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Too young to be stroke in young: Retrospective case series in a tertiary care center

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ABSTRACT:
BACKGROUND: stroke in young and elderly patients differs considerably. Stroke in young is defined as stroke in people aged between 15 to 45 years and it's a tragic process because of it's potential to create long term disability and socio economic burden to their families. Objective of our study is to know the different etiological spectrum in younger patients with stroke.
METHODS: A retrospective observational case series study was done in SDM medical college and hospital, Dharwad , Karnataka from Dec 2021 – Dec 2022. During this period we had 1055 cases of stroke among which 5 cases fulfilled the criteria for stroke in young.
RESULTS: In our study we found 5 cases with stroke in young, 3 were ischaemic and 2 were hemorrhagic , with mean age of 25. 4 years of which 2 were females and 3 were males and underlying risk factors found to be varied from hypertension, alcoholic with dyslipidemia , AV malformation , hyperhomocystienemia and PICA aneurysm respectively.
CONCLUSION: In our study we found variable risk factors. It includes both modifiable and non modifiable risk factors like hypertension and dyslipidemia.

KEYWORDS: Stroke,Stroke in young,CVA.

I. INTRODUCTION

A stroke, or cerebrovascular accident, is defined as a sudden onset neurological deficit due to a focal vascular cause [1]. This condition is the second leading cause of death worldwide and the fifth leading cause of death in India [2]. Stroke can be classified as ischemic and hemorrhagic stroke based on the etiology. Although stroke usually affects the elderly age group, it is not a rarity among the younger population with 10-15% of stroke patients being in the below-45 group [3]. The risk factors also show considerable variation in the age groups where in older patients hypertension and atherosclerosis are the key risk factors, in young patients, cardioembolism, smoking and use of OCPs also need to be considered [4].
Understanding the epidemiology of stroke in young patients helps in preventing and management strategies to reduce the global burden of young stroke.

II. CASES

Case 1: A 21-year-old male with no comorbidities presented to the Emergency with complaints of headache, giddiness, left upper limb and lower limb weakness with facial deviation to the left, slurring of speech and 1 episode of vomiting since 3 hours. On examination, BP was 170/90mmHg, GCS E4V4M6, left UMN facial palsy present and power in Left upper and lower limbs 1/5. CVA was suspected and an MRI brain was done which showed the right caudate nucleus and right lentiform nucleus acute infarct. Laboratory tests were normal. Since the patient presented within the window period, thrombolysis was done with Alteplase 0.9mg/kg. Antihypertensive was started. Antiplatelets were started 24 hours after thrombolysis. Post thrombolysis, power improved to 5/5 in all limbs. Patient was discharged with antiplatelet, statin and antihypertensive after 5 days of hospitalisation.

Case 2: A 28-year-old male chronic alcoholic was referred to our hospital in view of an MRI Brain report of a Posterior Circulation stroke in the Left cerebellum. He had initially presented to an outside hospital with complaints of Giddiness and loss of consciousness for 30 mins, 1 day back. He was brought to our hospital in a drowsy and

confused state and on examination GCS was 13/15, vital were stable.Slurring of speech present, reflexes were 1+ in all limbs with ankle reflex absent and normal power in all limbs. A respiratory system examination revealed reduced air entry on the left side. Laboratory tests revealed dyslipidemia with a raised LDL level. Patient was started on antiplatelets, antiedema and supportive measures. Patient improved and was discharged 4 days later with antiplatelet and adviced to continue physiotherapy.

Case 3: An 18-year-old female with no comorbidities presented with sudden onset weakness of the Right upper and lower limbs since 2 days, headache and vomiting since morning. On examination, the patient was drowsy and disoriented with a GCS of 14/15 and power in the right upper and lower limbs was 1/5. Laboratory tests were normal. CT brain was suggestive of acute intraparenchymalhemorrhage in the left ganglio-capsular region with dissection of bleed into the ipsilateral lateral ventricle. CT Angiography showed left thalamic cerebral vascular(venous) malformation with intraparenchymalhemorrhage. Neurosurgical opinion taken and resection was done. Renal artery doppler and Neck vessel doppler were done and were reported as normal. The patient was conservatively managed with antiedema and antiepileptic measures and was discharged after 21 days of hospitalisation.

Case 4: An 18-year-old male with no comorbidities developed left-sided weakness with deviation of angle of mouth to right 1 day back followed 4 hours later by altered sensorium. The patient was taken to a local hospital where laboratory tests showed raised TLC and CT brain was reported as normal. On arrival at our hospital, GCS was E2V4M5 with paucity of movements to painful stimuli on the left side. The plantar reflex was flexor on the right side and extensor on the left side. The patient was diagnosed as stroke in young with left hemiparesis. MRI done at our hospital showed Rt MCA infarct. Lab reports showed elevated homocystienelevels .patient was treated with antiplatelets and statins along with multi vitamin supplementation and was discharged after 10 days . GCS improved at the time of discharge. Physiotherapy continued.

