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Original Article

Study of Ischemic Stroke at Young Age (<25 years) of 50 Patients Admitted at SBMCH, Barisal

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Abstract

Background: *Stroke is a leading cause of death and a major cause of adult disability in developed countries. The risk of ischemic stroke in children and young adults with CHD is significantly higher than in the general population. Cardiovascular comorbidities ie congestive hypertension, atrial fibrillation and heart failure increased the risk of ischemic stroke.*

Objective: *This study was done to the etiology of ischemic stroke, to determine the incidence and prevalence of ischemic stroke and to set up a management plan.*

Methods & Materials: *It is a prospective study conducted at SBMCH, Barisal. during the times of 2015-2017. Total number of population is 50. Stroke was diagnosed by CT Scan of Brain. Either sex group and all aged patient were included this study.*

Results: *It was observed that majority 19(38.0%) patients belonged to age 16-20 years. The mean age was found 18.7±5.3 years. Male was found 29(58.0%) and female was 21(42.0%). Male female ratio was 1.4:1. It was observed that majority 13(26.0%) patients had hypertension, 11(22.0%) had diabetes mellitus, 6(12.0%) had smoker, 17(34.0%) had hypercholesterolaemia and 1(2.0%) had coronary artery disease. It was observed that majority 13(26.0%) patients had cardioembolism, 11(22.0%) had stroke due to determined etiology, 10(20.0%) had large artery artherosclerosis, 8(16.0%) had small vessel disease and 8(16.0%) had stroke due to undetermined etiology.*

Conclusion: *Modifiable risk factors for stroke, such as dyslipidemia, smoking, and hypertension, are highly prevalent in the young stroke population.*

Keywords: *Stroke, ischemic, risk, hypertension, population.*

Introduction

Stroke may be a leading account for death and a serious cause for adult disability in developed countries. The risk of ischaemic stroke in children and young adults with CHD is significantly higher within the general population. Cardiovascular comorbidities, such as congestive heart failure, atrial fibrillation and hypertension, increased the risk of ischemic stroke.[1]As will be outlined below, some causes of stroke are more frequent in adults under 45 years of age compared to more aged populations.[2] Despite these difficulties, some general trends are apparent. The frequency rates under the age of 45 range from 7 to 15 in 100 000 people/year for all stroke (ischaemic and haemorrhagic),[3-4] with higher rates reported in some countries.[5] Some studies shown similar frequency rates have examined all stroke in the 15 to 44 year old age group[6] or ischaemic stroke only in the 15 to 49 year old age group (6.6 to 11.4 in 100 000 people/year).[7] Under the age of 35, rates are less than 10 in 100 000 people/year (ranging from 0 to 9).[9] Within the 35 to 44 year old age range, rates range from 22 to 45 in 100 000 people/year.[8] Strokes in young adults are reported as being uncommon, comprising 10%–15% of all stroke patients. Though, compared with stroke in older adults, stroke within the young features a disproportionately large economic impact by leaving victims disabled before their most efficient years. The frequency of ordinary modifiable vascular risk factors in young stroke patients is different from that in older patients. Modifiable risk factors for stroke, like hypertension dyslipidemia and smoking are highly predominant within the young stroke population, with no significant difference in lifestyle, nutritional, geographic, climatic or genetic diversity.[9]

Methods & Materials

It is a prospective study conducted at SBMCH, BARISHAL. during the time of 2015-2017. Total number of population is 50. STROKE was diagnosed by CT Scan of Brain. Either Sex Group and all aged patient were included this study. Proper history had been taken and examined thoroughly. Particulars of the patient and information regarding age, sex, physical examination and laboratory findings had been documented in a case record form which is done at my private chamber and data were analyzed statistically.

Results

Table I: Socio-demographic characteristics of the patients (n=50)

Age (years)	Frequency (n)	Percentage (%)
≤10	7	14.0
11-15	9	18.0
16-20	19	38.0
21-25	15	30.0
Mean ±SD	18.7±5.3	
Sex		
Male	29	58.0
Female	21	42.0

Table I showed socio-demographic characteristics of the patients. It was observed that majority 19(38.0%) patients belonged to age 16-20 years. The mean age was found 18.7±5.3 years. Male was found 29(58.0%) and female was 21(42.0%). Male female ratio was 1.4:1.

