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Study of Risk Factors among patients presenting with Stroke in Younger Age group

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ABSTRACT

Aim: To Study the Clinical profile and Etiology among patients presenting with Stroke in Younger Individuals. **Methods:** The present Cross-Sectional Observational study was conducted on 50 patients of age 15-45 years with clinical and radiological diagnoses admitted to Dr. D.Y. Patil Medical College Hospital and Research Centre, Pimpri, Pune during the period from OCTOBER 2020– SEPTEMBER 2022. **Results:** In this study, the majority of patients were in the 36–45 years age group (46%). And also, it was found that in this study, majority of the patients had Dyslipidemia as the major risk factor in 21(42%) subjects. **Conclusion:** Thus, our study concludes that Dyslipidaemia as the most commonly reported risk factor stating that primary prevention of these modifiable risk factors will help in preventing stroke in younger individuals.

Keywords: Younger Individuals, Dyslipidemia

Introduction:

Stroke is at the foremost, among the causes of mortality and morbidity in the country and the world at large. Stroke has been defined as rapidly developed clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin[1]. The disabling effect of stroke possesses an enormous threat to the socioeconomic thread, especially in developing countries. The causes mainly include shifts in lifestyle changes that have occurred over the decades. Young stroke is increasing in prevalence is increasing due to several factors. In Young patients without conventional vascular risk factors and negative preliminary stroke work-up, clinicians must consider less common causes of stroke in this population. The prognosis, outcome, and management of stroke depend on its etiology. Ischemic stroke has been subcategorized into

various types mainly based on etiology and has been developed for the Trial of Org 10172 in Acute Stroke Treatment (TOAST).The TOAST classification denotes five subtypes of ischemic stroke: 1) large-artery atherosclerosis, 2) cardioembolism, 3) small-vessel occlusion, 4) stroke of other determined etiology, and 5) stroke of undetermined etiology[2].Young adults make up 10% to 15% of all stroke patients, which is a highly uncommon age group for strokes to occur. In contrast to stroke in older persons, young stroke has an unjustifiably high economic burden on victims, rendering them handicapped before their prime years of productivity. Since modifiable risk factors are also most prevalent among young population , primary prevention is the most important mode of prevention to prevent any mortality or morbidity which results from stroke in the young[3].

Materials and Methodology:

The present Cross-Sectional Observational study was conducted on 50 patients of age 15-45 years with clinical and radiological diagnosis admitted in Dr. D.Y. Patil Medical College Hospital and Research Centre, Pimpri, Pune during the period from OCTOBER 2020–SEPTEMBER 2022.

INCLUSION CRITERIA:-

1. Patients in the age group of 15-45 years,
2. Patients diagnosed as having stroke based on clinical & radiological (CT/MRI) findings.

EXCLUSION CRITERIA:-

1. Patients with k/c/o- stroke.
2. Patients presenting with h/o head injury
3. Patients with a pre-existing bleeding disorder
4. Patients below 15 years and more than 45 years

Ethical approval and Informed consent:

The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance. After explaining the purpose and details of the study, a written informed consent was obtained.

Methodology:

The study was conducted on 50 patients fulfilled the eligibility criteria admitted in our hospital. We obtained Informed consent from all our patients. All the patients were subjected to detailed clinical examination including general and physicalexamination. On admission, detailed neurological examination, signs and symptoms like UMN signs (hypertonia, hyperreflexia, positive Babinski sign), LMN signs (hypotonia, hyporeflexia, and negative Babinski sign) were done, and then the patient were subjected to CT/ MRI. Based on this, patients were divided into ischemic (Thrombotic and Embolic) and Hemorrhagic stroke, and the patients were evaluated for the following investigations.

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- Complete blood count
- BSL-R
- LFT/ RFT , Serum electrolytes
- Lipid profile
- Serum Homocysteine
- 2D-Echo
- CT / MRI imaging
- Coagulation profile which includes, Anti-nuclear antibody(ANA) by immunofluorescence technique, Protein C / S, Factor V Leiden mutation, Anti-thrombin III, Anti-Cardiolipin antibodies.

Table 1: Distribution of patients according to age group

Age (years)	No of patients	%
15–25	8	16
26–35	19	38
36–45	23	46
Total	**50**	**100**

In the present study, it was seen that 8(16%) subjects were in the age group of 15-25,19(38%) was in the age group of 26-35, 23 (46%) were in the age group of 36-45 years.