Case 5:A 21 yr old female patient presented with history of headache, vomiting since 1 day, giddiness which was followed by sudden onset loss of consciousness and was brought to hospital. On arrival at the hospital patient was hemodynamically stable and had GCS of 15/15 .there was terminal neck rigidity on neurological examination. Power in all 4 limbs was 5/5. CT brain showed acute intraventricularhemorrage in third ventricle, occipital horn of left lateral ventricle and fourth ventricle. CT cerebral angio revealed saccularoutpouching arising from the right posterior inferior cerebellar artery. It was seen directing superomedially and then angulated superolaterally .it approximately measured 5 mm with neck of around 2 mm . neuro surgery opinion was taken and patient underwent surgical clipping and was discharged uneventfully on day 25 with antiepeileptic and antioedema measures.

III. DISCUSSION

In this case series we studied 5 patients in 1 year and they were found to be within 15 – 45 years of age. Various etiological factors are implicated in stroke in young patients, different from those in older population.In elderly atherosclerosis is the most common etiology, diabetes mellitus and hypertension being important risk factors. In contrast diabetes and hypertension are rare in young adults, seen in only 11-18% of patients as per study done by Nayak et al[5]. Elevated cholesterol was seen in 17% and increase in triglycerides was observed in 42% patients. Metabolic abnormalities like Protein C, Protein S deficiencies; hyperhomocysteinemia play an important role in formation of atherosclerotic plaques especially in younger age group.in our study , out of 5 patients 1 patient (20%) was having hypertension . another patient in our study had dyslipidemia and one more with hyperhomocystienemia.

Heamorrhagic strokes are commonly seen secondary to ruptured aneurysms or arteriovenous malformations which need surgical intervention. Unruptured or inaccessible malformations are suitable candidates for radiotherapy. Our study had 2 patients with hemorrhagic stroke and both were females.

A study done by Lipska et al classified patients of ischemic stroke; 25.2% patients had cardioembolic stroke, 12.6% had large artery atherosclerosis and 7.5% had lacunar infarcts[6]. Strokes due to other determined etiology were 11.2% (7.0% arterial dissection, and one patient each with lupus erythematosus, primary antiphospholipid antibody syndrome and protein S deficiency). Four patients had stroke due to other causes (one case each of Moyamoya disease, Takayasu'sarteritis, fibromuscular dysplasia and

nephritic syndrome).Cervical artery dissection was one of the relatively common causes of stroke in young, accounting for 6-15% of patients, carotid and vertebral artery system being involved in various frequencies. Cardioembolic stroke is common in rheumatic heart disease, paradoxical embolism in patent foramen ovale, atrial fibrillation,mitralvalve prolapse, mechanical prosthetic valves, dilated cardiomyopathy, atrial myxoma, congestive heart failure and sick sinus syndrome. Other causes of stroke like antiphospholipid antibody syndrome, factor V Leiden mutation, proteins C and S deficiency, antinuclear antibody positivity, systemic lupus erythematosus, fibromusculardysplasia, migraine-related stroke and other vasculitis should also be considered. Cerebral venous thrombosis is a common cause for venous stroke in young adults. Risk factors such as dehydration, smoking, alcoholism must be looked into. Treatment is by administration of anticoagulants for 6-12 months.In high-risk groups, such as women with preeclampsia incidence is about 6 fold higher than in pregnant women without these disorders. Recent publications report an increased incidence of stroke in young adults[7]. This is important given the fact that younger stroke patients have a clearly increased risk of death compared with the general population. The prevalence of standard modifiable vascular risk factors in young stroke patients is different from that in older patients. Modifiable risk factors for stroke, such as dyslipidemia, smoking, and hypertension, are highly prevalent in the young stroke population, with no significant difference in geographic, climatic, nutritional, lifestyle, or genetic diversity. The list of potential stroke etiologies among young adults is extensive. Strokes of undetermined and of other determined etiology are the most common types among young patients according to TOAST (Trial of Org 10172 in Acute Stroke Treatment) criteria [7].Primary prevention is very important with regard to stroke in young adults, and aggressive treatment of risk factors for stroke, such as hypertension, smoking, and dyslipidemia, is essential. The best form of secondary stroke prevention is directed toward stroke etiology as well as treatment of additional risk factors. However, there is a lack of specific recommendations and guidelines for stroke management in young adults and further research using standard methodology is needed.despite that there is a limited data on stroke in young adults in our country. Our health care programs should target primary prevention and treatment of these modifiable risk factors as it will reduce the associated morbidity and mortality of stroke in these young population[7] .

IV. LIMITATIONS

Limitations of our study were: it is a single centered retrospective observational study. Sample size was too small to detect all strong associations with common exposure.

V. CONCLUSION

Stroke in young adults is expected to cause an increasing public health problem in both developed and developing countries. We found that hypertension, alcoholic with dyslipidemia, hyperhomocystienemia were the risk factors found in ischaemic stroke patients. AV malformation and PICA aneurysm rupture were the cause for hemorrhagic stroke patients. India being a developing country there is a limited data on stroke in young patients. Large prospective studies are required to assess specific etiology and to prevent modifiable risk factors for stroke in young patients.

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