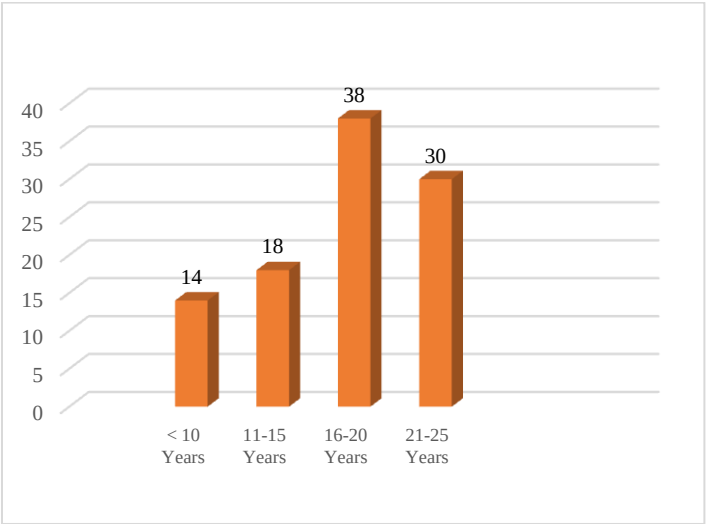

Figure 1: Patients Age Distribution

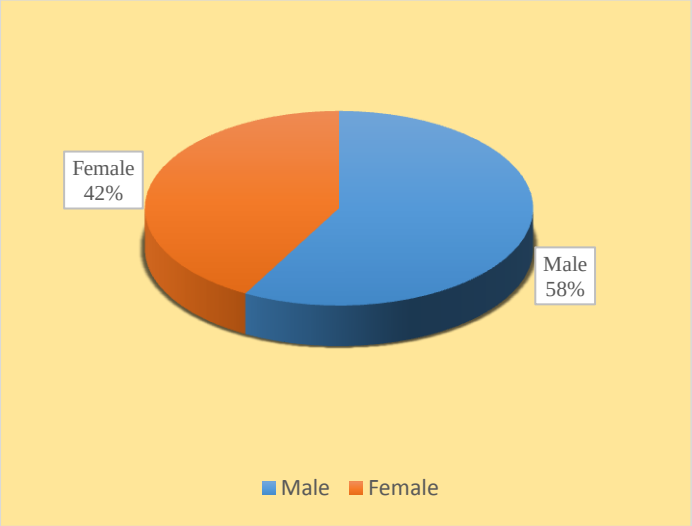

Figure 2: Patients Sex Wise Distribution

Table II: Modifiable risk factors of the patients (n=50)

Modifiable Risk Factors	Frequency (n)	Percentage (%)
Hypercholesterolemia	17	34.0
Hypertension	13	26.0
Diabetes mellitus	12	24.0
Smoking	6	12.0
Coronary artery disease	2	4.0

Table II showed modifiable risk factors of the patients. It was observed that majority 13(26.0%) patients had hypertension, 12(24.0%) had diabetes mellitus, 6(12.0%) had smoker, 17(34.0%) had hypercholesterolemia and 2(4.0%) had coronary artery disease.

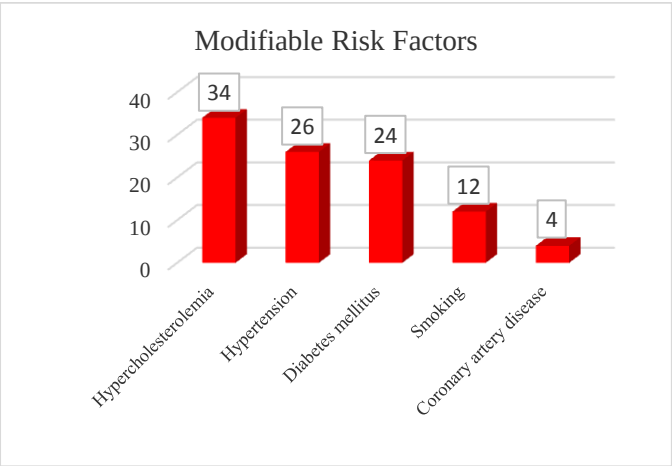

Figure 3: Modifiable Risk Factors

Table III: Family history of the patients (n=13)

Family History	Frequency (n)	Percentage (%)
History of transient Ischaemic attacks	7	14.0
History of Amaurosis fugax	3	6.0
History of Ischaemic stroke	2	4.0
History of migraine without aura	1	2.0

Table II showed family history of the patients. It was observed that history of transient ischaemic attacks was found 7(14.0%), history of ischaemic stroke was 2(4.0%), history of amaurosis fugas was 3(6.0%) and history of migraine without aura was 1(2.0%).

