Evaluation of Risk Factors in Ischemic Stroke

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Abstract

Background: To determine the frequency of different risk factors among patients of stroke due to cerebral infarction.

Methods: This cross sectional study included 195 patients with stroke due to cerebral infarction. Risk factors leading to cerebral infarction were evaluated.

Results: Hypertension (73%) and diabetes (42.5%) were the commonest risk factors seen in patients.

Conclusions: Most of the risk factors were modifiable.

Key Words: Stroke; cerebral infarction; risk factors.

Introduction

Stroke refers to a debilitating illness that is caused by deficient blood supply to the brain. It is defined as an abrupt onset of characteristic neurological deficit that is attributable to a focal vascular cause lasting for more than twenty four hours. Stroke is a leading cause of disease and death throughout the world. Approximately 80% of strokes are due to ischemic cerebral infarction and 20% to brain hemorrhage. It is occasionally treated with thrombolysis, but usually with supportive care like speech therapy, physiotherapy and occupational therapy and secondary prevention with antithrombotic drugs, blood pressure control, statins, and in selected patients with carotid endarterectomy and anticoagulation. Non modifiable risk factors include age, sex, low birth weight, race/ethnicity, and genetic factors. Well documented and modifiable risk factors include hypertension, diabetes, atrial fibrillation, exposure to cigarette smoke and certain other cardiac conditions, dyslipidemia, carotid artery stenosis, post menopausal hormone therapy, poor diet, physical inactivity, and obesity. Less well documented or potentially modifiable risk factors include metabolic syndrome, alcohol abuse, oral contraceptive use, hypercoagubility, inflammation and infection.

Patients and Methods

This cross sectional study included 195 patients with stroke due to cerebral infarction. The study was conducted at Punjab Medical College and affiliated hospitals (Allied Hospital and DHQ, Faisalabad). The duration of the study was six months from June-2006 to November-2006. Patients included in the study were aged more than 40 years and were of both sexes, diagnosed cases (clinical plus C.T. Scan brain proven) of patients with cerebral infarction and patients with single or multiple cerebral infarction. Patients with stroke in whom C.T. Scan brain revealed pathology other than cerebral infarction like, haemorrhages, tuberculomas, tumors and clinically unstable patients requiring respirator or intensive care or those who could not be moved for relevant investigations were excluded from the study.

Results

The total number of patients included in the study was 195 (including both males and females). The mean age of the patients included in the study was 60.47 ± 8.85 years (range 41-92) (Table 1). There were 128 (65.6 %) male and 67 (34.4%) female patients, with a male to female ratio of 1.91:1. The patients were also distributed according to the frequency of risk factors. Hypertension (73%) was the commonest risk factor (Table 2).

Table 1: Ischemic Stroke- Age Profile (n=195)

<table>
<thead>
<tr>
<th>Age(years)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 – 50</td>
<td>21(10.7)</td>
</tr>
<tr>
<td>51 – 60</td>
<td>88(45)</td>
</tr>
<tr>
<td>61 – 70</td>
<td>61(31.3)</td>
</tr>
<tr>
<td>71 – 80</td>
<td>15(8)</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>10(5)</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>60.47 ± 8.85</td>
</tr>
<tr>
<td>Range</td>
<td>60-92</td>
</tr>
</tbody>
</table>

SD Standard deviation
Discussion

The frequency of risk factors is variable among different clinical trials. In a study by Marwat MA, et al, 82 patients with stroke were admitted. Out of 88 patients, hypertension was the most common risk factor (75%) followed by diabetes mellitus (54.5%). Cerebral infarction was seen among 50% of the whole population of the study, while intracerebral haemorrhage was seen among 29% patients. In a study by Aly Z, et al, 398 patients were studied for the presence of risk factors of stroke and they observed that hypertension (69.1%), stress (55.8%), hypercholesterolaemia (36.7%), age (33.7%), diabetes (33.4%), smoking (29.1%), and family history of stroke (29.1%) were identified as major risk factors. In a study by Javed MA, et al, the risk factors in stroke were studied in fifty consecutive patients. There were 24 males and 26 females with mean age 52 years and range from 19-80 years. Hypertension was present in 62%, diabetes mellitus 32%, obesity 32%, Ischemic heart disease 20%, valvular heart disease 16% and 24% patients had history of heavy smoking. There are other studies in literature in which the frequency of hypertension is reported lower than our study.

Frequency of hypertension is by Fayyaz et al (58%), Khawaja and Shakoor (56%) and Vohra et al (50%). However, Marwat MA and Khan SN, et al have described a frequency that is quite comparable to our results i.e. 75% and 65.8%, In this study male to female ratio of stroke is 1.91:1 which is higher than that observed by Khawaja and Shakoor 1.5:1 and Raza and Imran 1.6:1.11 Higher ratio in male patients is due presence of other risk factor like diabetes and smoking and most of patients belong to older age group.

In present study, the frequency of patients with diabetes was 42.5%. There are studies which recorded a lesser prevalence of diabetes.

Conclusion

The presence of modifiable risk factors in a greater majority reflects the need to educate the population about these factors. Proper address to these factors can substantially decrease the morbidity and mortality.

References

11. Khawaja I, Shakoor Z. Hypertension is a major factor in men and women of all ages. Journal of Pakistan Institute of Medical Sciences 1993; 4: 191-94