Original Article

Young-Onset Stroke in the Rural Areas of Sindh

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ABSTRACT

Objective: to determine the risk factors and clinical features in the young-onset stroke belonging to the rural areas.
Study Design: Retrospective, Observational.
Place and Duration of Study: This study was conducted at the Department of Neurology, Medical Unit II, Peoples Medical College Hospital, Nawabshah from 1.1.2006 to 31.12.2006.
Materials and Methods: Hospital records of acute stroke cases aged 20-45 years were reviewed. Stroke was defined according to the WHO criteria. Demographic and clinical data including the risk factors were scrutinized. Laboratory investigations and the CT Scan of brain were evaluated in all cases.
Results: Twenty-cases were documented. Male= 12 (60%), Female= 8(40%). Age ranged from 20-45 years. Majority were uneducated and they were residents of small rural communities. Hypertension was the most frequent risk factor in 13 (65%) of cases (Table 1). Only 2 (10%) were previously taking antihypertensive treatment while 18 (90%) were not receiving any treatment prior to stroke. Heart disease was present in 2 (10%). Three (15%) were smokers. One (5%) had Diabetes mellitus, 3 (15%) had previous stroke and 1 (5%) had a family history of stroke. Three (15%) had none of the above risk factors. Hemiplegia was the most common presentation where 8 (40%) had right while 7(35%) had left hemiplegia and in 5 (25%) sidedness could not be ascertained because of deep coma (Table 2). Glasgow Coma Scale (GCS) ranged from 5-12 out of 15. Cerebral infarction was more common 12 (60%) than cerebral haemorrhage 6 (30%) while in 2 (10%) CT findings were unremarkable (Table 3). Of the 20 cases 3 (15%) expired and 17 (85%) survived (Table4). Fatal cases had GCS of below 8 out of 15.
Conclusions: This study indicates that hypertension is the major risk factor for stroke in young adults belonging to the rural areas. Hemiplegia was the most common presenting feature. Cerebral infarction accounts for 60% of the cases and the survival rate was 85%. Unawareness and poor control of hypertension appears to be the main reasons behind the young-onset stroke in our region.
Key Words: Young stroke, Risk factors, Prognosis, Rural.

INTRODUCTION

There were times when stroke was considered as the disease of the old age, but the time is changing and stroke is affecting a growing number of adults below the age of 45 years. This is evident in the recent population[1,2] and hospital-based studies[3,4]. Such evolution of stroke affecting young adults is quite alarming as well as challenging. That is why it has generated a great deal of interest for study of such group of patients may lead to a better understanding of the disease process[5]. Stroke occurring in individuals below 45 years constitutes approximately 5% to 10% of all ischemic strokes[1,2,6]. The annual incidence of stroke in this age group varies from 9-39 cases per 100,000 populations[1,2,5,7]. Since our younger population is increasing the incidence of stroke in this age group is likely to increase if the risks involved are not properly identified. Therefore further studies are required to address this issue.

Stroke may be as a result of infarction due to thrombotic or embolic occlusion of a cerebral vessel or as a result of cerebral hemorrhage. Epidemiological evidence indicate that hypertension is the most important cause of stroke in men and women of all ages[8]. While in some young stroke cases the underlying cause can be identified, in 43%[9] to 45%[3] of cases the cause remain undetermined despite of extensive investigations (cryptogenic strokes). However, with the help of more sophisticated tools like MRI, cerebral angiography, transesophageal echocardiography, the proportion of unexplained stroke may come down to 27%[2]. It is therefore important to thoroughly asses the young stroke patients so that a treatable cause is not missed. Moreover, stroke is a disabling disease[10]. Since young age is the most productive age it is imperative that such cases receives special attention so that long term disability can be minimized. Regional hospital-based studies[3,4] have previously highlighted some clinical aspects of stroke in young adults but those are mostly part from the urban areas. The purpose of this study was to determine the risk factors and other clinical characteristics of young stroke cases belonging to the rural areas.

MATERIALS AND METHODS

We retrospectively reviewed the hospital records of patients aged 20-45 years admitted with the diagnosis of acute stroke at the Department of Neurology,

Medical Unit II, Peoples Medical College Hospital Nawabshah during the period January 2006 to December 2006. Demographic and clinical data was evaluated. Presence of risk factors including hypertension, heart disease, diabetes mellitus, smoking , past history of stroke, family history of stroke were scrutinized. Investigations like complete blood count, blood sugar, urea, urine analysis, Chest x-ray, ECG, Echocardiogram and CT Scan of brain were analyzed. Diagnosis of hypertension, diabetes, heart disease was based on combination of medical history, laboratory results, previous prescriptions or other hospital discharge cards whenever available. Stroke was defined as the rapidly developed clinical signs of focal (or global) disturbance of cerebral functions, lasting for more than 24 hours or leading to death with no apparent cause other than of vascular origin[11]. All cases with intracranial infections, space occupying lesions or other diseases simulating stroke were excluded. The diagnosis of cerebral infarction or cerebral hemorrhage was made on the basis of CT Scan findings.

