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Research Article

Evaluation of hypoalbuminemia and its relation with duration of symptoms in cases of ischemic stroke

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ABSTRACT

OBJECTIVES: To find out the frequency of Hypoalbuminemia in patients with ischemic stroke.
Material and methods: This cross sectional study was conducted at Department of Medicine, THQ Hospital Darya Khan District Bhakkar from March 2017 to September 2017. Total 382 patients with ischemic stroke either male or female having age from 40 to 60 years were selected for this study.
RESULTS: Mean age of the patients was 50.89 ± 5.876 years, mean duration of symptoms was 5.24 ± 2.768 days. Male patients were 232 (60.7%) and female patients were 150 (39.3%). Total 154 (40.3%) patients belonged to age group 40-50 years and 228 (59.7%) patients belonged to age group 51-60 years, 129 (33.8%) patients were hypertensive, 161 (42.1%) patients were found with raised serum cholesterol levels, 163 (42.7%) patients were diabetics. No association of hypoalbuminemia with age, gender, raised cholesterol level, hypertension and diabetes was seen.
CONCLUSION: Results of this study showed a higher percentage of hypoalbuminemia in patients with ischemic stroke. Male were more victim of ischemic stroke as compare to female but insignificant association of hypoalbuminemia with gender is noted. Results of this study also revealed that there is insignificant association of hypoalbuminemia with age and hypertension.

KEY WORDS: Hypertension, hypoalbuminemia, diabetes mellitus, ischemic stroke.

INTRODUCTION:

A stroke, sometimes referred to as a cerebrovascular accident (CVA), cerebrovascular insult (CVI), or colloquially brain attack is the loss of brain function due to a disturbance in the blood supply to the brain. This disturbance is due to either ischemia (lack of blood flow) or hemorrhage.[1] Ischemia is caused by either blockage of a blood vessel via thrombosis or arterial embolism, or by cerebral hypoperfusion.[2] Hemorrhagic stroke is caused by bleeding of blood vessels of the brain, either directly into the brain parenchyma or into the subarachnoid space surrounding brain tissue.[3] Nearly 800,000 people suffer strokes each year in the United States; 82-92% of these strokes are ischemic.[4] Stroke is the second leading cause of adult death and disability after ischemic heart disease.[5]

Furthermore, 20-40% of patients with ischemic infarction may develop hemorrhagic transformation within one week after ictus.[6,7]Differentiating between these different types of stroke is an essential part of the initial workup of these patients because the subsequent management of each patient is vastly different. Neuroimaging plays a vital role in the workup of acute stroke by providing information essential to

accurately triage patients, expedite clinical decision making with regards to treatment, and improve outcomes in patients presenting with acute stroke.[8] Rapid and accurate diagnosis is crucial since the only drug currently approved by the FDA for treatment of acute ischemic stroke is intravenous tissue plasminogen activator (tPA) administered within 3 hours of stroke onset.[9-11]
Hypoalbuminemia is a predictive factor for several clinical outcomes (recurrences, functional recovery and medical complications) and mortality in patients with stroke.[12] Low serum albumin level is frequently found in hospitalized patients. Hypoalbuminemia was reported in up to 19% of stroke patients.[13]
The exact frequency of Hypoalbuminemia in patients with ischemic stroke is not known as insufficient local data exists. So the objective of my study is to find out the frequency of Hypoalbuminemia in patients with ischemic stroke may help us to determine the exact magnitude of this problem which may guide us in better management to decrease the mortality and morbidity related to it.

MATERIAL AND METHODS:

This cross sectional study was conducted at Department of Medicine, THQ Hospital Darya Khan District Bhakkar from March 2017 to September 2017. Total 382 patients with ischemic stroke either male or female having age from 40 to 60 years were selected. Patients with decompensated cirrhosis of liver (ultrasound findings of cirrhosis, portal hypertension, ascites, splenomegaly), Nephrotic syndrome (proteinuria (>3.5 gm/day), hypo albuminemia (<3.5g/dl), hyper-cholestrolemia>200mg/dl and pitting edema.), Hemotoma on CT scan brain and Protein losing enteropathy were excluded from the study.Ischemic stroke was defined as: Patients having hypodense area (infarction) on plain CT scan Brain in the respective vascular territory along with anyone of these: Abnormal reflexes, inability to speak, decreased sensation, loss of balance, mental function problems (irritability and behavioural changes), vision changes (decreased visual acuity <6/6), walking problems (power < 5/5) and weakness within 36 hours of onset.
Study is approved ethically by institutional review board. Written informed consent was taken from every patient. Five ml fasting blood sample within 36 hours of onset of stroke was drawn and send to the laboratory for serum albumin. Findings were noted in term of hypoalbuminemia (Yes/No) on predesigned proforma. Hypoalbuminemia was labelled when serum albumin level <35 g/l. Demographic data like age, gender was also entered in predesigned Performa.
Data were entered on computer software SPSS version 16. Mean ± SD was calculated for age and duration of symptoms as quantitative variable. Qualitative variable like gender, hypertension and hypoalbuminemia was presented as frequencies and percentage. Stratification was done for age, gender, hypertension and duration of symptoms. Post stratification chi-square test was applied to see the effect of these on outcome variable i.ehypoalbuminemia. P-value $\leq$ 0.05 was considered as significant.

