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

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ABSTRACT

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”. 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. 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. 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. 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 cerebrovascular 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/m² 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 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.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Risk factor</th>
<th>Assumed criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>More than 60 yrs</td>
</tr>
<tr>
<td>2</td>
<td>Obesity</td>
<td>BMI equal or more than 25 kg/m²</td>
</tr>
<tr>
<td>3</td>
<td>Smoking</td>
<td>More than 5 packs per year</td>
</tr>
<tr>
<td>4</td>
<td>Lack of physical activity</td>
<td>Less than 30 minutes walk per day for at least five days in a week</td>
</tr>
<tr>
<td>5</td>
<td>Dyslipidemia</td>
<td>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</td>
</tr>
<tr>
<td>6</td>
<td>Diabetes mellitus</td>
<td>If present before emergence of the disease of concern</td>
</tr>
<tr>
<td>7</td>
<td>Hypertension</td>
<td>If present before emergence of the disease of concern</td>
</tr>
<tr>
<td>8</td>
<td>Family history</td>
<td>Family history of either DM, HTN, CAD, CVA</td>
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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 disease.
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 of age. Youngest case of this study was 24 years female having haemorrhagic stroke. She was case of newly diagnosed hypertension with takayas 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 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 and Amu E et al 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 found male female ratio of 2:1 in CVA patients. Study held in Pakistan by Khan Sher Ali found male female ratio of 1.4:1 among CVA patients. Study by Amu E et al 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 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 of HTN, DM, CVA, CAD. Other Indian studies also found hypertension as major risk factor like according to Sridharan S. E. et al 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 found common risk factors of CVA in decreasing order were hypertension (40%), smoking (28%) and hyperlipidemia (17%).

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.

**References**