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# STROKE-RELATED COMPLICATIONS DUE TO DELAY IN SEEKING MEDICAL CARE: A REVIEW OF 100 CASES

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## ABSTRACT

Stroke is a life-threatening condition. It constitutes the third leading cause of death and significantly compromises quality of life. We hypothesized that a major factor behind stroke-related complications is delay in seeking medical help after stroke onset. We have conducted a hospital-based, descriptive study of patients with stroke presenting to the medical units of Combined Military Hospital, Muzaffarabad (Azad Kashmir). There were a total of 100 patients (64 males, 36 females), age range 14-75 years (mean 45 years). Higher rate of complications was observed in patients who delayed seeking medical help ( $p < 0.05$ ). Thirty seven percent patients presented within 6-12 hours of onset, 27% from 12-24 hours, and 36% after a period of one day. Collectively, 63% presented at least 12 hours after stroke onset. The following complications were seen in patients presenting with delay of 12 hours or more: seizures (81%), aspiration pneumonia (87.5%), deterioration of consciousness (78%), infection at cannula site (100%), mortality (8.9%), bed sores (100%), stress ulcers (92.3%), depression (91%), and deep-vein thrombosis (100%). Prompt diagnosis and early management is essential to decrease morbidity and mortality after stroke.

Stroke is defined according to World Health Organization criteria as rapidly developing symptoms or signs of focal and, at times, global loss of cerebral function with no apparent cause other than that of vascular origin.<sup>1</sup> Stroke subtypes include thrombotic, embolic and hemorrhagic strokes.<sup>2</sup> In general, only a small number of patients seek medical help within first few hours of stroke onset. This is a crucial consideration because (i) brain tissue surrounding the ischemic core (penumbra) remains viable and responsive to therapeutic intervention<sup>3,4,5,6,7</sup> and (ii) the majority of patients develop complications during this early period including aspiration pneumonia, seizures, deterioration of consciousness, and infection.<sup>8,9</sup> Public awareness regarding stroke as a medical emergency requiring immediate attention is crucial, as the delay may mean the difference between successful management and permanent disability.<sup>10,11</sup>

## MATERIALS & METHODS

A total of 100 patients both male and female were recruited from the medical units of Combined Military Hospital, Muzaffarabad. Stroke diagnosis was based on history, physical examination, and brain imaging (CT scan). Complications, management and outcome were recorded

on a structured questionnaire. Patients were followed for six months and follow-up data also recorded. Patients were excluded from this study if stroke was not the primary reason for admission. Descriptive statistics and comparison of proportions (chi-square) were used for statistical analysis.

## RESULTS

Data from this study are summarized in tables 1 through 5. We divided the time of presentation to hospital into three segments: 6-12 hour; 12-24 hours; and more than 24 hours. We found that 37% patients presented within 6-12 hours, 27% within 12-24 hours, and 36% came to hospital after one day. Overall 36% of all patients presented over 12 hours after stroke onset. Mean age was 45 years, with a range from 14 to 75 years (Table 1).

The most common risk factor was hypertension, followed by ischemic heart disease, cigarette smoking, diabetes mellitus, elevated blood lipids, and positive relevant family history. Other conditions included mitral valve disease, prior stroke, history of cardiac bypass surgery, and chronic renal failure, in that order (Table 2).

**TABLE.1**  
**Age Distribution of 100 patients with stroke**

Age	No. of Patients	Male	Female
14-29 yrs	5	4 (80%)	1 (20%)
30-44 yrs	23	18 (78.2%)	5 (22%)
45-59 yrs	25	15 (60%)	10 (40%)
60 yrs	47	27 (57.4%)	20 (42.6%)

**TABLE.2**  
**Risk Factors among 100 patients with stroke**

Risk Factors	No. of patients	Male	Female
a) Hypertension	59	37 (63%)	22 (37.2%)
b) Ischemic heart disease	56	34 (61%)	22 (39.2)
c) Smoking			
d) Diabetes Mellitus	41	38 (93%)	3 (7.31%)
e) Hyperlipidemia	38	23 (61%)	15 (39.4%)
f) Family history of diabetes, hypertension	30	21 (70%)	9 (30%)
g) Mitral valve disease	27	19 (70.3%)	8(30%)
h) Recurrent stroke			
i) Bypass surgery			
j) Chronic renal failure	14	9 (64.2%)	5 (36%)
	11	6 (54.54%)	5 (45.45%)
	2	2 (100%)	-
	1	1(100%)	-

The tabulated value of  $X^2$  at 5% level of significance with degree of freedom 1 is 3.84

Etiology of stroke was found to be thrombotic in 37% of patients followed by hemorrhagic (31%), embolic (28%) and subarachnoid hemorrhage (4%). In 64% of patients hemiplegia was right-sided, whereas in 36% it was left-sided.

Out of 100, 17 (17%) patients died. Of these 10 patients had sought help more than 24 hours after onset, 5 sought medical help within 6-12 hours and 2 had arrived within 6 hours.

