

Patterns of Vascular Events and Risk Factors of Stroke- A Retrospective Study in a Tertiary Care Hospital of Bangladesh

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Abstract

Although stroke can affect any age but overall its incidence increases with advanced age. A number of risk factors affect stroke incidence. Here, we have tried to focus on relation of age and sex with stroke incidence as well as identification of modifiable risk factors, both of which bears important implications both patients and physicians.

This retrospective study was undertaken by analyzing previous records of patients admitted in medicine ward of Shahabuddin Medical College and Hospital Dhaka, Bangladesh, from June 2013 to December 2014. Patients with stroke confirmed by CT/MRI scan were included in the study. Patient's age, sex, risk factors including smoking, diabetes mellitus, hypertension and dyslipidemia were recorded from the history sheets and attached investigation slips.

A total of 64 patients diagnosed as having stroke by CT/MRI scan were included. Overall male and female ratio was 1.2:1. In the study cerebral infarction, intra cerebral haemorrhage and subarachnoid haemorrhage were found in 71.87%, 20.31%, and 7.81% patients respectively. Most patients were between 40-79 years with male predominance but above 80 years female patients more than male. Among the stroke patients hypertension was found in 60.93% patients followed by smoking 48.43% dyslipidemia 40.38% and diabetes mellitus 37.93%.

Stroke can be regarded as a preventable disease to large extent. Quitting smoking, detecting and treating most of the

modifiable risk factors can go a long way to protect the community against stroke.

Key Words : Stroke, infarction, haemorrhage, hypertension, smoking, diabetes mellitus, hyperlipidemia.

Introduction

Stroke is the third most common cause of death after coronary heart diseases and all cancer deaths. According to world health organization 15 million people suffer from stroke worldwide each year; of these 5 million people die and another 5 million are permanently disabled¹. In Bangladesh, stroke has been major causes of death and disability. Few major studies have been undertaken in Bangladesh to determine the risk factors among stroke patients and prevalence of ischaemic and haemorrhagic strokes. It is to be noted that majority of strokes are due to infarction of brain and minority of are due to intracerebral haemorrhage² but interestingly some reports from Asia^{3,4} showed that intracerebral haemorrhage constitute a substantial percentage of stroke patients. Modifiable risk factors of stroke include hypertension, diabetes mellitus, hyperlipidemia and smoking⁵.

Materials and Methods

This retrospective study was conducted by scrutinising the previous records of the patients admitted in Shahabuddin Medical College and Hospital Dhaka, Bangladesh, from June 2013 to December 2014. The objective of the study was to identify the most events and to assess the association of modifiable risk factors of stroke.

Only patients having CT/MRI scan with definite feature of stroke were included. Ambiguous or non-specific or unconfirmed reports were not included. Patient's age, sex and smoking habit were recorded from the history sheets. Patients were categorized hypertensive on the basis of blood pressure recorded during hospital stay and previous recorded blood pressure by qualified physician. Criteria were followed according to British hypertension society. Patients were labeled diabetic on finding of previous reliable biochemical report or blood sugar including HBA1c measurement during hospital study as per WHO criteria. Dyslipidemia was recorded when the patients had abnormal lipid profile defined by ATP111 classification. Patients were grouped in three forms of stroke- cerebral infarction; intracerebral haemorrhage and subarachnoid haemorrhage depending on CT/MRI scan report.

Results

Out of total 64 patients who had stroke confirmed by CT/MRI scan. 36 patients (56.25%) were male and 28

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patients (43.75%) were female. Highest number of patients is 31 (48.43%) were between 60-79 years age group followed by more than 80 years patients group comprising 17 (26.52%)

In 40-59 years age group there were 11(18.33%) patients .While the number of patients was only 5 (8.33%) in below 40 year age group.

Male patients predominate in the 40-79 year age group with M:F ration 1.36:1 in 60-79 group and 2.37:1 in 40-59 age group respectively. But females were more in > 80 years ago group and < 40 year group. With M:F ratio0.71:1 and 0.5:1 respectively .

In our study CT/MRI scan showed 46 (71.87%) patients had cerebral infraction while 13 patients (20.31%) had intracerebral haemorrhage and only 5 (7.81%) patients had subarachnoid haemorrhage (Table-01).

