

FREQUENCY OF COMPLICATIONS OF STROKE

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ABSTRACT

Objectives: Stroke is considered to be a lethal condition associated with significant mortality and morbidity due to its complications. The objective of our study was to determine the frequency of complications of acute stroke.

Material and Methods: The study was carried out in the Department of Medicine, Hayatabad Medical Complex, Peshawar from July 2008 to December 2008. Patients presenting within the first week of stroke were admitted. After initial assessment of the degree of neurological deficit and functional disability, patients were investigated for the type and cause of stroke. Daily assessment of all patients for the development of complications was done till the discharge or death of the patient.

Results: Out of 93 patients, 58 (62.4%) were male and 35 (37.6%) were female. Mean age was 59.98 (\pm 11.95SD). Intra-cerebral bleed was present in 32(34.4%), while those with cerebral infarction were 57(61.3%). Mean stay in the hospital was 6 days. Main complications were aspiration pneumonia in 28 (30.1%), constipation in 28 (30.1%), chest infection in 27 (29%), dehydration in 21 (22.6%) and urinary tract infection in 12 (12.9%). 16 patients (17.2%) had no complication. Seven (7.5%) patients died during hospital stay, 4.4% of them due to aspiration pneumonia.

Conclusion: Post-stroke complications are very common, which can alter the outcome of the disease.

Key Words: Stroke, Cerebral Infarct, Cerebral Hemorrhage, Aspiration Pneumonia.

INTRODUCTION

The prevalence of stroke is 6.4% in Pakistan according to the largest trial conducted recently¹. Stroke has been defined by W.H.O as "an acute neurological deficit with focal and at times global neurological dysfunction, lasting for more than 24 hours or, resulting in death before 24 hours and in which, after adequate investigations, clinical signs are presumed to be of a non traumatic vascular origin².

Stroke is the third most common cause of death in developed countries. The age-adjusted annual death rate from stroke is 116 per 100,000 population in the U.S.A and some 200 per 100,000 in the U.K³.

The incidence of stroke is decreasing due to better management of risk factors, but since stroke rate increases greatly with age and the number of elderly people is increasing, the burden of stroke on individuals, families and on the health services is unlikely to fall rapidly^{4,5,6}.

Cerebrovascular disease has been shown to be a major cause of death and disability in all societies.⁷ Substantial proportion of morbidity and mortality occurring later on in the ensuing weeks is due to potentially preventable or treatable complications of

stroke. Data from the RANTTAS trial⁸ showed that there was a relationship between serious medical complications and severe disability that was not due to the severity of stroke. The prevention, recognition, and management of medical conditions after stroke form an integral part of inpatient care.^{9,10,11}

MATERIALS AND METHODS:

This descriptive study was carried out in the Department of Medicine, Hayatabad Medical Complex Peshawar from July 2008 to December 2008.

All acute stroke patients presenting within the first week were evaluated and only those who fulfilled the definition of stroke were included in the study. Patients with documented evidence of subarachnoid haemorrhage were excluded.

Demographic characteristics were recorded. Detailed clinical history, examination and relevant investigations were performed, i.e. random blood sugar, Electrocardiogram, full blood count, lipid profile and CT brain.

Patients were managed along standard guidelines. Complications at the time of admission e.g. aspiration pneumonia, fall or trauma were recorded and treated accordingly. Each day patients were clinically observed, complications noted and investigations were done for suspected complications.

All data was entered in an objectively structured proforma. Data collected was analysed using SPSS 10.

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RESULTS

Ninety-three patients with acute stroke were included in the study. The mean age was 59.98 years (± 11.95 SD) with majority of patients in age group 50-70 years (Table 1). Out of 93 patients, 58 (62.4%) were male and 35 (37.6%) were female (Fig 1). Thirty two (34.4%) patients had intra-cerebral bleed and 57 (61.3%) patients had cerebral infarction while 4 (4.3%) patients were diagnosed with lacunar infarcts (Table 2).

Stroke had occurred for the first time in 89 (96%) patients and was recurrent in 4 patients (4.3%) patients. Mean systolic BP was 150.15 mmHg and mean diastolic BP was 98.1 mmHg.

Patients stay in the hospital was variable ranging from 1 to 12 days with a mean stay of 6 days. Seven (7.5%) patients died during the hospital stay of which four died due to aspiration pneumonia with primary diagnosis of intra-cerebral bleed, with a GCS of 3/15 to 6/15, while 86(92.5%) patients were discharged after hospitalization.

Out of 93 patients, 77 (83%) patients had one or more complications during hospital stay chest infection in 27 (29%), constipation in 28 (30%), aspiration pneumonia in 28 (30%) and UTI in 12 (13%) patients occurred. Dehydration was observed in 21 (23%) patients and raised intracranial pressure was observed in 10 (11%) patients.

