

Original Article

FREQUENCY OF KNOWN RISK FACTORS FOR STROKE IN POOR PATIENTS ADMITTED TO LAHORE GENERAL HOSPITAL IN 2000

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ABSTRACT

Objective: To study the risk factors of stroke in a poor hospital population.

Design: Prospective, descriptive hospital based study.

Setting: Medical Unit I, Lahore General Hospital, Lahore.

Subjects and methods: All poor adults having treatment arranged by social welfare department through zakat admitted with features of stroke during the period January 2000 to December 2000 were included in the study. Type of stroke was identified by CT scan brain and risk factors for stroke and functional outcome at the time of discharge were noted on a proforma.

Results: Out of 100 patients studied, 79% had cerebral infarction and 21% had cerebral hemorrhage. Most of the patients had more than one risk factor which included: hypertension 61%, smoking 53%, sedentary habits 38%, diabetes mellitus 33%, dyslipidaemia 32%, coronary artery disease 22%, obesity 11%, alcoholism 9% and carotid artery stenosis 8%. In-hospital mortality was 7% and most of them (89%) at discharge were dependent for their daily activities.

Conclusions: Hypertension, smoking and diabetes mellitus are major risk factors for stroke in this poor population and should be the main targets for primary and secondary prevention of stroke. Availability of free medicines and developing stroke units can go a long way in reducing mortality and improving rehabilitation of such patients.

KEY WORDS: Stroke, risk factors, poor social class.

INTRODUCTION

Strokes kill about 5 million people each year making this the second leading cause of death worldwide¹. At least 15 millions others have non-fatal strokes annually, and about a third are disabled as a consequence.^{2,3} Nonmodifiable risk factors for stroke include age, sex, family history, race and ethnicity. Modifiable risk factors for stroke include hypertension, cardiac disease (particularly atrial fibrillation), diabetes, hyperlipidaemia, cigarette smoking, alcohol abuse, physical inactivity, asymptomatic carotid stenosis, and transient ischemic attack.⁴

Although there are studies on the risk factors of stroke in Pakistan⁵⁻⁹, there is no study about the frequency of these risk factors in poor patients admitted to hospital. The present

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study was done to find out frequency distribution of risk factors for stroke.

PATIENTS AND METHODS

This was a descriptive hospital based study. All the poor adults above the age of eighteen years with stroke admitted to Medical Unit I, Lahore General Hospital, Lahore during the period January 2000 to December 2000 were included. A poor was defined as a person who had claimed free management in the hospital through social welfare department from zakat fund. Stroke was defined as focal neurological deficit due to vascular lesion. All those patients with focal neurological deficit of more than 24 hours duration were included in the study. Patients diagnosed to have associated tuberculous meningitis, brain tumor, viral or bacterial encephalitis and multiple sclerosis were excluded. A proforma was designed to record the demographic profile, risk factors for stroke and laboratory investigations. Risk factor evaluation included age, sex, history, clinical evaluation and investigations. History included history of smoking with duration and cigarettes smoked daily, a past history of TIA or stroke, family history of stroke, use of antidiabetic or antihypertensive drugs and in females use of contraceptive pills. Clinical evaluation included BP, carotid bruit, and evidence of atrial fibrillation and type of neurological deficit. Investigations included blood glucose, lipid profile and ECG. Hypertension was diagnosed if the patient had been having a past history of it, use of anti-hypertensive drugs or if the BP remained > 140/90 mm Hg without treatment, 2 weeks after the stroke.

Diabetes was diagnosed according to WHO criteria.¹⁰ Dyslipidaemia was diagnosed if the fasting total cholesterol, LDL and HDL were abnormal according to the NCEP III guidelines¹¹. Obesity was diagnosed if the waist to hip ratio (WHR) was > 0.80 or > 0.95 in females and males respectively. Every patient had a plain CT scan brain to evaluate the type of stroke. If indicated, contrast brain CT, echocardiography and carotid doppler flow

studies were done to confirm the diagnosis and assess the cardiovascular risk factors. Follow up CT scan brain or contrast studies were done when needed.

RESULTS

Data of 100 cases with stroke was recorded during the study period which included 47 % males and 53 % females with a male to female ratio of 1: 1.1. Mean age was 53.0 years for all cases, while mean age in males and females was 56.2 and 48.9 years respectively.

