ORIGINAL ARTICLE

Frequency of Hypoalbuminemia and Mortality in Acute Ischemic Stroke

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ABSTRACT

Aim: To determine the frequency of hypoalbuminemia in acute ischemic stroke patients and frequency of mortality in patients having hypoalbuminemia in acute ischemic stroke patients.

Methodology: A total of 125 diagnosed cases presenting with rapidly developing clinical signs of focal or diffuse neurological deficit (weakness of limbs, sensory loss, speech, swallowing disturbance) lasting more than 24 hours with no apparent cause other than vascular determined on CT scan presenting out-patient department of East Medical Ward, Mayo Hospital Lahore between 20-70 years of age with either gender were enrolled in the study while those with transient ischemic stroke, space occupying lesion brain, comorbid cardiac disease i.e. history of atrial fibrillation were excluded from the study. The study was conducted from: January 2015 to June 2015. Informed consent was taken to include their data in the study. The patients were evaluated for hypoalbuminemia and mortality rate in those patients were recorded within 7 days of admission. Frequency of hypoalbuminemia in acute ischemic stroke and mortality among them were recorded.

Results: In our study, out of 125 cases of ischemic stroke,37(29.6%) cases between 20-50 years of age, 88(70.4%) were between 51-70 years of age, mean±sd was calculated as 55.93±8.73 years, 70(56%) were male and 55(44%) were females. Frequency of hypoalbuminemia in acute ischemic stroke patients was recorded in 52(41.6%) and out of these cases, 15(28.85%) cases died while 37(71.15%) were alive.

Conclusion: We concluded that the frequency of hypoalbuminemia is significantly higher in acute ischemic stroke patients and the mortality is also associated with it. However, the mortality can be reduced by controlling hypoalbuminemia in acute ischemic stroke cases.

Keywords: Acute ischemic stroke, hypoalbuminemia, mortality

INTRODUCTION

Stroke is demonstrated as a third most common cause of mortality in developed countries[1,2]. In Pakistan, 72% of strokes are recorded due to cerebral infarction while 28% are due to intra-cerebral bleed[3]. Ischemic stroke is classified according to trial of acute stroke treatment including large artery atherosclerosis, small vessel disease, cardioembolic stroke, other determined causes, and undermined etiologies[2]. Usually, patient's attendant, paramedical staff and insurance agents ask physicians to predictive the outcome of the patient after stroke. Various factors influence the prognosis of stroke e.g. age, severity of stroke, mechanism of stroke, location of infarction, comorbid conditions, and other related complications[4]. However, knowledge regarding important factors which may affect the prognosis is essential for the physicians to make an accurate prediction to provide approach for effective management of the patient and to help the family and patient to understand the course of disease[5].

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Lower level of serum albumin is a frequently found in old aged patients. The rate of Hypoalbuminemia is found in estimated in 19% of stroke cases. Stroke cases having hypoalbuminemia at the time of admission are at increased risk of infective complications, poor functional outcome and it is associated with increased risk of mortality[6].

This study was planned to determine the frequency of mortality in hypoalbuminemic cases presenting with acute ischemic stroke as the data regarding frequency of hypoalbuminemia and frequency of mortality in hypoalbuminemia is variant in ischemic stroke, the findings of our study will recorded primary data in our population regarding.

MATERIAL AND METHODS

A total of 125 diagnosed cases presenting with rapidly developing clinical signs of focal or diffuse neurological deficit (weakness of limbs, sensory loss, speech, swallowing disturbance) lasting more than 24 hours with no apparent cause other than vascular determined on CT scan presenting out-patient department of East Medical Ward, Mayo Hospital Lahore between 20-70 years of age with either

gender were enrolled in the study while those with transient ischemic stroke, space occupying lesion brain, comorbid cardiac disease i.e. history of atrial fibrillation were excluded from the study. The study was conducted from: January 2015 to June 2015. Informed consent was taken to include their data in the study. The patients were evaluated for hypoalbuminemia and mortality rate in those patients were recorded within 7 days of admission. Frequency of hypoalbuminemia in acute ischemic stroke and mortality among them were recorded on a pre-designed proforma by the researcher himself. All patients were managed according to standard departmental protocol. The collected data was entered and analysed in an SPSS Version 16. Mean±sd was calculated for age of the patients. Qualitative data like gender and hypoalbuminemia in acute ischemic stroke patients and mortality among them was presented in the form of frequency and percentage.

