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Study of Risk Factors and Clinical Profile of Stroke in Young Adults

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Abstract

Background: According to the Global Health Observatory, stroke is the second most common cause of death during last decade with a rising trend. Although stroke is considered to be the disease of older population, with the demographic shift the disease incidence is now shifting to younger age group. This shifting trend to younger age group pose a great concern to the world in terms of days lost to work and mortality. There is paucity of information on stroke in young individuals covering important types of stroke. **Aims & Objectives:** To study the clinical profile and risk factors associated with the stroke in young adults. **Materials & Methods:** The present descriptive study was carried out at tertiary care Hospital of Nasik from June 2011 to June 2013. A total of 40 consecutive cases between 15-45 years presenting with stroke were recruited for the study after taking prior informed consent. All cases underwent a detailed history taking, general and clinical examination along with all required Investigations. Data was analysed by SPSS software ver. 17 using appropriate statistical tests. **Results:** Ischemic stroke was the most common presentation and stroke prevalence was similar across both genders. Headache was the most common symptom followed by vomiting in all types of stroke patients. OC Pills and parity was found to significantly associated with CVST. Obesity, smoking and abnormal lipid profile was found to be significantly associated with thromboemblic stroke. Only 3 out of 40 stroke patients died during the course of study. **Conclusion:** OC Pills and parity were significantly associated with CVST while obesity, smoking and dyslipidemia were significantly associated with thromboemblic stroke. Outcome in young stroke patients was fairly good.

Keywords: Clinical Profile, Risk factors, Stroke, Young Adults

1. Introduction

Stroke or Cerebrovascular diseases include some of the most common and devastating disorders: ischemic stroke, hemorrhagic stroke, and cerebrovascular anomalies such as intracranial aneurysms and Arteriovenous Malformations (AVMs). Most cerebrovascular diseases manifest by the abrupt onset of a focal neurologic deficit, as if the patient was "struck by the hand of God." According to the Global Health Observatory (GHO), stroke is the second most common cause of death during last decade (2000-2011) with a rising trend[1]. A stroke, or cerebrovascular accident, is defined by this abrupt onset of a neurologic deficit that is attributable to a focal vascular cause[2]. Thus, the definition of stroke is clinical, and laboratory studies including brain imaging are used to support the diagnosis. The clinical manifestations of stroke are highly variable because of the complex anatomy of the brain and its vasculature.

The effects of stroke can vary enormously, depending on the area of brain that has been damaged and the extent of the damage. Clinical Features varies from paralysis communication difficulties (problems with speaking, reading, writing and understanding) difficulties with

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mental processes, such as learning, concentration and memory. Some patients can present with visual disturbances, urinary incontinence, swallowing difficulties and emotional problems etc. It can take time for the full implications of a stroke to sink in. It has physiological, economical and psychological impact on the patients[3].

Stroke ranks first amongst all CNS diseases both in frequency and gravity. Approximately 20 million people each year suffer from stroke and of these 5 million do not survive[4]. Older population based studies in India conducted in Vellore and Rohtak quoted annual incidene of Stroke as 13 per lac and 33 per lac persons respectively[5,6]. Strokes form nearly 1.5% of all hospital admissions, 4.5% of all medical and 20% of neurological cases[7]. Although stroke is considered to be the disease of older population, the with demographic shift the disease incidence is shifting to younger age group. It is not infrequent among adolescent and young adults (Age 15-45 yrs).

According to Kittner et al. the incidence of stroke is approximately 6 per lakh in Caucasians aged 15-39 years and 2.5 times higher in persons of African descent. Young stroke patients constitute 15-30% of all stroke patients in India as opposed to 1-8.5% in western countries[8]. Indian reports estimate the incidence of stroke in young as between 15 and 30% of strokes in all ages[9]. Of all sudden unexpected natural death in young patients of age group 18-35 years cerebrovascular accidents was responsible for 9.37% of death[10].13 Recent prospective population based Mumbai Stroke Registry (2005) using standardized WHO STEPS Stroke protocol (version 2.0) registered an overall annual incidence of 148/100,000/per year with incidence of stroke among the younger populations of 40/lac/year[11].

