Risk Factor Stratification in Patient with Recurrent Stroke in Bangladesh

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Abstract

Background : Stroke is a non communicable disease of increasing importance. Stroke is a major cause of death and disability in the world. Individual who suffered from stroke are at high risk of suffering recurrent stroke. So it is important to establish the risk factor for secondary prevention. The aim of this study is to find out the association of risk factor of recurrent stroke and it helps to take steps to reduce recurrent stroke.

Materials and methods: This is a cross sectional observational case control study was conducted at Dhaka Medical College Hospital during 1st January to 31st December 2011. Definition was followed by WHO stroke manual.

Results : In this study two leading risk factors were found hypertension and smoking respectively 78% and 72%. Among risk factors others were diabetes 56%, dyslipidemia 24%, cardiac diseases (AF, IHD, Valvular heart disease) 22%, Mean age of patient 61.09. Ischemic stroke found in 68% and haemorrhagic in 32% of patient.

Conclusion : The common risk factors of stroke are also attributed to risk factor of stroke. Noncompliance to drug and life style modification also important cause of recurrent stroke.

Key words : Recurrent stroke; Risk factors; Stroke.

Introduction

Stroke is a noncommunicable disease of increasing importance in aging population. Annually 15 million people suffering from stoke globally.[1] Among them 5 million died and another 5 million permanently disabled. This disabled people are burden of the family and community and cause economic loss of the society. Individual suffered from stroke has more chance of recurrent stroke.[2] Within first year of first stroke there are >40% have chance of another stroke. According to National Stroke Association 795,000 American suffer stroke each year and about 185,000 of those stroke are recurrent stroke.[3] People who survive and become improving again worsening of activity status. There are many risk factors for stroke. some are fixed some are modifiable.

Among fixed risk factors -age, sex (Male>female) family history are important. Modifiable risk factors are-smoking, hypertension, diabetes mellitus, hyperlipidemia etc. Based on pathogenesis there are 3 types of stroke- i) Ischemic stroke, ii) Haemorrhagic stroke, iii) Sub-arachnoid haemorrhage. Cerebral infarction mostly due to thromboembolic disease due to atherosclerosis. About 20% emboli from heart another 20% due to disease of small perforating arteries producing so called lacunar infarction about 5% due to rare disease as vasculitis, endocarditis, cerebral venous disease etc.[4]

Ischemic stroke occur due to ischemia of brain. Cerebral infarction is a process takes some hours to complete. After occlusion of a cerebral artery anastomotic channel from other arteries restore perfusion to that area. Intracerebral haemorrhage usually results from rupture of a blood vessel with in the brain. It may occur in patient of sub-arachnoid haemorrhage if the artery rupture in sub-arachonoid space.[4]

Much effort has been made to study first ever stroke, but recurrent stroke has not been investigated extensively. Several trials have attempted to improve secondary prevention of stroke through patient education and improving access to care.

Material and methods

This is hospital based cross sectional observational study done at Dhaka Medical College Hospital during the period January to December 2011. Study population patient with 18 years and above.

Inclusion criteria

i) Patient who had a history of recurrent stroke and again admitted with recurrent stroke

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ii) Age above 18
iii) Any kind of recurrent stroke
iv) Male and female patient both are included.

Exclusion criteria

i) Patient with other neurological disease with stroke like feature, brain tumor, brain abscess, multiple sclerosis

ii) Patient presented with first stroke
iii) Age less than 18 years.

Patient selected from several Department of Dhaka Medical College Hospital (DMCH). When any previously diagnosed stroke patient admitted in DMCH initially the duty physician examine and screen for the study. After that I took detailed history and physical examination and if met the inclusion criteria then added in this study. Ethical clearance was obtained from the proper authority before start the study.

Results

In this study among 100 patient male patients were 66% rest are female. Mean age found 61.09 SD (± 17.12). Maximum patient are poor 54% and middle class. Among risk factors hypertension 78% and smoking 72%, DM 56% are top of the risk factors. Most of the patient discontinue medication and only 8% on regular follow-up and medication.

Table I Age of respondent (n=100)

Age	No. of respondent	Percentage (%)
18-40	5	5%
41-50	15	15%
51-60	29	29
61-70	36	36
>70	15	15

Most of the patient were 61-70 yrs.

Table II Sociodemographic data (n=100)

Characteristic		No. of respondent	Percentage (%)
Sex	Male	66	66%
	Female	34	34%
Residence	Rural	46	46%
	Urban	24	24%
	Slum area	30	30%
	Upper class	3	3%
	Middle class	43	43%
Socioeconomic status	Lower Class	54	54%

In this table male patient are more than female, Rural and lower socioeconomic status are more. As it is done in government hospital where uperclass people are admitted less likely.

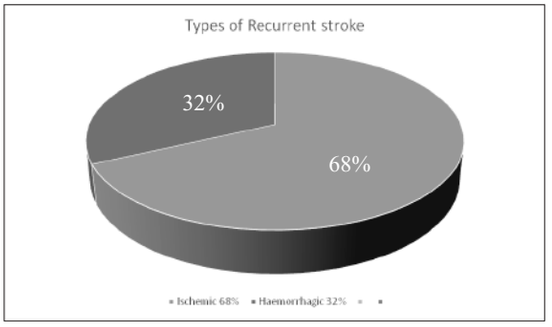

Figure 1 Types of recurrent stroke patient in study population (n=100)

Ischemic stroke 68% and Haemorrhagic stroke 32%.

