ORIGINAL RESEARCH PAPER

Community Medicine

STROKE: RISK FACTOR EVALUATION IN PATIENTS ATTENDING A TERTIARY HEALTH CARE INSTITUTE OF RAJASTHAN.

KEY WORDS: Prevention, risk factors, stroke.

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ABSTRACT

Background: Cerebro Vascular Accident (CVA) is one of the major causes of morbidity and mortality. Quality of life is compromised heavily due to this vascular event. Risk factors responsible for the disease plays major role in occurrence of disease. Current study was planned to evaluate the risk factors causing the disease.

Methodology: Total 144 patients of cerebro vascular disease were included in this cross-sectional study which was conducted for a period of six months (May to October, 2017). Cases of cerebro vascular disease were evaluated for common risk factors like age, obesity, diabetes, hypertension, lack of exercise, smoking, dyslipidemia and positive family history.

Results: Among study population 93 (64.6%) patients were of CVA infract and 51 (35.4%) had haemorrhagic or mixed haemorrhagic-infraction CVA. On risk factor evaluation 123 (85.4%) patients were found to have age more than 60 years, 110 (76.4%) patients had lack of exercise, 91 (63.2%) had hypertension before emergence of CVA, 74 (51.4%) patients were smokers as per mentioned criteria, 38 (26.4%) patients had diabetes before emergence of CVA, 30 (20.8%) patients were obese, 24 (16.7%) patients had dyslipidemia, 13 (9%) patients had family history of either hypertension, diabetes, CVA, CAD (Coronary Artery Disease).

Conclusion: This study concludes that life style changes like regular exercise, cessation of smoking, strict control of DM and HTN plays role in prevention of stroke.

Introduction

Sedentary lifestyle has shifted community health problems toward non communicable diseases like hypertension (HTN), diabetes mellitus (DM), cardio and cerebro vascular diseases. Increased incidence of these entities in young patients is alarming. The World Health Organization (WHO) definition of stroke is "rapidly developing clinical signs of focal or global disturbance of cerebral function with symptoms lasting 24 hours or longer or leading to death with no apparent cause other than of vascular origin" [1]. Cerebro Vascular accidents (CVA) or stroke can limit the quality life and can be life threatening too. Cerebro Vascular accident is one of the major causes of morbidity and mortality. Worldwide cerebrovascular accidents (stroke) are the second leading cause of death and the third leading cause of disability [2]. In 2001 it was estimated that cerebrovascular diseases (stroke) accounted for 5.5 million deaths world wide, equivalent to 9.6 % of all deaths. Two-thirds of these deaths occurred in people living in developing countries [3]. CVA has well known risk factors like age, obesity, diabetes mellitus, hypertension, lack of exercise, smoking, dyslipidemia and positive family history. Risk factor control can be effective not only in primary prevention but also in secondary prevention of the disease. Patients with a history of stroke are at risk of a subsequent event of around 10% in the first year and 5% per year thereafter [4]. This study is aimed to evaluate risk factors of CVA present in community to strategise better handling of this health problem.

Material and Methods

One hundred forty four subjects were included in the study of cerebro vascular disease (both infraction and haemorrhage) admitted on indoor and outdoor basis by complete enumeration. These study subjects comprised both new and old cases of CVA. Duration of study was 6 months (May to October, 2017) and this cross sectional type of observational study was conducted at one of the tertiary health care institute of Rajasthan at department of General Medicine.

All the subjects were subjected to detail history and clinical examination after informed consent and all the details were taken in a pre-structured performa. Common risk factors considered for evaluation of cases are depicted in the table no 1. All selected subjects were evaluated for risk factors like age, obesity, DM, HTN, lack of exercise, smoking, dyslipidemia and positive family history of DM, HTN, CAD, CVA either of single or multiple disease.