RESULTS

Twenty-cases were documented. Male= 12 (60%), Female= 8(40%). Age ranged from 20-45 years. Majority were uneducated and they were residents of small rural communities. Hypertension was the most frequent risk factor in 13 (65%) of cases (Table 1). Only 2 (10%) were previously taking antihypertensive treatment while 18 (90%) were not receiving any treatment prior to stroke. Heart disease was present in 2 (10%). Three (15%) were smokers. One (5%) had Diabetes mellitus, 3 (15%) had previous stroke and 1 (5%) had a family history of stroke. Three (15%) had none of the above risk factors. Hemiplegia was the most common presentation where 8 (40%) had right while 7 (35%) had left hemiplegia whereas in 5 (25%) sidedness could not be ascertained because of deep coma (Table 2). Glasgow Coma Scale (GCS) ranged from 5-12 out of 15. Cerebral infarction was more common 12 (60%) than cerebral hemorrhage 6 (30%) while in 2 (10%) CT findings were unremarkable (Table 3). Of the 20 cases 3 (15%) expired and 17 (85%) survived (Table 4). Fatal cases had GCS of below 8 out of 15.

Table No. 1: Risk Factors

Risk Factor	N0. of Patients	%
Hypertension	13	65%
Heart Disease	2	10%
Smoking	3	15%
Diabetes	1	5%
Past Stroke	3	15%
Family History	1	5%
None of Above	3	15%

Table No. 2: Disability

Sidedness	Cases	%
Right Hemiplegia	8	40%
Left Hemiplegia	7	35%
Uncertain	5	25%

Table No.3: CT Scan Findings

Diagnosis	No	%
CI	12	60%
CH	6	30%
Unknown	2	10%

CI = Cerebral Infarction
CH = Cerebral hemorrhage

Table No.4: Mortality

Expired	3	15 %
Survived	17	85%

DISCUSSION

We studied the young cases with acute stroke belonging to the rural areas. Due to small sample size of our study it is difficult to make comparison with large regional[3,4] and International[7,9] studies. None the less, it does shows a glimpse of young stroke patients belonging to various rural communities. Majority of the patients were uneducated. Hypertension was the most frequent risk factor. Ironically 90% of the cases never received treatment for hypertension prior to stroke. Although this figure is quite high but not surprising as similar situation is projected by Jafar et al[12] where 70% of the cases were unaware of their hypertension and only 3% had proper control of hypertension. Other characteristics include male preponderance of 60% similar to 64%[3] and 69.3%[4] as reported by regional urban centres and from other Asian countries India (76.3%)[13], Saudi Arabia (58.9%)[14] and Western countries[2,5]. Hypertension was the most frequent risk factor observed in 65% cases, same as 65% reported by Makki et al[4] but higher (43%) reported by Razzak et al[3] and 15-28% [1,2,15,16] from Western series. Given that the prevalence of hypertension is increasing in the younger individuals in Pakistan[12], the poor control of hypertension may lead to increased incidence of stroke among the young adults[9]. This could well be the reason for a growing number of young stroke cases in our region. It is of note that risk of stroke can be reduced by 38% if the blood pressure is adequately controlled[17].

In our study 15% were smokers which is lower (21%) reported by a regional study[3] and (42.6%) from a US[18] and much lower (69%) from Indian[13] and (81%) from Greenland[19]. The number of smokers in our study (15%) is less than expected. This may be due to small sample size of our study. But in view of (5.2 %)[20] prevalence of smokers aged 15 years and above in Pakistan it is possible that some patients may have concealed their smoking habits. While 43% of young stroke may be due to undetermined cause[9] , in 15% we

could not identify the risk factors or other underlying cause. But since these cases were not extensively investigated due to lack of facilities and financial constraints they were not considered as cryptogenic or of undetermined cause. Likewise, MRI could have been more revealing when the CT scan in 2 of our cases were unremarkable.

In our study cerebral infarction was more common (60%) than cerebral hemorrhage (30%). The same pattern of cerebral infarction greater then cerebral hemorrhage is reported in general population with thromboembolic stroke[21] and in series involving young people[22]. Mortality of 15% and survival of 85% is in line with 12-21% mortality and 79-88% survival projected by Makki et al[4] in previously published reports[5,23,24]. As mortality is higher in cerebral hemorrhage[25,26] and lower in cerebral infarction.[26,27] and that upto 79% of cases with cerebral infarction survive and have better prognosis[5,28], we expect better survival and recovery in patients with cerebral infarction. This is also evident in our data where 85% of our cases with cerebral infarction survived. None of our cases had movement disorder which may be an indicator of bad prognosis[3]. Most of our cases had hemiplegia at onset (75%) similar to 75.4% reported in a larger series[3]. We could not ascertained the degree of functional recovery as no standardized scale was used for this purpose. Other studies however indicate that a significant number of young stroke show good recovery (49%), yet some are left with residual deficits[3].

CONCLUSIONS

This study indicates that hypertension is the major risk factor for stroke in young adults belonging to the rural areas. Hemiplegia was the most common presenting feature. Cerebral infarction accounts for 60% of the cases and the survival rate was 85%. Unawareness and poor control of hypertension appears to be the main reasons behind the young–onset stroke in our region.

Recommendations

Most of the risk factors that have been identified are modifiable. There is a need for increasing awareness regarding stroke and its risk factors particularly in the rural areas where the illiteracy is very high. Public awareness through various sources including electronic media is strongly recommended.

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