RESULTS:

Total 382 patients with ischemic stroke were included in this study. Mean age of the patients was 50.89 ± 5.876 years, mean duration of symptoms was 5.24 ± 2.768 hours. Out of 382 patients hypoalbuminemia was seen in 160 (42%) patients. (Fig. 1)
Stratification for age was done and two groups was made, age group 40-50 years and age group 51-60 years. In age group 40-50 years, out of 154 (40.31%) patients, hypoalbuminemia was seen in 70 (45.45%) patients. In age group 51-60 years out of 228 (59.69%) patients, hypoalbuminemia was seen in 90 (39.47%) patients. Insignificant (P = 0.2474) association between age and hypoalbuminemia was noted. (Table 1).
Out of 232 (60.73%) male patients, hypoalbuminemia was seen in 101 (43.53%) patients and out of 150 (39.27%) female patients hypoalbuminemia was seen in 59 (39.33%) patients. Insignificant (P = 0.4577) association of

hypoalbuminemia with gender was noted. (Table 2)

In patients with 1-18 hours of duration of symptoms, hypoalbuminemia was noted in 82 (41.41%) patients and in patients with 19-36 hours duration of symptoms, hypoalbuminemia was observed in 78 (42.39%) patients. Insignificant (P = 0.9174) association between duration of symptoms and hypoalbuminemia was observed. (Table 3)

As shown in table 4, out of 129 (33.77%) hypertensive patients, hypoalbuminemia was seen in 59 (45.74%) patients and out of 253 (66.23%) normotensive patients, hypoalbuminemia was seen in 101 (39.92%) patients. Insignificant (P = 0.3238) association was seen between hypertension and hypoalbuminemia was noted.

Fig. 1: Frequency for Hypoalbuminemia

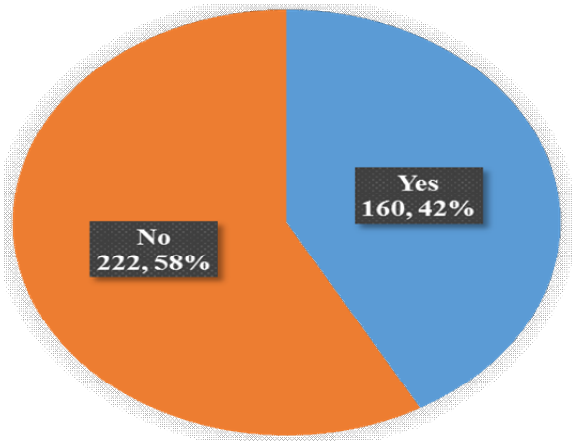

Table 1: Stratification for age

Age	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
40-50	70 (45.45)	84 (54.54)	154 (40.31)	0.2474
51-60	90 (39.47)	138 (60.52)	228 (59.69)	
Total	**160 (42)**	**222 (58)**	**382**	

Table 2: Stratification for Gender

Gender	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
Male	101 (43.53)	131 (56.47)	232 (60.73)	0.4577
Female	59 (39.33)	91 (60.67)	150 (39.27)	
Total	**160 (42)**	**222 (58)**	**382**	

Table 3: Stratification for duration of symptoms

Duration of symptoms (Hours)	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
1-18	82 (41.41)	116 (58.59)	198 (51.83)	0.9174
19-36	78 (42.39)	106 (57.61)	184 (48.17)	
Total	**160 (42)**	**222 (58)**	**382**	

Table 4: Stratification for hypertension

Hypertension	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
Yes	59 (45.74)	70 (54.26)	129 (33.77)	0.3238
No	101 (39.92)	152 (60.08)	253 (66.23)	
Total	**160 (42)**	**222 (58)**	**382**	

DISCUSSION:

Stroke is the 3rd leading cause of death in USA. About 700000individuals are affected by stroke in western world every year.[8] The rate of in hospital mortality varies between 3% to 5% according to stroke type.[9] Generally it is believed that early death after stroke is mainly attributable to the disease itself, whereas the death after acute phase is due to the hospitalization and the related complications during this period.[10] Hypoalbuminemia may be an indirect marker of systemic conditions such as malnutrition and patients with low albumin level may have other underlying chronic medical or neurologic conditions that impair their ability to recover from acute stroke. Alternatively, low levels of albumin at time of acute stroke may simply be indicative of role of the albumin as a negative acute phase reactant whose concentration decreases during acute inflammatory states.Despite its importance, hypoalbuminemia has not been widely evaluated as a predictor of mortality after acute stroke. [11]

In present study hypoalbuminemia was noted in 42% patients with ischemic stroke. In one study by Dziedzic et al.,[7] frequency of Hypoalbuminemia was found in 45.5% patients which is in agreement with our study. Vahedi A

et al.,[12] reported decreased serum albumin (<35 g/l) levels in 43% patients of ischemic stroke. Chen Y et al.,[13] studied serum albumin levels in 70 patients of ischemic stroke and observed Hypoalbuminemia in 56% patients.

We found high frequency of hypoalbuminemia in acute stroke patients. Some previous studies reported significantly lower frequency of hypoalbuminemia in stroke patients. In one study Davaloset al.[14] assessed malnutrition in 104 patients with acute ischemic and hemorrhagic stroke. Serum albumin level was measured within 24 hours after stroke onset, and hypoalbuminemia (serum albumin level <35 g/l) was observed in 7.7% of patients.

Gariballa et al.,[15] found serum albumin concentration <35 g/l in 19% from 201 ischemic stroke patients. In that study, serum albumin level was measured within 48 h after stroke onset.

Davis et al.,[16] measured serum albumin concentration in 185 patients with cerebral infarction and intracerebral hemorrhage within 24 h after stroke onset. They found hypoalbuminemia (serum albumin level (<34 g/l) in 16.2% of patients.Dzieniszewski et al.,[17] also reported frequency of hypoalbuminemia in ischemic stroke patients as 20.7%.

CONCLUSION:

Results of this study showed a higher percentage of hypoalbuminemia in patients with ischemic stroke. Male were more victim of ischemic stroke as compare to female but insignificant association of hypoalbuminemia with gender is noted. Results of this study also revealed that there is insignificant association of hypoalbuminemia with age and hypertension.

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