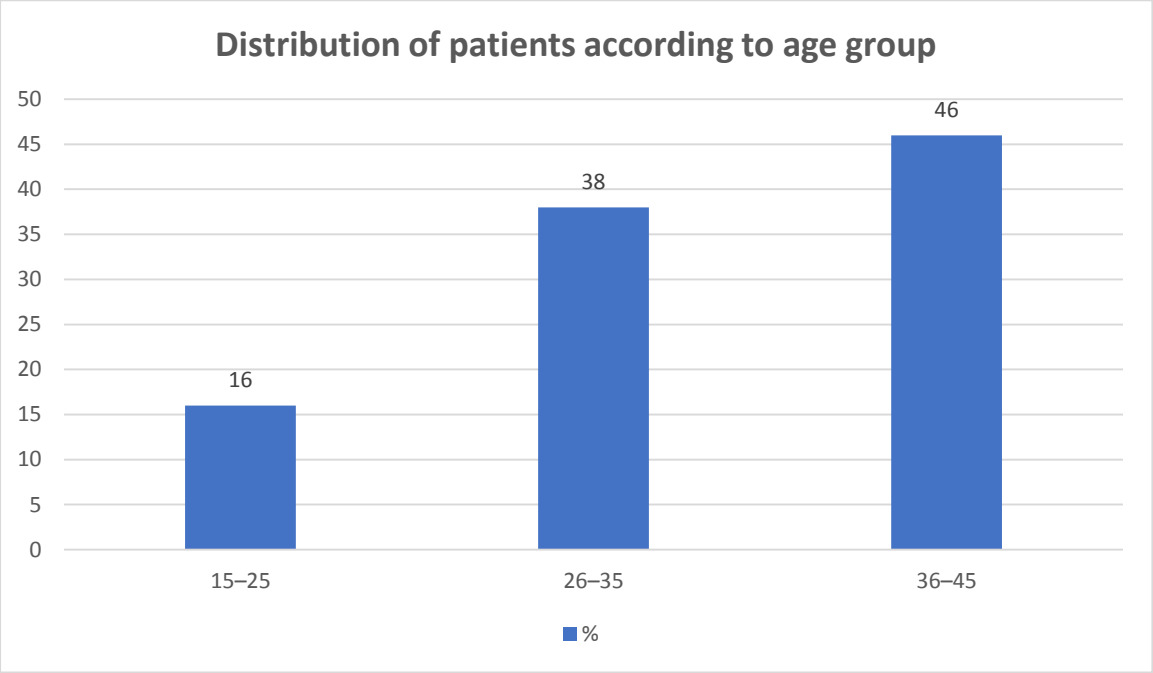

Table 3: Distribution of patients according to Risk factors

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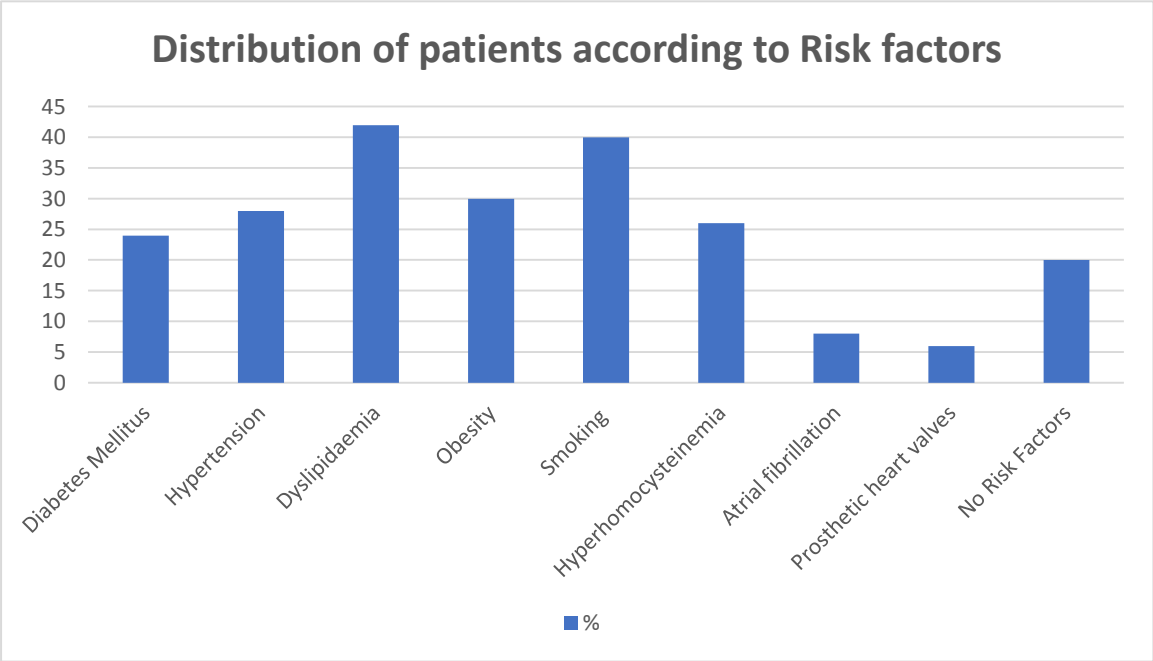
Risk factors	No of patients	%
Diabetes Mellitus	12	24
Hypertension	14	28
Dyslipidaemia	21	42
Obesity	15	30
Smoking	20	40
Hyperhomocysteinemia	13	26
Atrial fibrillation	4	8
Prosthetic heart valves	3	6
No Risk Factors	10	20

