

ACUTE COMPLICATIONS OF STROKE

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ABSTRACT

Objective: To study the frequency of acute complications of stroke in patients admitted in General Neurology Unit, PGMI, Lady Reading hospital, Peshawar.

Material and Methods: This study was conducted on 50 consecutive patients of acute stroke presenting within 7 days of onset of stroke. All patients fulfilling WHO definition of acute stroke were admitted in Neurology unit of LRH. Patients with subarachnised haemorrhage were excluded from study. After initial assessment for degree of neuro-deficit and functional status, patients were investigated for stroke subtypes and underlying causes. Daily assessment of all patients for occurrence of complication was done till discharge from hospital or death of the patient.

Results: Out of 50 patients, 24 (48%) were males and 26 (52%) were females. Mean age was 54.38 years (+/- 16.52). Patients with intra-cerebral bleed were 9 while those with cerebral infarction were 41. Median stay in hospital was 6 days. Main complications were chest infection in 12 (24%), constipation in 12 (24%), aspiration pneumonia in 6 (12%) and UTI in 5 (10%). 24 patients (48%) had no complications. Two patients (4%) died from aspiration pneumonia during hospital stay.

Conclusion: Post stroke complications are common and alter the outcome of stroke. Multidisciplinary stroke units are needed to decrease the complications of acute stroke.

Key words: Stroke, Complications, Cerebral Infarct, Cerebral Haemorrhage.

INTRODUCTION

Stroke is the third commonest cause of death after coronary artery disease and all can-

cers.¹ According to WHO estimates for the year 2020, stroke will become the second leading cause of death and ischaemic heart disease as the leading cause in developing

and developed world.² About 200 people per 100,000 population will have first ever stroke every year.³

The impact of stroke on individuals, his family and society is attributed to increased morbidity and mortality of stroke. The outcome of stroke is crucially dependent on the extent and site of brain damage, patient's age, pre-stroke health status,⁴ as well as prompt and proper therapeutic intervention. Haemorrhagic stroke carries a higher risk of mortality than ischaemic stroke.⁵ Post-stroke complications are common and various studies have reported the complication rates of 40% to 96% in acute stroke patients.^{6,7} In order to minimise these complications, stroke should be considered as a medical emergency and like "heart attack" should be treated as "acute brain attack".

In developing countries like Pakistan, where established stroke units are not available, general medical or general neurology units (in some hospitals) usually treat majority of stroke patients. This study was conducted to determine the frequency of acute complications in stroke patients admitted to general neurology unit.

MATERIAL AND METHODS

We recruited all patients with acute stroke according to WHO definition of stroke, presenting within 7 days of stroke onset. However, patients with subarachnoid

AGE IN YEARS

Age groups	Number n=50	Percentage
10-25	3	6
26-40	8	16
41-60	21	42
> 60	18	36

TABLE 1

ACUTE COMPLICATIONS OF STROKE

Complications	Frequency n=50	Percentage
Chest infection	12	24
Constipation	12	24
Aspiration Pneumonia	6	12
UTI	5	10
Depression	4	8
Recurrent stroke	2	4
Seizures	2	4
Urinary Retention	2	4
Pressure sores	1	2
Other infections	1	2
Congestive cardiac failure	1	2
Side effects	1	2
No complications	24	48

TABLE 2

haemorrhage were excluded from the study. All patients, meeting the criteria, were admitted in the neurology unit of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar. Initial assessment of all patients was done at admission and relevant demographic details and modified Rankin scale was recorded. Patients were thoroughly investigated for stroke sub-types and underlying causes. Daily assessment for occurrence of various complications was carried out for each patient till discharge from the hospital or death of the patient in the hospital. We used the simple clinical definition of complications as used by Langmore et al.¹⁰ On discharge, final assessment was performed with recording of modified Ranking scale. Relevant data was recorded on a specially designed performa. Data was statistically analyzed by using SPSS Window's version 8.0.

PATIENT'S STAY IN HOSPITAL

Number of days in Hospital	Frequency n=50	%age
2	2	4
3	7	14
4	8	16
5	6	12
6	6	12
7	11	22
8	6	12
10	3	6
21	1	2

Median stay in hospital {days}= 6

TABLE 3

RESULTS

This study comprised of 50 consecutive patients with acute stroke, ranging in age from 10-87 years, mean age 54.38 years (SD \pm 16.52) with majority of patients in age group 41-60 years (table 1). Out of 50 patients, 24 were (48%) males and 26 were (52%) females. Nine patients(18%) had intracerebral bleed and 41 patients (82%) had cerebral infarcts. Stroke had occurred for the first time in 43 patients (86%) and was recurrent in 7 (14%) patients. Regarding the

SUBTYPES OF STROKE

Stroke subtype	Frequency n=50	Percentage
Partial anterior circulation infarction	20	40
Total anterior circulation infarct	4	8
Posterior circulation infarct	3	6
Lacunar infarct	14	28
Intracerebral haemorrhage	9	18