Age more than 60 years was considered as one of the risk factor for development of the disease under evaluation. Body mass index (BMI) equal or more than 25 kg/m^2 was taken as criteria for obesity. DM and HTN were taken as risk factor only if present before emergence of the disease of concern. A criterion for appropriate physical activity was taken as 30 minutes walk per day for atleast five days in a week. A criterion for significant smoking was taken as more than 5 packs per year. Total cholesterol more than 200 mg/dl, triglycerides more than 150 mg/dl, HDL cholesterol less than 50 mg/dl or LDL cholesterol more than 100 mg/dl were taken as criteria of dyslipidemia. Each subject was evaluated separately for the risk factors. Relevant statistics were applied. Simple tabulation and proportions were calculated.

Table No. 1- Criteria for risk factors considered for evaluation.

S. No.	Risk factor	Assumed criteria
1	Age	More than 60 yrs
2	Obesity	BMI equal or more than 25 kg/m^2
3	Smoking	More than 5 packs per year
4	Lack of physical activity	Less than 30 minutes walk per day for at least five days in a week
5	Dyslipidemia	Serum total cholesterol more than 200 mg/dl or
		Serum triglycerides level more than 150 mg/dl or
		Serum HDL cholesterol less than 50 mg/dl or
		Serum LDL cholesterol more than 100 mg/dl
6	Diabetes mellitus	If present before emergence of the disease of concern
7	Hypertension	If present before emergence of the disease of concern
8	Family history	Family history of either DM, HTN, CAD, CVA

Result

Total 144 CVA patients were evaluated with male female ratio nearly 3:2. Age ranges from 24 to 87 years. Among study population 93 (64.6%) patients were of CVA infract and 51 (35.4%) had haemorrhagic or mixed haemorrhagic-infraction

CVA. On risk factor evaluation of 144 CVA patients it was found that 123 (85.4%) patients had age more than 60 years, 110 (76.4%) patients had lack of exercise, 91 (63.2%) patients had HTN before emergence of CVA, 74 (51.4%) patients were smokers under above mentioned criteria, 38 (26.4%) patients had DM before emergence of CVA, 30 (20.8%) patients were obese, 24 (16.7%) patients had dyslipidemia, 13 (9%) patients had family history of either HTN, DM, CVA, CAD (Figure No.1).
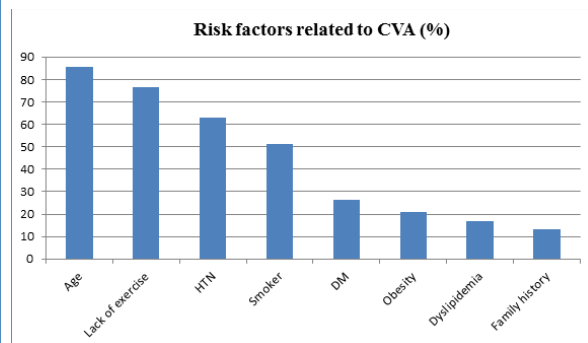

Figure No. 1- Distribution of risk factors in CVA patients.

Discussion

In current study among study population (n=144) age ranges from 24 to 87 years in age. Youngest case of this study was 24 years female having haemorrhagic stroke. She was case of newly diagnosed hypertension with takayasu arteritis. Another young patient was 31 years old male having newly diagnosed hypertension and dyslipidemia with positive family history of hypertension. CVA in such young age group is alarming and shows the need of vigilance of risk factors at early age. Study by Sridharan S. E. et al [5] found that 3.8% CVA patients were less than 40 years of age and the youngest case of the study was less than 25 years of age. The youngest case of CVA in studies by Eapen RP et al [6] and Amu E et al [7] were of 15 years and less than 20 years of age respectively.

In current study male female ratio was 3:2 while another Indian study on CVA patients by Eapen RP et al[6] found male female ratio of 2:1 in CVA patients. Study held in Pakistan by Khan Sher Ali[8] found male female ratio of 1.4:1 among CVA patients. Study by Amu E et al[7] done on Nigerian Africans found male female ratio of 1.2:1 among CVA patients.