Table IV: Stroke etiology in young adults with ischemic stroke (n=50)

Stroke Etiology	Frequency (n)	Percentage (%)
Cardioembolism	13	26.0
Stroke due to determined etiology	11	22.0
Large artery atherosclerosis	10	20.0
Small vessel disease	8	16.0
Stroke due to undetermined etiology	8	16.0

Table IV showed stroke aetiology of the patients. It was observed that majority 13(26.0%) patients had cardioembolism, 11(22.0%) had stroke due to determined etiology, 10(20.0%) had large artery artherosclerosis, 8(16.0%) had small vessel disease and 8(16.0%) had stroke due to undetermined etiology.

Discussion

It was observed that majority 19(38.0%) patients belonged to age 16-20 years. The mean age was found 18.7±5.3 years. Male was found 29(58.0%) and female was 21(42.0%). Male female ratio was 1.4:1. In study of Sher et al.[10] observed that patients were sub grouped into three age groups. Patients majority in numbers. having indication of cardioembolic source and stroke due to determined etiology fell between 15-29 years of age, more than 60% of those with stroke. 9% patients had cardioembolic stroke [8(42.1%)

males and 11(57.9%) females. Maaijwee et al.[11] study observed that stratified young patients with stroke by age category found no significant difference in prevalence between patients under 42 years, 42 years or older in age. In this study, cardiomyopathy was more than twice as prevalent in men than in women (15.5% versus 6.1%).[12] Nedeltchev et al.[13] reported males were found 53.0%. It was observed that majority 12(24.0%) patients had hypertension, 11(22.0%) had diabetes mellitus, 6(12.0%) had smoker, 17(34.0%) had hypercholesterolaemia and 1(2.0%) had coronary artery disease. Sher et al.[10] study showed that smoking, hypertension and dyslipidemia were statistically significantly associated risk factors in this series of younger stroke patients as well. However, diabetes mellitus was found to have insignificant association in any of the etiologic patterns of stroke. Maaijwee et al.[11] revealed hypertensions are reported in 19-39% of all young patients with stroke, dyslipidaemia in 17-60%, diabetes in 2-10%, smoking in 42-57%, and obesity in 10-20%.[14-15] Nedeltchev et al.[13] one hundred and sixty-two patients (80%) had at least one stroke risk factor, 106 (52%) had two or more. Hypertension, hypercholesterolaemia and cigarette smoking were detected in 46%, 39% and 19% of cases, while diabetes mellitus and coronary artery disease were rare (2% and 1%, respectively). In current study family history of the patients. It was observed that history of transient ischaemic attacks was found 7(14.0%), history of ischaemic stroke was 2(4.0%), history of amaurosis fugas was 3(6.0%) and history of migraine without aura was 1(2.0%). Nedeltchev et al.[13] study observed that history of migraine without aura was 37(18.0%), history of transient ischaemic attacks was 24(12.0%), history of ischaemic stroke was 8(4.0%) and history of amaurosis fugas was 6(3.0%). Regarding stroke aetiology of the patients. It was observed that majority 13(26.0%) patients had cardioembolism, 11(22.0%) had stroke due to determined etiology, 10(20.0%) had large artery artherosclerosis, 8(16.0%) had small vessel disease and 8(16.0%) had stroke due to undetermined etiology. In study of Sher et al.10 showed 19(25.3%) patients had cardioembolism, 15(20.0%) had large artery artherosclerosis, 12(16.0%) had small vessel disease and 12(16.0%) had stroke due to undetermined etiology. Nedeltchev et al.[13] Stroke was caused by atherosclerotic large artery disease in 4%, cardioembolism in 24%, small vessel disease in 9%, another determined aetiology in 30%, and undetermined aetiology in 33%. The aetiology of stroke differs in young compared with older patients.[16,17] Correspondingly, cardiac embolism and other determined aetiologies-especially cervical artery dissection-were found in 54%, and atherothrombosis and small vessel disease in 13% of our patients. Our study endorsed the greater heterogeneity in stroke aetiology found in strokes, affecting young adults. According to the TOAST classification, every third patient suffered from a stroke of other determined aetiology.[18] We identified 10 different aetiologies within this stroke category, cervical artery dissection being the most frequent. The aetiological multiplicity of stroke in young adults is often challenging. On the one hand, many investigations and tests have to be carried out in order to consider all possible aetiologies. Needless examinations should be avoided by planning the diagnostic evaluation on a case by case basis.[19, 20]

Conclusion

The pervasiveness of ordinary modifiable vascular risk factors in young stroke patients is different than that of older patients. Modifiable risk factors for stroke, like hypertension, dyslipidemia, and smoking are highly predominant within the young stroke population, with no significant difference in lifestyle, nutritional, genetic, climatic and geographic diversity.[9]

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