

ORIGINAL ARTICLE

ASSOCIATION OF DIFFERENT RISK FACTORS IN PREVALENCE OF CEREBRAL INFARCTION

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Background: Cerebral infarction is one of the important causes of cerebrovascular accident. This study was conducted to see which risk factors are more prevalent in cerebral infarction. **Methods:** It is a hospital based descriptive study of 130 patients of different types of strokes. **Results:** Out of 130 patients 70 were male and 60 females. Majority (58%) of the patients were between 41–60 years of age. Patient presented with variable risk factors. The majority (60% male and 73% female) were hypertensive. The percentage of other factors including diabetes mellitus, atrial fibrillation, smoking, high serum cholesterol, obesity and carotid artery stenosis was observed. **Conclusions:** Cerebral infarction is the most common cause of stroke in our community and all the other factors that are included in our study showed their association in occurrence of cerebral infarction.

Keywords: Cerebral infarction; Diabetes mellitus; Hypertension; Smoking

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INTRODUCTION

Good cerebral circulation is important to prevent narrowness and blockage in brain blood supply. Cerebral infarction occurs when there is restriction of blood flow and oxygen to an area of the brain causing necrosis. This results in causing an ischemic stroke. The obstruction of one or more arteries can be due to embolus, atheromatous stenosis and thrombus.¹

Atherosclerosis and cerebral infarction have generally the same risk factors like obesity, diabetes mellitus, smoking and high blood pressure.² American research association commends prevention of stroke by the control of all risk factors even including more specific concerns of pregnancy and sickle- cell anaemia.^{3,4}

The symptoms of cerebral infarction are different, depending on which area of the brain is affected. Contralateral hemiparesis occurs when primary motor cortex get infarction. The main syndromes that are due to brainstem localization are Benedikt syndrome, Weber's syndrome and Wallenberg's syndrome. Physical examination will depend upon site of the lesion and size of the lesion. It may show contralateral hemiplegia, abnormal dilation in pupil, slurring in speech and lack of eye movement.

In cerebral thrombosis, the blockage affects blood flow to an area of the brain. The defined therapy is aimed at removing the blockage by thrombolysis or thrombectomy so that blood flow to the brain is restored.⁵ An artery can be unblocked by many processes including direct removal of the offending thrombus by introducing a catheter into femoral artery, leading it into the cerebral circulation and with a corkscrew like device tangle the clot

which is then withdrawn from body. Some mechanical embolectomy devices are effective for those patients in which drugs are ineffective at restoration of blood flow, although no big difference has been found between older and new devices.^{6–10}

MATERIAL AND METHODS

This is hospital based indicative study of different types of stroke and was carried out on 130 patients. These stroke types include cerebral infarction, cerebral haemorrhage and subarachnoid haemorrhage. The study was conducted in The Department of Medicine, Ayub Teaching Hospital, Abbottabad, over a period of one year. The majority of patients either female or male included in the study were above the age of 15. A written consent was taken from either the guardian or the patient. Detailed history of patient was taken on a form which included history of current and previous illness, history of or the presence of hypertension, diabetes, smoking, atrial fibrillation, obesity, high serum cholesterol and carotid artery stenosis. The patient's economic history was taken to know whether he could afford the treatment. Each patient was examined in detail including complete general physical and systemic examination.

RESULTS

Out of a total of 130 patients there were 70 males and 60 females. The study shows that 2% patients were less than 20 years of age, 8% patients were between 21 and 40 years of age, 58% patients were between 41 and 60 years of age, 55% patients were between 61 and 80 years of age and 7% patients were above the age of 80. (Table-1).

The patients were mainly had three types of strokes, i.e., Cerebral Infraction, Cerebral Haemorrhage and Subarachnoid Haemorrhage (Table-2). Among all patients including both male and female, 76% had cerebral infraction, 20% had cerebral haemorrhage and 3% had subarachnoid haemorrhage. Further data was divided according to risk factors separately both in male and female. The risk factors in male showed 60% hypertension, 14.2% diabetes mellitus, 50% smoking, 17.1% atrial fibrillation, 11% overweight, 2% high serum cholesterol and 7.1% carotid artery stenosis (Table-3).