Table III Risk factor of respondent (n=100)

Risk Factor	Number	Percentage
Hypertension	78	78%
Smoking	72	72%
Diabetes Mellitus	56	56%
Dyslipidemia	24	24%
Cardiac disease	22	22%
Tobacco chewing	16	16%

Table IV Time interval of recurrent stroke of respondent (n=100)

Time (Year)	No. of respondent	Percentage
1yr	22	22%
1-5 yr	42	42%
>5 yr	36	36%

Most of the patients have recurrence with in 1-5 years.

Table V Compliance of medication and follow up after stroke (n=100)

Compliance	No. of respondent	Percentage
Regular follow-up and continue medication regularly	8	8%
Continue medication irregularly	58	58%
Discontinue medication	34	34%

This table shows very little number of patient taken follow up regularly.

Discussion

In this study among risk factors in patient of recurrent stroke hypertension is the top most 78% this result consistence with Laloux P et al shown the most frequent risk factor was hypertension 79%.[5] Hossain et al shown the most hypertension 63%.[6] El-gohary et al shows hypertension is the most highly notable risk factor found in 90% of patient.[7] It is also found that non compliance with antihypertensive drug is one important factor behind recurrent stroke. It can be evaluate separately to find out cause behind non compliance.

Smoking is very important factor for recurrent stroke it is found in present study. In this study 72% were smoker. This finding corelate with Haque et al shown smoker were 60% and BA Mondel et al showed 58%.[8,9] In my present study 16% also found tobacco chewing it may contribute to recurrent stroke.

In this study association of diabetes found in 56% of patient of recurrent stroke. Hossain et al shown diabetic were 41% Deepak arjun das et al shows 49% patient were diabetic these results also correlate with current study.[6,10]

Dyslipidemia found in 24% of patient this is nearly similar to Das et al found dyslipidemia 22.2% Wu de et al found 48.4% which is higher than my study.[2,11] Yuanyuan Zhuo et al shows dyslipidemia 30% which is similar with my study.[12]

Cardiac diseases (IHD, AF, Angina, Valvular heart disease etc.) found 22%, Hossain et al found cardiac disease were 24% this is similar with this study.[6]

In this study recurrence found in most patient within 2-5 years 46% Hardie K et al found in 49% in 1st year 4% increase every year.[13] Mohan KM et al found 16% at 5 year.[14]

In this study 66% patient were male and 34% of patient are female. Das UK et al showed 60% were male and 40% were female.[2]

In this study age distribution of patient most of patient in 61-70 years of age 34%, second highest 51-60 yrs 29%. . Mean age found 61.09 and SD ± 17.12. Mondel et al showed most patient between 51-60 yrs of age 23.7%.[9] Hossain AM et al showed most patient between 51-60 yrs 39%. 61-70 years 30%.[6] This result have similarity with my study.

In this study ischemic stroke found 68% and haemorrhagic stroke were 32%. This results correlate with Das et al showed ischemic 64% and haemorrhagic 36%.[2] Naser et al showed ischemic stroke 80% and haemorrhagic 20%.[15] This results similar with current study.

In this study patient taking regular followup found only 8%, continue medication irregularly found 58%, discontinue medication 34%. Sappok T et al study done in Germany showed 84.6% patient taking regular follow-up and medication, which is developed country, we have huge gap with this in follow up regularly. So we should improve this.[16]

Limitation

This is very small study so it could not reflect the actual situation of the country. A large study should be done to evaluate risk factors of our country. Transient ischemic stroke is another important scenario should be evaluate. Here all patient of acute attack are enrolled for study and their retrospective data are collected. But case control study with regular followup and compliance with medication should be evaluate. Sub type of stroke should evaluate separately. This data are collected from government hospital so the upper socioeconomic society are not evaluated.

Conclusion

In this study I try to find out and risk factors of recurrent stroke. Risk factors are more or less similar with first ever stroke. One is most important found hypertension which found in most patient. Next to hypertension smoking and diabetes are two important risk factor. In case of diabetic patient many of them are also hypertensive. Tobacco chewing also found in good number. Another most important thing is follow up and continue medication. In this study it is found that many patients discontinue medication and suffered with recurrent stroke.

Recommendation

With this small study recommendation for the country is difficult. From my data I think following factor can help to reduce recurrence.

- The risk factor of first ever stroke are important for recurrence.
- Among risk factors hypertension, diabetes, smoking, hyperlipidemia are most important.
- Along with smoking people should discourage for tobacco chewing.
- During discharge patient should counseled for regular follow-up and taking medication regularly.
- Every hospital should maintain a stroke register for basic data.

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Contribution authors

FA-Conception, design, data collection, drafting & final approval.
MDH-Data analysis, drafting & final approval.
MAR-Data collection, interpretation of data, critical revision & final approval.
MB-Interpretation of data, critical revision & final approval.
AM-Data collection, analysis, drafting & final approval.
MRI-Design, data analysis, drafting & final approval.
MEH-Interpretation of data, critical revision & final approval.

Disclosure

All the authors declared no competing interest.

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