This shifting trend to younger age group pose a great concern to the world in terms of days lost to work and mortality. There is paucity of information on stroke in young individuals covering important types of stroke. The purpose of the study is to look out the clinical profile of the young stroke patients and to find out risk factors including additional risk factors if any, associated with the occurrence of stroke in young population so that high risk groups can be identified and intervened at the earliest to favourably modify the disease outcome.

2. Aims and Objectives

To study the clinical profile and risk factors associated with the stroke in young adults.

3. Materials and Methods

The present Descriptive study was carried out at tertiary care Hospital, Nasik in an urban area from June 2011 to June 2013. A total of 40 consecutive cases between 15-45 years presenting with stroke were recruited for the study after taking prior informed consent.

All cases underwent a detailed history and clinical examination. A provisional diagnosis was reached based on the history, examination and blood investigations. All the patients were then subjected to CT Brain plain or contrast as needed. Based on the CT brain, history, clinical examination and blood investigations, ECG a final diagnosis was reached. All the patients were re-evaluated at the time of discharge from the hospital regarding the outcome of the disease, to assess the prognosis and rehabilitation.

Stroke or CVA was defined as sudden onset of neurodefecit due to a vascular cause and was sub typed as Embolic, Thrombotic, Haemorrhagic and CVST as per the etiology. Treatment according to the type of CVA was given according to the management of stroke guidelines in these cases.

Patients were followed to assess the improvement in power of the affected group of muscles at the time of discharge. An increase in the grade of power from the power at presentation of CVA was taken as improved case.

4. Statistical Analysis

Collected data was entered in Microsoft Excel sheet-2007 and then transferred and analysed using SPSS software ver. 17. All the observation findings were presented as means (±SD) or percentages and appropriate statistical tests were applied based on type and distribution of data. P value of < 0.05 was considered as significant.

5. Results

Out of 40 patients 12 (30%) reported embolic stroke while 8 (20%) reported stroke with CVST. Thrombotic and haemorrhagic stroke were observed in 10 (25%) patients each (Table 1).

Twelve patients were in the age group 21-25 years and ischemic stroke constituted 55% of total number of stroke and was the most common type of stroke (Table 2). Fifty percent patients reported with stroke were females while 48% were males. In females embolic and CVST stroke was

found in 7 patients each. In males hemorrhagic stroke was more commonly found in the present study (Table 2).

Headache was the most common symptom followed by vomiting in all types of stroke patients. In patient with thrombo-embolic stroke headache was present in 11 patients while altered sensorium and vomiting was present in 9 patients each. Nearly all patients with hemorrhagic stroke had headache and vomiting and patients with CVST had convulsions and headache. 72% of patients with history of fever were diagnosed with thromboembolic type of stroke (Table 3).

Out of 7 peripartum females 4 developed CVST, 2 suffered thromboembolic stroke and 1 had hemorrhagic stroke and the difference was statistically significant Patients on OC Pills was also found to significantly associated with the CVST. Obesity, smoking, abnormal lipid profile was found to be statistically associated with thromboemblic stroke (Table 4).

Table 1. Distribution of study subjects according to type of stroke

Type of stroke	Number	Percentage
Embolic	12	30
Thrombotic	10	25
Hemorrhagic	10	25
Cortical venous sinus thrombosis (CVTS)	8	20
Total	**40**	**100**