In the present study, it was seen that 12(24%) subjects had the risk factor of Diabetes Mellitus,14(28%) had the risk factor of Hypertension,21(42%) had Dyslipidemia, 15(30%) were obese, 20(40%) were smokers 13(26%) had Hyperhomocysteinemia, 4(8%) had Atrial Fibrillation, 3(6%) had Prosthetic heart valves and 10 (20%) had no risk factors.

Discussion :



It is one of the main noncommunicable diseases affecting young and old populations alike causing a catastrophic burden on the healthcare services throughout the world. The present scenario is seeing a shift in the age groups affected by stroke with the younger populations being involved to a greater extent causing a loss of young manpower to the economic and health status of the country[4] We must first define a "young patient" in order to discuss the epidemiology of stroke in the young age group. It can be difficult and occasionally arbitrary to establish an age cut-off, but according to previously published research and registries, young adults are often individuals who are under the age of 45 or 49 years.

In the present study, it was seen that 21(42%) had Dyslipidemia, 20(40%) were smokers, 15(30%) were obese, 14 (28%) had the risk factor of Hypertension, 13(26%) had Hyperhomocysteinemia, 12 (24%) subjects had the risk factor of Diabetes Mellitus, 4(8%) had Atrial Fibrillation, 3(6%) had Prosthetic heart valves and 10 (20%) had no risk factors.

Zhang YN et al in their study on risk factors study of ischemic stroke in young adults in Southwest China found that various vascular risk factors which included hypertension, dyslipidemia, and cigarette smoking have also been reported to be common in young stroke patients in the country of China[6]. W B Kannel et al in their study Based on 20 years of surveillance of the Framingham cohort found that patients with diabetes mellitus had a 2-3-fold increased risk of cardiovascular disease secondary to atherosclerosis[7]. Esther Boot et al in a study found that the prevalence of modifiable vascular risk factors which included hypertension, smoking, dyslipidemia, diabetes, and obesity was increasing in young patients who presented with stroke[8]. Annette Aigner et al in their study on 2125 patients showed that a sedentary lifestyle with minimal physical activity and increased blood pressure was the most important risk factor, amounting to 59.7% and 27.1% of all young cases of stroke, respectively[9]. Smajlović D in his study on strokes in young adults: epidemiology and prevention found that modifiable risk factors for stroke, such as dyslipidemia, smoking, and hypertension, are highly prevalent in the young stroke population[10]. Cerrato P et al in their study on stroke in young patients: etiopathogenesis and risk factors in different age classes found that the higher incidence of atherosclerotic stroke is mainly due to the presence of multiple modifiable risk factors, such as hypertension, cigarette smoking, and hyperlipidemia[11]. Mitchell et al. found obesity to be significantly associated with increased risk for ischemic stroke risk among younger adults ages 15 to 49 years in a case-control study of young ischemic stroke patients in the United States, and like other studies found high rates of hypertension (42%), diabetes mellitus (17%) and obesity (40%) among young ischemic stroke patients[12]. In our study, we had 30% individuals with obesity as a risk factor for stroke in young individuals. Niazi F et al in their study on Frequency of Homocysteinemia in Young Ischemic Stroke Patients and Its Relationship with the Early Outcome of a Stroke conducted among 71 young patients found that there were 35 (49.3%) patients having normal homocysteine levels, 21 (29.6%) showed high-risk homocysteine levels while the remaining 15 (21.1%) had moderate homocysteine levels[13]. In our study, we had 26% of individuals with increased homocysteine levels.

George MG et al in their study prevalence of Cardiovascular Risk Factors and Strokes in Younger Adults found that tobacco(smoking) use among young ischemic stroke patients is

higher than among similarly aged adults in the general population and has increased over time[14]. In our study, we found smoking is associated with 20% of patients among strokes in young.

The findings in the above studies were similar to that of our study.

Conclusion :

Thus, our study among 50 patients, concludes that dyslipidaemia as the most common risk factor leading to stroke in younger age group. Stroke is one of the main noncommunicable diseases affecting young and old populations alike causing a catastrophic burden on the healthcare services throughout the world. Standard modifiable risk factors are seen more commonly in the elderly as compared to the younger group. Since modifiable risk factors are also most prevalent among young population , primary prevention is the most important mode of prevention to prevent any mortality or morbidity which results from stroke in the young

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Conflict of Interest - None

Ethics approval and consent - All consents were taken from the ethics committee

Patient consent for publication – Patients have provided consent for their information to be published.

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