A less common complication was deep vein thrombosis in 7 (7.5%) patients. No pulmonary

Table 1: Frequency of different age groups with stroke (n=93)

Age in years	Frequency and %age
20-49	13 (13.9%)
50-70	66 (70.9%)
>70	14 (15.0%)

Table 2: Frequency of different types of stroke (n=93)

Stroke type	No. of patients and %age
Infarction	57 (61.3%)
Lacunar infarcat	4 (4.3%)
Intracerebral bleed	32 (34.4%)

Table 3: Association of Aspiration Pneumonia and Glassgow Coma Scale

GCS	3/15	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	13/15	15/15	Total
Aspiration pneumonia	1	1	6	6	8		1		1	2		2	28

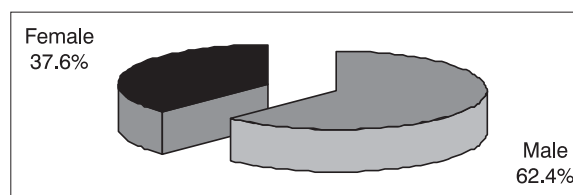


Fig. 1: Percentage Sex Distribution of Stroke

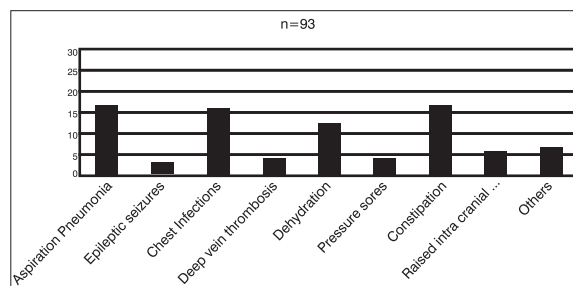


Fig. 2: Frequencies of different complications of Acute Stroke.

embolism was observed in any of our patients. Pressure sores developed in 7(7.5%), trauma in 6(6.5%) and seizures in 5 (5.4%) patients. (Figure 2).

An increasing trend of aspiration pneumonia was noticed with a lower Glassgow Coma Scale. The most common trend of complications of different types was observed in the age group 50-70 years.

DISCUSSION

In several studies of variable designs done in overseas centers, the complication rates after a stroke varies from 48-96%. Our study showed complications in 84% of patients. The complication rate in the study by Roth et al was 75%⁹ and 85% in P. Langhorne et al¹². Results from these studies show a wide variation due to differences in study designs^{12,13} and patient cohort^{14,15} selection and diagnostic criteria^{16,17}, length of inpatient stay and duration of follow-up.¹⁸⁻²⁴ Also, most of these studies focused on individual complications rather than a spectrum of complications, thus enabling more detailed diagnostic criteria to be employed.

Our study showed constipation in 30% of patients. Prevalence of constipation in the general population is high, around 15%. The prevalence is higher in the female population and in the elderly. A study on 15,000 women, quoted in a review article by Winge et al²⁴, found that 14% to 27% were constipated.

We felt that this result has important implications to clinical practice. Constipation can be associated with significant morbidity; e.g. acute confusion, subacute intestinal obstruction, abdominal pain, loss of

appetite, nausea and vomiting, etc. All of these will have a significant negative impact on the rehabilitation process and eventual outcome. The stroke event itself, immobility after stroke, dehydration and nasogastric formulations can all contribute towards constipation¹⁰.

In this study aspiration pneumonia (30%) and chest infections (29%) other than pneumonias were among the major observed complications, which is also observed in a study carried out by Alam et al¹³ and also an international study by P. Langhorne et al¹². This study shows that aspiration pneumonia is a very common complication after stroke that contributes independently to the likelihood of poorer outcome. Seven patients (7.5%) died during the hospital stay. Four died due to aspiration pneumonia with primary diagnosis of intracerebral bleed.

Dehydration was observed in very big proportion (23%), in our observation compared to (10%) by P. Langhorne et al¹². The frequency of UTI 12% in our study was lower to 30.5% by Roth et al⁸ 16% by Davenport et al¹¹ and 24% by Langhorne et al¹². Deep vein thrombosis (DVT) and pulmonary embolism (PE) are uncommon but important complications after stroke. P. Langhorne¹² has also small percent of DVT observation in his study (2%). Our study shows a higher incidence of DVT.

CONCLUSION

Post stroke complications are common and pose a significant challenge to both the health care provider as well as to the patient. More studies are required to determine the time interval from onset of stroke to development of complications and to determine the risk factors for developing these complications in our local population. Modification of these risk factors will reduce the rate of complications.

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