RESULTS

Age distribution of the patients was done which shows 37(29.6%) cases between 20-50 years of age, 88(70.4%) were between 51-70 years of age, mean±sd was calculated as 55.93±8.73 years, 70(56%) were male and 55(44%) were females. Frequency of hypoalbuminemia in acute ischemic stroke patients was recorded in 52(41.6%) while 73(58.4%) had no findings of the morbidity. Frequency of mortality in 52 cases of hypoalbuminemia in acute ischemic stroke patients was recorded in 15(28.85%) cases while 37(71.15%) were alive.

Table 1: Frequency of hypoalbuminemia in acute ischemic stroke patients (n=125)

Hypoalbuminemia	**n**	**%age**
Yes	52	41.6
No	73	58.4

Table 2: Frequency of mortality in patients having hypoalbuminemia in acute ischemic stroke patients (n=52)

Mortality	**n**	**%age**
Yes	15	28.85
No	37	71.15

DISCUSSION

Hypoalbuminemia is a predictive factor for various clinical outcomes and mortality in patients suffering with stroke[7]. Recent data renewed the interest regarding the influence of hypoalbuminemia on mortality and the use of albumin in cases with acute stroke[8].

The findings of our study are in agreement with a recent study by Vahedi A and co-workers[9] assessed the relation between hypoalbuminemia and in hospital mortality in patients with acute stroke and recorded that hypoalbuminemia was present in 43.8% of the cases while 25.9% patients expired during the hospitalization.

Another study recorded that decreased serum albumin in acute ischemic stroke patients was significantly associated with mortality(p=0.0003) but did not show the exact rate of the mortality[10]. Another study by Sani Abubakar and co-workers recorded that out of 75 cases 58(77.33%) cases were having hypoalbuminemia while out of these 58 hypoalbunemic cases 13(22.41%) had mortality.[11] These results regarding frequency of hypoalbuminemia in stroke cases is in contrast with the current study but the frequency of mortality in hypoalbuminemia is constant with our findings.

Hypoalbuminemia in cases with acute stroke could be a result of malnutrition and/or underlying disease processes e.g. renal or hepatic insufficiency, uncontrolled heart failure and malignancy etc. Protein energy malnutrition may affect 8–30% of stroke patients on admission[12] while low serum albumin at admission is significantly correlaed with premorbid nutrition. The higher rate of low serum albumin level among our stroke patients could be caused by malnutrition. Additional studies are also needed to record the etiology of hypoalbuminemia in stroke patients.

Davis et al[13] measured serum albumin concentration in 185 cases with cerebral infarction and intracerebral hemorrhage within 24 hour after stroke onset. They found hypoalbuminemia (<34 g/l serum albumin level) in 16.2% of cases. The rate of hypoalbuminemia in our study is also higher than previously reported in patients admitted to Polish hospitals (20.7%)[14].

The difference in frequency of hypoalbuminemia between our study and previous reports could be to partially caused by patients selection (ischemic and hemorrhagic stroke vs only ischemic stroke; selected versus unselected cohort of patients), methods and timing of assessments; however, it does not explain several-fold higher rate of hypoalbuminemia in our patients.

A few epidemiological studies are of the view that lower serum albumin level could be associated with higher risk of stroke. In a prospective study group with higher serum albumin (>44 g/l) vs lower serum albumin (<42 g/l) had lower rater of stroke.15 However, the findings of our study generated further guidelines for the management of hypoalbuminemia in these patients.

We concluded that the frequency of hypoalbuminemia is significantly higher in acute ischemic stroke patients and the mortality is also associated with it. However, the mortality can be reduced by controlling hypoalbuminemia in acute ischemic stroke cases.

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