Of the observed complications in patients seeking help after 12 hours, 81% had seizures, 87.5% aspiration pneumonia, 78% deterioration of consciousness, 100% decubitus ulcers, 92.3% stress ulcers, 91% depression, and 100% had deep-vein thrombosis. Delay in consultation was related to a higher rate of complications ( $p < 0.05$ ). We also found that male patients over age 60 years who developed left hemisphere hemorrhagic stroke and presented more than 12 hours after onset, had more complications (single or in combination) than patients lacking these characteristics.(Table 3)

TABLE.3

**Complications & Etiology of stroke**

Complications	No. of patients	Hemorrhagic	Thrombotic	Embolic	SAH*
(i) Seizures	47	17(36.1%)	5(11%)	23(49%)	2(4.2%)
(i) Aspiration pneumonia	40	12(30%)	11(27.5%)	16(40%)	1(2.5%)
(ii) Deterioration of conscious level	36	18(50%)	11(36%)	6(17%)	1(3%)
(iii) Infection at cannula site	27	9(33.3%)	14(52%)	4(4%)	
(iv) Stress ulcer	13	5(38.4%)	6(46.1%)	2(15.3%)	
(v) Depression	11	4(36.3%)	5(45.4%)	2(18.1%)	
(vi) Bed sores	10	3(30%)	4(40%)	(30%)	

TABLE.4

**Time of presentation and development of complications**

Time of presentation	No. of patients	Complications	No. of patients	%
Within 6-12 hours	37	(i) seizure	9	24.3%
		(ii) deterioration of conscious level	8	22
		(iii) aspiration Pneumonia	5	13.5
		(iv) death	2	5.4
		(v) depression	1	2.7
		(vi) stress ulcers	1	2.7
12-24 hours	27	(i) Aspiration Pneumonia	9	33.3
		(ii) Seizures	9	33.3
		(iii) Infection at cannula site	8	30
		(iv) Deteriorated conscious level	7	26
		(v) Death	5	18.5
		(vi) Stress ulcers	3	11.1
		(vii) Depression	2	7.4
		(viii) Bed sores	1	3.7
1 day	36	(i) seizures	29	80.5
		(ii) aspiration Pneumonia	26	72.2
		(iii) deteriorated conscious level	21	58.3
		(iv) cannula infection	19	52.7
		(v) death	10	27.7
		(vi) bed sores	9	25
		(vii) stress ulcer	9	25
		(viii) depression	8	22.2
		(ix) deep vein thrombosis	2	5.55

TABLE.5  
Complications & Delay in seeking medical help

Complications	1 day	12-24 hrs	6-12 hrs	Total No.
(i) Seizures	9 (62%)	9 (19.1%)	9 (19.1%)	47
(i) Aspiration pneumonia	26 (65%)	9 (22.5%)	5 (12.5%)	40
(ii) Deteriorated conscious level	21 (58.3%)	7 (19.44%)	8 (22.22%)	36
(iii) Cannula infection	19 (70.3%)	8 (30%)	-	27
(iv) Bed sores	9 (90%)	1 (10%)	-	10
(v) Stress ulcers	9 (69.3%)	3 (23%)	1 (8%)	13
(vi) Depression	8 (73%)	2 (18.1%)	1 (9%)	-
(vii) Deep vein thrombosis	2 (100%)	-	-	-

## DISCUSSION

Strokes are considered life-threatening emergencies. They are frequently encountered in medical and neurology wards worldwide including Pakistan. With recent advances, stroke can now be considered both a preventable as well as a treatable disease in which time is of the essence. This study was based on detailed history, physical examination, and supportive imaging and laboratory data to determine stroke subtype, risk factors, complications, and outcome. It is a hospital-based, descriptive study. Our protocol included follow-up for a period of six months. Patient sampling was non-probability and purposive.

Regarding the time of presentation of patients after stroke onset, a study was performed to analyze retrospectively the data of 100 patients admitted in the neurology ward of Mayo Hospital Lahore during the months of January-July 1995 (personal communication). This study observed that only a few cases (6%) of stroke come within first 6 hours after onset. Majority (48%) of the cases came after one day, and only 34% came within 6-12 hours. In our study, 37% came within 6-12 hours, 27% from 12-24 hours, and 36% presented more than one day after stroke onset. In common with our study, a substantial proportion of stroke patients were motivated to seek medical attention over 24 hours after stroke onset.

This work has limitations in that (i) it may not be a representative sample of the stroke burden in the local community; and (ii) the number of patients is relatively modest. It is uncertain whether the results can be generalized. Our findings do highlight the need for a larger study with greater patient numbers and longer observation periods. These data also underscore the need for government and political authorities to take active part in making the public aware of stroke severity and

complications, and the need to seek emergent and early medical help.

We conclude that the majority of stroke patients present late after the onset of a stroke; and this factor leads to a considerable increase in the development of complications such as aspiration pneumonia and seizures that negatively impact stroke outcome. Delayed arrival also precludes immediate and limited therapeutic interventions such as thrombolytic tissue-salvage therapy.

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