The risk factors in female showed 73% hypertension, 13% diabetes mellitus, 1% smoking, 8.3% atrial fibrillation, 26% overweight, 6.6% high serum cholesterol and no carotid artery stenosis (Table-4).

Table-1: Age distribution of patients

Age in years	Male	Female	Total
<20	1	1	2
21-40	2	6	8
41-60	30	28	58
61-80	32	23	55
>80	5	2	7
Total	70	60	130

Table-2: Types of stroke

Types of stroke	Male	Female	Total
Cerebral Infraction	57	42	99
Cerebral Haemorrhage	12	15	27
Subarachnoid Haemorrhage	1	3	4
Total	70	60	130

Table 3: Risk factors in male

Risk factors in Male	Percentage
Hypertension	60
Diabetes Mellitus	14.2
Smoking	50
Atrial Fibrillation	17.1
Overweight	11
High Serum Cholesterol	2
Carotid Artery Stenosis	7.1

Table 4: Risk factors in females

Risk factors in Female	Percentage
Hypertension	73
Diabetes Mellitus	13
Smoking	1
Atrial Fibrillation	8.3
Overweight	26
High Serum Cholesterol	6.6
Carotid Artery Stenosis	0

DISCUSSION

The majority of our stroke patients had a cerebral infraction or cerebral haemorrhage. Out of 130 patients 99 cases were of cerebral infraction (57 male and 42 female) and 27 were of cerebral haemorrhage (12 male and 15 female). The two most important risk factors for stroke in our study were hypertension and diabetes mellitus.

Ages of the patient in our study ranged between 18 and 104 years. Out of 130 patients most of the cases were between ages of 41 and 80 years. Comparable studies of the incidence of strokes were seen in the West and in the Far East countries. When compared with similar studies our study showed an overall percentage of stroke similar to that in other parts of world. However, in the Eastern countries cerebral infraction and intracerebral haemorrhages percentage is significantly higher (up to 35%) than in proportion to the West. In 1990 only, a fraction of data of mortality due to strokes was available.¹¹⁻¹⁷

Our study showed in stroke due to cerebral infraction the major risk factor is hypertension both in male (60%) and female (73%). Prolonged hypertension is a major risk factor for stroke and its subtypes in terms of relative and absolute risks. The results are in accordance with a Korean study.¹⁸⁻²¹

Diabetes Mellitus is not seen in a higher percentage as compared to hypertension i.e. in male (14.2%) and female (13%). The same rate of diabetes prevalence was reported in a Finnish Population earlier.²²

Smoking is not dependent but an independent factor for stroke. In our study male (50%) and female (1%) were involved in smoking. The results were similar in Finnish Population that effect of smoking results in stroke was more prominent in non-diabetics than diabetic subjects. So, there is a clear association between smoking and stroke.²³⁻²⁷

Atrial Fibrillation has been an important factor for stroke due to cerebral infraction. The frequency of atrial fibrillation in our sample patient with first stroke is the same as Oxfordshire community stroke,²⁸⁻³¹ although some investigators have failed to observe an effective association involving atrial fibrillation.³²⁻³⁴

Due to weight increase, high serum cholesterol and carotid stenosis there is great chance of infarction instead of haemorrhage. Although in our study its ratio is low and serum cholesterol is reduced in men which show the same results as the research conducted in Japan that serum cholesterol seems higher for infarction and lower for cerebral haemorrhage.³⁵⁻³⁷

CONCLUSION

Cerebral infarction is most common cause of all strokes. It is more prevalent in 41-80 years of age. From this study, it was observed that hypertension is the most important risk factor for cerebral infraction.

AUTHORS' CONTRIBUTION

SM: Main paper writing. AP: Literature search, Write-up, Statistical analysis. ZZ: Discussion. Proof reading, data collection.

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