TABLE 4

MEAN VALUE OF DIFFERENT VARIABLES

Variables	Mean value	Standard deviation (+/-)
Age (years)	54.38	16.52
Systolic blood pressure (mm Hg)	148	35.97
Diastolic blood pressure (mmHg)	91.8	20.6
Glasgow coma scale	12.82	2.88
Random blood sugar (mg/dl)	109.4	42.6
Cholesterol (mg/dl)	171.6	45
HDL (mg/dl)	31.6	7.7
Triglycerides (mg/dl)	148.18	57.4
Blood Urea (g/dl)	44.38	29.77

TABLE 5

risk factors 38 patients (68%) had hypertension, 11 patients (22%) had cardiac problems (like valvular heart disease, ischaemic heart disease and congestive cardiac failure), and 8 patients (16%) had diabetes mellitus. Mean systolic BP was 148 mmHg (\pm 35.97) and mean diastolic BP was 91.8 mmHg (\pm 20.6). Mean value of investigations (table 5) included cholesterol 171.6 (\pm 45), triglycerides 148.18 (\pm 57.4), random blood glucose 109.4 (\pm 42.6) and urea 44.3 (\pm 29.7). Patients stay in the hospital was variable ranging from 2 to 21 days with a median stay of 6 days (Table 3). Two patients died during the hospital stay (4%) due to aspiration pneumonia with primary diagnosis of intracerebral bleed, while 48 patients (96%) patients were alive at the day of discharge from the hospital. Out of 50 patients, 26 patients (52%) had one or more complications while 24 (48%) had no complications during hospital stay. Main complications during hospital stay (Table 2) were chest infection in 12 (24%), constipation in 12 (24%), aspiration pneumonia in 6 (12%) and UTI in 5 (10%) patients. Less

common complications were depression in 4 (8%), seizures in 2 (4%), recurrent stroke in 2 (4%) and urinary retention in 2 (4%) patients.

DISCUSSION

Stroke is one of the leading cause of morbidity and mortality in both developing and developed countries. Outcome of stroke is not only dependent on the co-existing medical disorder such as hypertension, diabetes mellitus, and cardiac disease¹¹ but also strongly associated with post-stroke complications.⁹ It is very difficult to compare the complication rates and outcome measures in various populations due to the difference in the level of care, extent of brain insult, age of the patient and pre-stroke health of the patient.

Our results showing overall complication rate of 52% may appear low compared to Langmore et al,¹⁰ however, this comparison may be due to the fact that the above mentioned study was based on the follow-up for 30 months while in our study the period of assessment was only during the hospital stay, which range from 2 to 21 days with a median stay of 6 days. It is also evident from the above-mentioned study that the weekly point prevalence of symptomatic complication in hospital patients was ranging from 0.5 to 35 for individual complications. Complication rate is variable in different studies ranging from 40 to 96% having being reported.^{6-9,12-14} The most common complications in our study were chest infections, constipation, aspiration pneumonia and UTI. These findings were consistent with the relatively high frequencies of chest infections, UTI and other pyrexial illnesses reported by Langmore et al.¹⁰ The low frequencies of complications like pressure sores, skin-breakdown, DVT, and thrombo-embolism may be attributed to the short stay in the hospital and active

physiotherapy with side nursing care, most emphasised in acute stroke care. In our study two patients died (4%) while in hospital. Both patients had intra-cerebral bleeds and developed aspiration pneumonia, with a GCS of 4/15 and 5/15. The case fatality rates of first ever stroke (all types combined) in UK are 12% at 7 days and 18% at 30 days.⁵ Deaths occurring within the first week after the stroke are mainly due to the direct effect of the cerebral damage.^{11,15,16} The later complications are due to immobility and cardiac events and these contribute to case fatality rate.^{4,5} Haemorrhagic strokes have higher mortality rates than ischaemic strokes. The mortality of intra-cerebral haemorrhage is 52% at 30 days.¹⁷ Prognosis of intra-cerebral haemorrhage depends on the size and location of the haematoma, its ventricular extension and the presence of hydrocephalus.

Despite the short stay in hospital the complication rate of 52% is significantly high. This complication rate can be further reduced in multidisciplinary stroke care by a specialised stroke team consisting of an emergency physician, cerebro-vascular nurse, clinical neurologist, intensive care specialist and a research coordinator. The concept of optimal care by a specialised stroke unit has been endorsed by the data from randomized trials of stroke care.¹⁸ Stroke units can not only reduce the acute medical complication rate but also lead to improve long term rehabilitation of stroke patients.

CONCLUSION

Post-stroke complications are common and are responsible for increased morbidity and mortality of the stroke patients. These complications may slow the process of recovery. Efforts should be made not only to prevent these complications but to provide prompt and appropriate treatment for these complications. Establishing multidiscip-

linary stroke units can reduce post-stroke complications.

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