carried out and data thus collected were subjected to descriptive statistical analysis of patients with chronic liver disease using SPSS 19, Student's T-test was used for comparison of continuous data. p-value <0.05 was considered significant. All repoted P values are two sided.

Results

The present study was carried out on 171 cases of chronic liver disease.

Age range of patients was from 18 to 80 years. Mean age of patients was

51.23±12.09 years. Male preponderance was seen in our series. Maximum number of patients of chronic liver disease were in the age group of 51 to 60 years.

Table 1: Comparison of baseline laboratory parameters and scores between survivors and the patients who died within 3 months.

	Total patients (n=171)	Survivors (n=147)	Patients who died (n= 24)	p -value
Serum Albumin (g/dL)	2.29±0.66	2.42±0.62	1.76±0.52	0.000
Serum Sodium (mmol)	131.24±4.72	132.63±4.11	129.36±6.18	0.001
Serum Potassium (mmol)	4.18±1.13	4.10±1.08	4.26±1.03	0.614

Serum albumin was lower among patients who died than survivors. Serum sodium was lower among patients who died than survivors. Serum potassium was higher among patients who died than survivors.

Discussion

As the liver cirrhosis progresses, there is fall in serum sodium concentration. It is a negative prognostic factor associated with increased short-term mortality. [7]During cirrhosis, hyponatremia results from solute free water retention.

Volume expansion with resuscitative fluid infusion is often required for hospitalized cirrhotic patients. Evidence supports human serum albumin infusion in the treatment of certain specific complications of cirrhosis including HRS and prevention of both acute kidney injury in SBP and post-paracentesis circulatory dysfunction following large volume paracentesis. However, given the significantly higher cost associated with albumin compared to crystalloid, limiting administration to appropriate clinical indications is essential.[6]

Albumin infusion is postulated to confer many benefits to cirrhotic patients beyond volume expansion, including immunomodulation, antioxidant effects,

endothelial stabilization, and hemostatic effects, any and all of which might contribute to increased survival.[7]

Conclusion

We concluded that hyponatermia and hypoalbuminemia was a poor prognostic marker in chronic liver disease patients

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