Retrospective Analysis of Stroke and Its Risk Factors at Bir Hospital.

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ABSTRACT

INTRODUCTION: Stroke is a leading cause of morbidity and mortality worldwide affecting millions of people every year. The aim of the present study is to identify the correlation between common modifiable risk factors and stroke in Nepal.

METHODS: Patients of either sex above the age 18 years who were admitted to neurology ward of Bir Hospital, NAMS were included in this retrospective study. Types of strokes were identified by HEAD CT SCAN or MRI and risk factors for stroke and other details were noted and analyzed. Out of the 210 patients studied 124 (59.05%) were males and 86 (40.95%) females.

RESULTS: Most of them belonged to low socio-economic status. Most of the patients had multiple risk factors which included: Smoking 127 (60.48 %), Alcohol consumption in excess 87 (41.43 %), Hypertension 81(38.57 %), Diabetes Mellitus 21(10 %), Dyslipidemia 19 (9.05 %) and Valvular Heart Disease 7 (3.33%).

CONCLUSION: It was concluded that ischemic stroke was more common than hemorrhagic; smoking was the most common modifiable risk factor for stroke followed by alcohol, hypertension and diabetes mellitus. Incidence of stroke rises with the increase in the numbers of risk factors. Control of above-mentioned risk factors should be considered as the main target for primary and secondary prevention of stroke.

KEY WORDS: Risk Factors, Stroke

INTRODUCTION

Stroke is a global health problem. It is the leading cause of disability and the second leading cause of mortality worldwide. Epidemiological studies help determine the prevalence, distribution and risk factors and are necessary to streamline health services for prevention and treatment of the disease. Stroke is responsible for three million deaths in developing countries. It is the major cause of mortality and morbidity in Asian countries. It is a leading cause of functional impairments, with 20% of survivors requiring institutional care after 3 months and 15%-30% being permanently disabled. Compared with the volume of perspective studies in Coronary Heart Disease (CHD), there have been relatively fewer population studies investigating the precursors of stroke. Current treatments for patients with established stroke are relatively ineffective and risk factor interventions are the real hope of reducing stroke morbidity and mortality in populations. Randomized, controlled intervention studies have demonstrated significant prevention of stroke with management of hypertension or hypercholesterolemia. Certain risk factors have consistently been identified as significant predictors of stroke outcome (mainly fatal stroke): age, hypertension, excessive alcohol intake, previous stroke,

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and atrial fibrillations. Other risk factors much less consistently associated with stroke include smoking, diabetes mellitus, previous CHD, left ventricular hypertrophy, excessive alcohol intake and family history of stroke.10,11 The relationship between serum cholesterol and stroke remain some what elusive, possibly because of the negative association with hemorrhagic on one hand and a positive association with ischemic stroke on the other.11 The aim of the present study was to identify the correlation between common modifiable risk factors and stroke in Nepal.

METHODS

This is a retrospective study of stroke patients managed at the Department of Medicine, Neurology Unit of Bir Hospital, and National Academy of Medical Sciences (NAMS) during the period of one year (June 2010 -July 2011). All patients of either sex who were admitted to Neurology ward with ischemic and hemorrhagic stroke were included in the study. Patients with TIA and subarachnoid hemorrhage were excluded. All patients underwent complete neurological evaluation, routine examination of blood, haematocrit, biochemistry, urine examination, coagulation profile, lipid profile, electrolyte, ECG, echocardiography and computer tomography. Parameters of the risk factors for stroke were taken. They were diabetes mellitus, smoking, hypertension, valvular heart disease, Alcoholism and dyslipidemia. Data analysis was done to find out the correlation between risk factors and stroke.

RESULTS

A total of 286 patients were admitted to Neurology ward of Bir Hospital in one year period (June 2010 – July 2011). Out of them 210 patients were diagnosed as stroke. There were 124 (59.05%) males and 86 (40.95%) females. 19 (9.05%) were below 45 yrs, 122 (58.10%) from 45 to 65 yrs age and 69(32.86%) more than 65 yrs. Hemorrhagic strokes were 89 (42.95%) and Ischemic were 121 (57.62%) (Table 1). Males were more affected than females (59% vs. 41%). The commonest modifiable risk factor in our study population was smoking 127(60.48%) followed by excessive intake of alcohol 87 (41.43%), hypertension 81 (38.57%), Diabetes Mellitus 21 (10 %), Dyslipedmia19 (9.05 %) and Valvular Heart Disease 7 (3.33%) (Table -2). The incidence of stroke with one major risk factor was 24.92%, with two risk factors was 31.43% and with more than two risk factors was 35.24%. (Table -3). The overall mortality from stroke in this group of hospitalized patients was 5.7%.

