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A CROSS SECTIONAL STUDY ON HYPOALBUMINEMIA IN CASES OF ISCHEMIC STROKE

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Abstract:

Objectives: *To study the hypoalbuminemia in patients with ischemic stroke.*
Material and methods: *In this cross-sectional study total 250 patients of ischemic stroke both male or female with age range from 40 years to 60 years were recruited from the Department of Medicine, Bakhtawar Amin Medical and Dental College Multan from January 2020 2014 to June 2020.*
Results: *Mean age of the patients was 48.45 ± 4.675 years. Hypoalbuminemia was noted in 108 (43%) patient. Male patients were 158 (63.2%) and female patients were 92 (36.8%). Total 103 (41.2%) patients belonged to age group 40-50 years and 147 (58.8%) patients belonged to age group 51-60 years, 87 (34.8%) patients were hypertensive, Insignificant association of hypoalbuminemia with age, gender and hypertension was seen.*
Conclusion: *Results of this study revealed that higher number of patients found with hypoalbuminemia, male patients were more victim of ischemic stroke as compare to female patient but the difference was not significant. Results of this study also revealed that there is insignificant association of hypoalbuminemia with age and hypertension.*
Key Words: *Hypoalbuminemia, hypertension, ischemic stroke.*

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INTRODUCTION:

A stroke is the loss of functions of brain due to disturbance in supply of blood towards the brain.

This disturbance of blood supply towards brain may due to hemorrhage or ischemia.[1] Ischemia is caused by either arterial embolism or vessel blockage via thrombosis or by cerebral hypoperfusion.[2] Almost 800,000 individuals suffer from strokes every year in USA, 82% to 92% of these strokes are ischemic.[3] Furthermore, 20% to 40% of cases with ischemic infarction may develop hemorrhagic transformation within the one week after ictus.[4]

Differentiating between these stroke type is very important because the management of each stroke type is vastly different.[5] Hypoalbuminemia is a predictive factor for several clinical outcomes (recurrences, functional recovery and medical complications) and mortality in patients with stroke.[6] Low serum albumin level is frequently found in hospitalized patients. Hypoalbuminemia was reported in up to 19% of stroke patients.[7]

The exact frequency of Hypoalbuminemia in patients with ischemic stroke is not known as insufficient local data exists. So the objective of our study is to find out the frequency of hypoalbuminemia in patients with ischemic stroke. Results of this 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, Bakhtawar Amin Medical and Dental College Multan from January 2020 2014 to June 2020. Total 250 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 along with demographic profile of the patients. Hypoalbuminemia was labelled when serum albumin level <35 g/l.

Collected data was analyzed by using SPSS version 20. 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.e hypoalbuminemia. P-value ≤ 0.05 was considered as significant.

RESULTS:

Total 250 patients with ischemic stroke were selected to evaluate the hypoalbuminemia. Mean age of the patients was 48.45 ± 4.675 years. Among the 250 patient's hypoalbuminemia was found in 108 (43%) patients. (Fig. 1)

Patients were divided into two age groups, age group 40-50 years and age group 51-60 years. There were 103 (41.2%) patients in age group 40-50 years and 147 (58.8%) patients in age group 51-60 years and hypoalbuminemia was found in 48 (46.6%) and 60 (40.8%) patients respectively.

Insignificant (P = 0.367) association between age and hypoalbuminemia was noted. (Table 1).

Out of 158 (63.2%) male patients, hypoalbuminemia was noted in 70 (44.3%) patients and out of 92 (36.8%) female patients, hypoalbuminemia was noted in 38 (41.3%) patients. Insignificant (P = 0.692) association of hypoalbuminemia with gender was noted. (Table 2)

As shown in table 3, out of 87 (34.8%) hypertensive patients, hypoalbuminemia was seen in 42 (48.28%) patients and out of 163 (65.5%) normotensive patients, hypoalbuminemia was seen in 66 (40.5%) patients. Insignificant (P = 0.283) association was seen between hypertension and hypoalbuminemia was noted.

Fig. 1: Frequency for Hypoalbuminemia

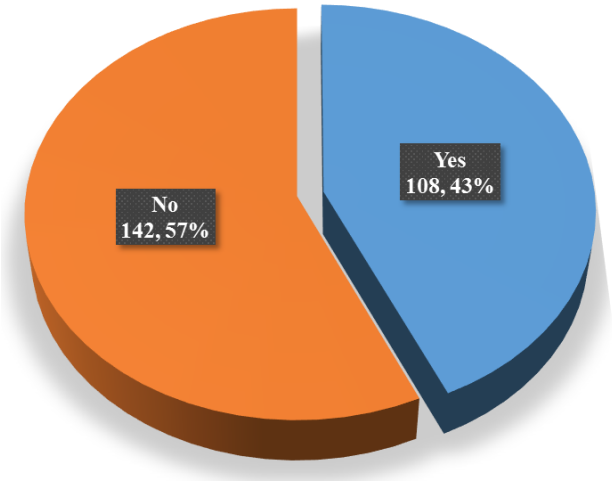

Table 1: Stratification for age

Age	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
40-50	48 (46.6)	55 (53.4)	103 (41.2)	**0.367**
51-60	60 (40.8)	87 (59.2)	147 (58.8)	
Total	**108 (43)**	**142 (57)**	**250**	

Table 2: Stratification for Gender

Gender	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
Male	70 (44.3)	88 (55.7)	158 (63.2)	**0.692**
Female	38 (41.3)	54 (58.7)	92 (36.8)	
Total	**108 (43)**	**142 (57)**	**250**	

Table 3: Stratification for hypertension

Hypertension	Hypoalbuminemia		Total	P. value
	Yes (%)	No (%)		
Yes	42 (48.28)	45 (51.72)	87 (34.8)	**0.283**
No	66 (40.5)	97 (59.5)	163 (65.5)	
Total	**108 (43)**	**142 (57)**	**250**	

DISCUSSION:

In west, stroke affect the 700000 people every year and in hospital mortality rate is 3-5% according to type of stroke.[8,9] 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.[10,11]

This study showed frequency of hypoalbuminemia as 43% in patients of ischemic stroke. Similarly, Dziedzic et al[7] reported frequency of hypoalbuminemia as 45.5% patients. Vahedi A et al.,[12] reported frequency of hypoalbuminemia 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.

In our study, we found a higher number of patients with hypoalbuminemia. Some other studies reported lower frequency of hypoalbuminemia in patients of ischemic stroke. In one study Davalos et al.[14] found hypoalbuminemia only in 7.7% patients out of 104 patients of ischemic stroke and Gariballa et al.,[15] reported hypoalbuminemia in 19% patients. Davis et al.,[16] found hypoalbuminemia in 16.2% patients and Dzieniszewski et al.,[17] hypoalbuminemia in 20.7% patients.

CONCLUSION:

Results of this study revealed that higher number of patients found with hypoalbuminemia, male patients were more victim of ischemic stroke as compare to female patient but the difference was not significant. Results of this study also revealed that there is insignificant association of hypoalbuminemia with age and hypertension.

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