In current study on risk factor evaluation of 144 CVA patients it was found that 123 (85.4%) patients had age more than 60 years, 110 (76.4%) patients had lack of exercise, 91 (63.2%) patients had HTN before emergence of CVA, 74 (51.4%) patients were smoker under above mentioned criteria, 38 (26.4%) patients had DM before emergence of CVA, 30 (20.8%) patients were obese, 24 (16.7%) patients had dyslipidemia, 13 (9%) patients had family history of either of HTN, DM, CVA, CAD. Other Indian studies[5,6,8] also found hypertension as major risk factor like according to Sridharan S. E. et al [5] among stroke patients nearly 85% had hypertension, half had diabetes mellitus, a quarter had dyslipidemia and one-fifth of males smoked tobacco. Another Indian study Eapen RP et al [6] found common risk factors of CVA in decreasing order were hypertension (40%), smoking (28%) and hyperlipidemia (17%). Pakistani study by Khan Sher Ali [8] found 62.3% CVA patients had hypertension, 27.3% had diabetes mellitus, 9.4% were smokers, 7.5% had dyslipidemia, 3.77% were obese. Study by Zhang et al [9] was a cross sectional study to know the prevalence of stroke associated risk factors in north east China. In this study according to the prevalence rates dyslipidaemia, smoking and hypertension were top three cerebrovascular risk factors and were 62.1%, 61.8%, 57.3% respectively. Study by Costa VSP et al [10] was done to evaluate the prevalence of risk factors in elderly of Brazil. In the study the most frequent risk factor found was diabetes (67.8%) followed by hypertension (63.7%), smoking (60.1%), dyslipidemia (59.3%), sedentarism (46%), vascular disease (43.2%), cardiac disease in the family (39.4%) and obesity (29.1%). In study by Kamran S et al

[11] the commonest risk factors identified were hypertension (23.1%) and smoking (27.3%) in a cross-sectional community-based survey in Gulf countries. According to review literature by Benamer HT, Grosset D [12] based on population of Arab countries hypertension, diabetes mellitus, hyperlipidaemia and cardiac disease were the commonest risk factors for stoke. According to A.L. Fitzpatrick et al [13] 27.3% of the participants were found to have hypertension, 26.2% used tobacco and 16.1% were overweight in community of Vietnam and more than two-thirds of the participants having hypertension were unaware of their condition. Study by Amu E et al [7] on Nigerian Africans CVA patients found hypertension was present in 82.5% subjects and DM was present in 25%, 30% patients were obese, Cigarette smoking was present only in 11.25 percent of the patients. 42.50% of the CVA patients admitted to sedentary life style (with little or no physical exercise), 20% patient had family history of stroke. Most of the studies found hypertension as leading risk factor. The risk of stroke rises steadily as blood pressure level rises and doubles for every 7.5 mm Hg increment in diastolic blood pressure with no lower threshold. Treatment with anti-hypertensive treatment has been shown to reduce stroke risk by about 38 % [14,15]. Smoking is another highlighted major risk factor.

Tobacco use increases the risk of ischemic stroke about two-fold and is furthermore also associated with a higher risk of hemorrhagic stroke [16]. There is a dose-response relationship so that heavy smokers are at a higher risk of stroke than light smokers however exposure to environmental tobacco smoking is also an independent risk factor for stroke [17]. Prevention of disease by controlling modifiable risk factors can defiantly help to limit morbidity and mortality of the disease.

Conclusion

This study specified the need of regular exercise, cessation of smoking, strict control of DM and HTN for prevention of stroke. Regular monitoring of blood pressure, blood sugar and lipid profile is needed as per related guidelines. Smoking must ban not only to prevent CVA but also to prevent cardio vascular, respiratory diseases and many malignancies.

Limitations of study

1. Exercise criteria was same for individuals having strenuous or sedentary lifestyle.
2. Dyslipidemia and obesity was considered as risk factor on the basis of current values during study. It was not clear whether it is present before emergence of concern disease or not.
3. Family history is not concrete in many cases.
4. Habit of smoking is less in female than male. In current study this risk factor (smoking) was not separately evaluated according to sex.

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