The average stay in the hospital was 7 days. Type of stroke included cerebral infarction in 78% and intracerebral hemorrhage in 22%. Most of the cases had more than one risk factors. (Table-I) Out of 33 diabetics with stroke, 19 were female and 14 were male and 21 had cerebral infarction while 12 had intracerebral hemorrhage. In-hospital mortality was 7%. Glasgow Coma Scale (GCS) was one of the most important determinants for the outcome. Three out of seven who died, had a GCS of five, however all the seven patients died of chest infection. At the time of discharge from hospital, 47% showed marked improvement

Table-I: Risk factors for stroke in poor patients (n = 100)

Hypertension	61
Smoking	53
Diabetes Mellitus	33
Dyslipidaemia	32
Coronary artery disease	22
Previous stroke	13
Carotid artery stenosis	8
Atrial fibrillation	7
Polycythaemia	2
Alcoholism	9
Heroin addiction	2
Obesity	11
Sedentary life style	38

while 46% showed slight improvement, 89% were still dependant for bath, toilet, feed and other daily activities. At discharge, only 4% were independent regarding daily activities.

DISCUSSION

The mean age of acquiring stroke in our study was 53.0 years which was slightly lower than 57.5 years reported by Akhtar⁵ and much lower than 70 years in United States¹². This difference is possibly because of better awareness and control of risk factors in United States or shorter life span in Pakistan as compared to Western countries. Most (78%) of our patients had cerebral infarction which is higher than 69% reported by Ali *et al*⁶, and 52% by Ruhul Amin⁷ but almost similar to 80% in Western data.¹³ Hypertension as a risk factor was present in 61% of our cases which was almost similar to 60% reported by Nasir Mehmood⁸ and 62% by Javed *et al*⁹ but less than 72% and 85% reported in United States¹² and Russia¹⁴ respectively. Risk of stroke can be reduced by at least 38% by control of hypertension¹⁵. Stroke risk mainly depends on the quality of blood pressure control as evidenced by studies from UK and Netherlands^{16,17}. In our study 53% of patients were smokers which is higher than 24% & 42% reported elsewhere in Pakistan^{8,9}. The high frequency of smoking in our study could be due to poor population as poor people are more likely to be smokers because they adopt it as a leisure activity and are less likely to stop because of poor educational level. Diabetes was a risk factor in 33% of our cases which is more than 20% reported from Denmark¹⁸ but less than 41% reported from Saudi Arabia¹⁹. Dyslipidaemia was present in 32% of our patients which is higher than 11-23% reported in other studies from Pakistan^{6,8}. This is surprising because poor patients as ours are likely to be malnourished and having low lipids.

Higher prevalence of dyslipidaemia in our poor stroke population could be due to smoking and underlying diabetes.

Most of our patients were uneducated and

unaware of the drastic outcome of poor control of diabetes mellitus, hypertension and other risk factors. As has been previously reported, only 23% and 40% of the hypertensive and diabetic patients respectively attending this hospital take drugs as prescribed^{2,21}. Non-compliance to treatment is the main cause of stroke in our patients because they are very unlikely to take treatment because it is very expensive. As a result most of them stop anti-hypertensive, anti-diabetic and lipid lowering drugs resulting in stroke and other complications which are more expensive to treat.

Stroke is a major contributor to total morbidity and mortality. Mortality of 7% in our study is far less than 25-34%^{22,23} reported in other studies of stroke in Pakistan. Lower mortality in our study could be due to care by a neurologist. The mortality can be further reduced by development of a stroke unit, as such units not only improve the mortality but may also help in rehabilitation of stroke patients²⁴. Most of our patients (89%) were still dependent for the daily activities at the time of discharge from hospital. There is need for similar studies in the community to compare the risk of stroke in the poor and affluent population.

CONCLUSIONS

We conclude that poor socio economic demographics increase the likelihood of stroke in patients with single or multiple risk factors. This increase can be attributed due to non-affordability of medication or proper follow-up. Availability of free medication and development of stroke units with affordable facility can go a long way in reducing the mortality and improving rehabilitation of these patients.

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