Table 2. Distribution of study subjects according to Age and Sex

Age Group	Type of stroke				Total
	Embolic	Thrombotic	Hemorrhagic	Cortical venous sinus thrombosis (CVTS	
15-20	1(16.7%)	3(50%)	1(16.7%)	1(16.7%)	6(100%)
21-25	5(41.7%)	2(16.7%)	2(16.7%)	3(25%)	12(100%)
26-30	2(50%)	1(25%)	0(0.0%)	1(25%)	4(100%)
31-35	0(0.0%)	1(20.0%)	3(60.0%)	1(20%)	5(100%)
36-40	3(50%)	2(33.3%)	1(16.7)	0(0.0)	6(100%)
41-45	1(14.3%)	1(14.3%)	3(42.9%)	2(28.6%)	7(100%)
Total	12(30%)	10(25%)	10(25%)	8(20%)	40(100%)
Sex					
Male	5(26.3%)	7(36.8%)	6(31.6%)	1(5.3%)	19(100%)
Female	7(33.3%)	3(14.3%)	419%)	7(33.3%)	12(100%)

Table 3. Distribution of symptoms according to type of stroke

Symptoms	Type of stroke			Total
	Embolic and Thrombotic	Hemorrhagic	Cortical venous sinus thrombosis (CVTS	
Altered Sensorium	9(64.3%)	4(28.6%)	1(7.1%)	14(100%)
Vomiting	9(39.1%)	9(39.1%)	5(21.7%)	23(100%)
Convulsions	6(35.3%)	5(29.4%)	6(35.3%)	17(100%)
Headache	11(40.7%)	9(33.3%)	7(25.9%)	27(100%)
Fever	8(72.7%)	1(9.1)	2(18.2)	11(100%)

Table 4. Presence of risk factor in different types of stroke

Symptoms	Type of stroke			Total	P-value
	Embolic and Thrombotic	Hemorrhagic	Cortical venous sinus thrombosis (CVTS		
Peripartum	2	1	4	7	0.3
Obesity/ overweight	8	5	1	14	0.05
RVHD	6	1	0	7	0.17
Smoking	10	5	1	16	0.04
Alcohol	6	3	1	10	0.65
Tobacco	6	4	2	12	0.72
Diabetes Mellitus	1	2	1	4	0.38
Abnormal lipid profile	8	1	3	12	0.02
Oral Contraceptive pill	2	1	4	7	0.02
Homocystein (Raised)	3	1	4	8	0.68
APLA positive	1	0	0	1	NA

Protein c/s deficiency	1	0	0	1	NA
Anti Ds DNA/ ANA	0	1	1	2	0.78

6. Discussion

The present study focuses on Stroke in young patients. A total of 40 patients with stroke in the age group of 15-45 years were included to study the profile of stroke cases in young and the risk factors associated disease. As mentioned in the literature, embolic stroke is the most common aetiology of stroke in all age groups. In present study 30% patients reported embolic stroke which suggest embolic stroke is also common in young stroke patients. No gender difference was observed in present study.

In a study in young stroke patients by Nayak SD et al. thrombotic stroke and cardio-embolic stroke occurred in 24% and 17% patients respectively[12]. Overall, there is a male preponderance of stroke. Studies performed on ischemic stroke among the 15-45 years age group from India also reported a male preponderance[12-15]. In several studies, females outnumbered men among those under 30[16-18].

The clinical spectrum of the young stroke patients in the present study is similar to other studies from India and abroad[12].

Smoking has been have been found to be significantly associated with ischemic storke by many studies[12,13] which supports the findings of present study. There does not seem to be a consistent association between diabetes and stroke in studies conducted in various countries[13]. In present study, abnormal lipid profile was found to be significantly associated with the occurrence of ischemic stroke. The study findings are supported by various studies in literature[14,15].

In the Baltimore–Washington Cooperative Young Stroke Study[19] which compared 296 cases of incident ischemic stroke among black and white adults aged 18–44 years with 1220 community based adults of the same age group, hypertension, diabetes mellitus and current smoking emerged as important risk factors. Similarly, in a comparison of 201 consecutive patients with first onset stroke due to cerebral infarction aged 15–55 years and the same number of matched neighbourhood control subjects conducted as part of the Melbourne Risk Factor Study[20], hypertension, diabetes mellitus, current smoking, heart disease and long term heavy alcohol consumption were major risk factors. The two case control studies from India that included ischemic stroke in all age groups suggested that hypertension, diabetes mellitus and smoking are important risk factors for stroke in India as they are worldwide[21].

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