FACTORS CONTRIBUTING TO MORTALITY DUE TO ACUTE STROKE IN HOSPITALIZED PATIENTS

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ABSTRACT

Background: Stroke is the 3rd commonest cause of death and the first leading cause of disability in developed and developing countries. Most strokes are caused by an abrupt blockage of arteries leading to the brain (ischemic stroke). Other strokes are caused by bleeding into brain tissue when a blood vessel bursts (hemorrhagic stroke). Because stroke occurs rapidly and requires immediate treatment, stroke is also called a brain attack. When the symptoms of a stroke last only a short time (less than 24 hours), this is called a transient ischemic attack (TIA) or mini-stroke. The study was done with an objective to determine factors contributing to mortality due to acute stroke in hospitalized patients.

Materials and methods: In this descriptive cross sectional study, all patients with ischemic/hemorrhagic stroke,, Age group 15-80 years, patients of either gender with a sample of 139 patients who were admitted in medical 'A' unit of Ayub Teaching Hospital, Abbottabad from 1st September 2011 to 29th February 2012.

Results: A total of 139 patients with age ranging from 15 to 80 years (mean age was 59.65±11.226 years) were included in the study. Seventy eight (56.1%) were male and sixty two (43.9%) were female patients. Ischemic stroke was found in 89(64.0%) and hemorrhagic stroke in 50(36.0%) patients with 19(13.7%) mortalities during hospital stay.

Conclusion: All the participants of this study were stroke patients. Stroke was seen among the patients with Hemorrhagic and Ischemic. Higher proportion of patients with Ischemic stroke were more hypertensive than hemorrhagic stroke patients.

Key words: Risk factors, Strokes, (Ischemic/Hemorrhagic)

INTRODUCTION

Stroke may be ischemic or hemorrhagic. Ischemic stroke is defined as focal neurological deficit lasting more than 24 hours which is caused by reduced blood flow that ultimately results in infarction. Hemorrhagic stroke results from bleeding into subarachnoid and intraventricular spaces or intraparenchymal bleed.[1]

Stroke is the 3rd commonest cause of death and the first leading cause of disability in developed and developing countries. Epidemiological studies are lacking to determine true incidence of stroke in Pakistan. Estimated annual incidence of stroke in Pakistan is 250/100,000 translating to 350,000 new cases per year.[2] Moreover, the mean age of the stroke patients in Pakistan is far less than in developed countries. There is only one stroke prevalence study from Pakistan, conducted on adult Pushtoon community residing in Karachi which reports a prevalence of 4.8%.[2] Post-stroke complications influence prognosis, and may become potentially life-threatening. The most common complications within two weeks of stroke onset include chest infection, fever, hypo-albuminemia, arrhythmias, irritable ulcer, gastrointestinal dysfunction, urinary tract infection and progression or recurrence of stroke. [3]

In a recent study conducted in the state of Georgia, USA, the mortality rate among patients hospitalized for acute stroke was found to be ten percent (10%). This study shows that mortality was associated with older age, stroke type, Glasgow Coma Scale less than 9, decreased serum albumin, elevated creatinine and blood glucose levels. Independent risk factors for mortality include older age, stroke type, Glasgow Coma Scale less than 9, and decreased serum albumin.[4] Serum albumin level of less than 35g/l is a frequent finding in hospitalized acute stroke patients and is an independent risk factor for acute stroke mortality.[5]

Mortality due to acute stroke in hospitalized patients is high and local studies that addresses stroke related mortality and its contributing factors are lacking.

This study would be able to provide us with local statistics and will help us to determine all those factors that contribute to mortality in acute stroke patients.

MATERIAL AND METHODS

The study with a sample of 139 ischemic hemorrhagic stroke patients was conducted in Medical

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"A" unit of Ayub Teaching Hospital Abbottabad. This descriptive cross sectional study was conducted from 1st September, 2011 to 29th February 2012. All patients of ischemic hemorrhagic stroke with age group of 15 to 80 years of either gender were included in the study.

Informed consent was taken from all patients or from their attendants. Approval of hospital ethical committee was also taken before starting the research work. All patients with acute strokes confirmed on CT/MRI brain in medical units, through emergency, outdoor departments and consultants' private clinic was enrolled. Detailed history was taken from patients or attendants and detailed clinical examination was done including Glasgow Coma Scale. All patients underwent a CT/MRI brain and serum albumin, serum creatinine, and serum blood glucose level were determined in all patients by fully automated chemistry analyzer machine (Selectera)

RESULTS

The study was conducted at medical 'A; unit of Ayub Teaching Hospital Abbottabad, a total of 139 patients were selected, diagnosed with stroke and included in the present study, mean age of the patients 59.65±11.226 ranging from 19 to 80 years of age.