Stroke is the main cause of adult disability and the third most common cause of mortality in the world. It is known that stroke incidence, prevalence and mortality vary widely through different populations. Asians have a higher prevalence of stroke. The burden of stroke in Asia is predicted to increase, both in absolute terms and as a proportion of disease burden as a whole, due to rapid population aging and lifestyle changes. Our study showed that smoking, excessive alcoholism and hypertension were the major modifiable risk factors for stroke in Nepalese population. Studies done at Nepal medical college Teaching Hospital by Pathak V, et al 12, Tribhuvan University Teaching Hospital Nepal (TUTH) by Oli K.K. and Agrawal J.P 13, as well as the study at Nepal Medical college Teaching hospital by Devkota K.C. et al.14 show similar results. Numerous studies show that the risk of stroke doubles for each successive decade after the age of 55yrs.15 The cumulative effects of aging on cardiovascular system and the progressive nature of stroke and its risk factors substantially increase over a period of time. The mean age of acquiring stroke in our study was 58.5 years, which was lower than the studies done in United States16 but higher than in studies from Pakistan17. The difference is shown is due to better

### Table 1. Stroke type

<table>
<thead>
<tr>
<th>Stroke type</th>
<th>No. of Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic</td>
<td>121</td>
<td>57.62%</td>
</tr>
<tr>
<td>Hemorrhagic</td>
<td>89</td>
<td>42.38%</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

### Table 2. Risk factors profile

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>No.of Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>127</td>
<td>60.48</td>
</tr>
<tr>
<td>Excessive Alcohol</td>
<td>87</td>
<td>41.43</td>
</tr>
<tr>
<td>Hypertension</td>
<td>81</td>
<td>38.57</td>
</tr>
<tr>
<td>DM</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Dyslipedmia</td>
<td>19</td>
<td>9.05</td>
</tr>
<tr>
<td>VHD</td>
<td>7</td>
<td>3.33</td>
</tr>
</tbody>
</table>

### Table3. No. of risk factors and frequency of stroke

<table>
<thead>
<tr>
<th>No. of Risk Factors</th>
<th>No. of stroke Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>21</td>
<td>10.00%</td>
</tr>
<tr>
<td>One</td>
<td>49</td>
<td>23.33%</td>
</tr>
<tr>
<td>Two</td>
<td>66</td>
<td>31.43%</td>
</tr>
<tr>
<td>More than Two</td>
<td>74</td>
<td>35.24%</td>
</tr>
<tr>
<td></td>
<td>210</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

The aim of the present study was to identify the correlation between common modifiable risk factors and stroke in Nepal.
awareness and proper control of risk factors in United States and also because of shorter life in Pakistan 18. The proportion of young stroke patients in Nepal was significantly higher than in developed countries. Chronic CNS infections like tuberculosis and a high prevalence of rheumatic heart disease are important contributing factors. Hypertension is one of the most important modifiable risk factors. Education of the general population and health providers is urgently required. Decreasing the incidence of rheumatic heart disease by early treatment of streptococcal pharyngitis and other preventive measures, better control of diabetes mellitus, avoidance of smoking and excessive alcohol intake, and adequate peripartum care are important measures which should help in dramatically decreasing the incidence of this disease.

CONCLUSION
Smoking, followed by excessive alcohol intake, hypertension, diabetes mellitus are the most common modifiable risk factors for stroke in Nepalese population. Less common risk factors other than these are dyslipidemia and valvular heart disease. Ischemic stroke is more common than hemorrhagic. Patients with multiple risk factors and from age group 45-65 years have higher chances of suffering from stroke. Thus, keeping the study in mind; primary and secondary prevention of risk factors contributing to stroke shows its urgency to be implemented at a national and community level.

REFERENCES