Table- 01 Number of patients (n)= 64

No of Patients	Cerebral Infraction	Intracerebral Haemorrhagic	Subarachnoid Haemorrhage
64	46 (71.87%)	13 (20.31%)	05 (7.81%)

Documents regarding blood pressure and smoking habit was recorded from all patients, but blood sugar level could be recorded in 58 patients while fasting lipid profile was recorded in 52 patients.

Among 64 patients hypertension was found in 39 (60.93%) patients followed by smoking in 31 (48.43%) patients. Among 52 patients dyslipidemia was found in 21 (40.38%) patients. and among 58 patients diabetes mellitus was recorded in 22 (37.93%) patients (Table-02) .A substantial number of patients had two or more risk factors.

Table-02 Risk factor of CVD

Smoker,	(n= 64)	31 (48.43%)
Diabetes Mellitus,	(n= 58)	22 (37.93%)
Hypertension,	(n= 64)	39 (60.93%)
Dyslipidemia,	(n= 52)	21 (40.38%)

Discussion

Stroke is a clinical syndrome characterized by rapidly developing neurological symptoms and sign due to vascular origin⁶ out of 64 patients in this study male: female was 1.2:1 which correlate with other studies².

The male patients are proportionately higher among 40-79 age groups but reverse is true for the patients above 80 years and below 40 years where number of female patients predominate over male. Their findings correlate with other large studies². The male predominance may reflect exceeds smoking habit among male patients, specially in 40-59 years age group where male have been found more than double compared to female. But female predominance in < 40 years age group may correlate with higher prevalence of rheumatic mitral valvular disease or

use of oral contraceptives in younger female.

In our study peak incidence of stroke was between 60-79 year age group which coincide with the study of chowdhury et al⁷ and Arif et al⁸ from Bangladesh but differs from the western study by Aho et al⁹ where peak incidence was above 85 years .in our study CT/MRI scan finding of all 64 patients showed 46 patients (71.87%) had infraction and 13 (20.31%) patients had intracerebral haemorrhage and only 5 patients (7.81%) had subarachnoid haemorrhage. These findings correlate with most western studies, for example in USA 87% strokes were ischaemic and only 10% were intracerebral haemorrhage² but higher rates of haemorrhagic strokes has been reported from some Asian countries for example, Malaysia (33%) , Thailand (30%) , Korea (31%), Taiwan (31%),^{3,4} proportion of ischaemic stroke. Our study does not correlate with some studies in Bangladesh for example by Khan MMZ et al¹⁰ and Bodiuzzaman et al¹¹. But our result correlate with the study of Hayee et al¹² where incidence of ischaemic stroke was rather higher (83.89%) . Similarly the incidence of ischaemic stroke is close to that found in many parts of India¹³ but differ from that reported from Kolkata of west Bengal and Gowhati of Assam¹³.

In this study 39 patients (60.93%) had hypertension ranking the most important risk factor. This correlate with that of Khan MMZ et al¹⁰ Khan J et al¹⁴. Reports from Kolkata stroke registry recorded hypertensive in 79% patients¹³ Hayee et al¹² found 52.11% and Alamgir et al¹⁵ found 58% patients were hypertensive among stroke patients in Bangladesh. High consumption of salt eg. 15-16gm/person/day might explain higher incidence of hypertension in this subcontinent¹³.

Number of smokers among stroke patients in the present study was 31 (48.43), which correlate with Khan J¹⁴ but differs with Khan MMZ study¹⁰ Bodiuzzaman et al¹¹ reported smoking habit among 53.79% of stroke patients in Bangladesh which also correlate with the present study and the figure also correlate with that reported by D Nagray¹³ from India.

In this study 21 (40.38%) out of 52 patients had raised serum cholesterol which is slightly lower than that reported by Bodiuzzaman et al (48%)² but higher than that reported by AM Hosain et al¹⁶ and Hyeet et al¹².

Diabetes mellitus was found in 22 (37.93%) out of 58 patients which is much higher than that reported by Khan MMZ (20%)¹⁰ but correlate with that reported by Khan J(33%)¹⁴.

This small hospital based retrospective study has many limitations and may not reflect the actual scenario of the community but if does show the importance of modifiable risk factors which can be controlled to a large extent if diagnosed early by routine screening and treated effectively. Quitting smoking, avoiding extra salt, regular effective treatment of hypertension and dyslipidemia can go a long way to prevent this incurable neurological

condition and save our poor community from gigantic socio-economic burden.

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