Hypoalbuminemia, was found in 37(26.6%). In female patients hypoalbuminemia was found in 28(20.1%) patients. (Table 1). Elevated serum creatinine, was found in 33(23.7%) male patients. In female patients it was found in 24(17.3%) patients. (Table 2). Raised blood glucose, it was found that 47(33.8%) male patients had raised serum glucose. In female patients it was found that 36(25.9%) female patients had raised blood glucose. (Table 3). Glasgow Coma Scale (GCS), 23(16.5%) male patients were found to have GCS less than 9. In female patients it was found that 13(9.4%) patients had a GCS less than 9. (Table 4). Forty-nine (35.5%) male patients had ischemic stroke and 29(20.9%) had hemorrhagic stroke while 40(28.8%) female patients had ischemic stroke and 21(15.1%) had hemorrhagic stroke (Table 5). Among the stroke patients who died during hospital stay, 10(7.2%) were male and 9(6.5%) were female patients (Table 6). Out of total 139 patients, age of the patients was further divided into four groups to see that which age groups were more affected with stroke. The 1st age group included patients below 20 years in which no stroke occurred and in the 2nd age group i.e. 21 to 40 years, 2(1.4%) ischemic and 7(5.03%) hemorrhagic stroke occurred and in the 3rd age group i.e. 41 to 60 years 23(16.54%) ischemic and 19(13.66%) hemorrhagic strokes were recorded and last age group included patients above 60 years, in which 64(46.02%) had ischemic and 24(17.26%) patients had hemorrhagic stroke. (Table 7). Among age group by death during hospital stay, age of the patients was further divided into four groups. The first group included patients below 20 years, in which no death occurred. In the 2nd age group i.e. 21 to 40 years, 1(0.7%)death occurred .In the 3rd group of age i.e. 41 to 60 years, 3(2.15%)deaths occurred and last age groups was above 60 years in which 15(10.79%) had died. (Table 8).

Table No: 1 Gender wise frequency distribution of Hypoalbuminemia

Gender	Contributing factors (Hypoalbuminemia)		Total
	Yes	No	
Male	37(26.6%)	41(29.5%)	78(56.1%)
Female	28(20.1%)	33(23.7%)	61(43.9%)
Total	65(46.8%)	74(53.2%)	139(100.0%)

Table No: 2 Gender wise frequency distribution of Elevated Serum creatinine

Gender	Contributing factors (Elevated Serum creatinine)		Total
	Yes	No	
Male	33(23.7%)	45(32.4%)	78(56.1%)
Female	24(17.3%)	37(26.6%)	61(43.9%)
Total	57(41.0%)	82(59.0%)	139(100.0%)

Table No: 3 Gender wise frequency distribution of Raised serum blood glucose

Gender	Contributing factors (Raised serum blood glucose)		Total
	Yes	No	
Male	47(33.8%)	31(22.3%)	78(56.1%)
Female	36(25.9%)	25(18.0%)	61(43.9%)
Total	83(59.7%)	56(40.3%)	139(100.0%)

Table No: 4 Gender wise frequency distribution of Glasgow Coma Scale (GCS)

Gender	Contributing factor (Glasgow Coma Scale less than9/15)		Total
	Yes	No	
Male	23(16.5%)	55(39.6%)	78(56.1%)
Female	13(9.4%)	48(34.5%)	61(43.9%)
Total	36(25.9%)	103(74.1%)	139(100.0%)

Table No: 5 Gender wise frequency distribution of type of stroke

Gender	Type of stroke		Total
	Ischemic	Hemorrhagic	
Male	49(35.3%)	29(20.9%)	78(56.1%)
Female	40(28.8%)	21(15.1%)	61(43.9%)
Total	89(64.0%)	50(36.0%)	139(100.0%)

Table No: 6 Gender wise frequency distribution of death during hospital stay

Gender	Death during hospital stay		Total
	Yes	No	
Male	10(7.2%)	68(48.9%)	78(56.1%)
Female	9(6.5%)	52(37.4%)	61(43.9%)
Total	19(13.7%)	120(86.3%)	139(100.0%)

Table No: 7 Frequency distribution among age group by type of stroke

Age Group	Type of stroke		Total
	Ischemic	Hemorrhagic	
21 to 40 years	2(1.4%)	7(5.03%)	9(6.47%)
41 to 60 years	23(16.54%)	19(13.66%)	42(30.21%)
above 60 years	64(46.02%)	24(17.26%)	88(63.30%)
Total	89(64.0%)	50(36.0%)	139(100.0%)

Table No: 8 Frequency distribution among age group by Death during hospital stay

Age Group	Death during hospital stay		Total
	Yes	No	
21 to 40 years	1(.7%)	15(10.79%)	16(11.5%)
41 to 60 years	3(2.15%)	48(34.53%)	51(36.69%)
above 60 years	15(10.79%)	57(41%)	72(51.7%)
Total	19(13.7%)	120(86.3%)	139(100.0%)

DISCUSSION

Stroke is the leading cause of neurological disability around the globe. According to different studies it is the third commonest cause of death. This study focused on distribution of contributing factors among patients with Hemorrhagic and Ischemic stroke in a tertiary care hospital. During the six month period of study, a sample of 139 stroke patients (Hemorrhagic and Ischemic) was studied in the Ayub Teaching Hospital Abbottabad.

Proportion of male patients was slightly higher as compared to females in our study (56.1% and 43.9% respectively). Only one study conducted at Mayo Hospital, Lahore shows that female are more affected (52%) than male. Almost all other studies shown higher frequency of males with a mean age ranging from 59.2-71.42%.[6-10] The mean age of the patients in this study was 59.65±11.226 years which were similar to one of study where the mean age of the patients was 59 years.[11] In the present study majority of Ischemic

stroke belongs to the age group above 60 years which is in keeping with other studies.[4]

In our study hypoalbuminemia was found in 65 patients (46.8%)in whom 37 were male patients and 28 female patients, which is close to the study of (Vahedi A, Lotfinia I).[5]

In our study elevated serum creatinine level was found higher in male patients than female patients. While raised serum blood glucose (fasting ≥126mg/dl or random ≥200mg/dl) was found higher in male i.e. 1.4% than the female patients. Glasgow Coma Scale, which is a predictor of stroke severity was below 9 in 36(25.9%) patients in whom 23 were male patients(25.9%) and 13 were female patients(9.4%).

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