Chordal Rupture presenting as Ischemic Stroke in young patient

Anil R Jawahirani[1], Mahesh Fulwani[2], Chandrashekhar Pakhmode[3], Pramod Giri[3], Sushant Admane[4], Tushar Yelne[4]

ABSTRACT

21 years male was admitted to neurological hospital with right hemiparesis & right supranuclear VII nerve palsy. His general and systemic examination apart from CNS examination were within normal limits. His biochemistry and ECG were within normal limits. MRI with MR angiogram performed in this patient revealed infarct in left MCA territory with normal carotid and cerebral arteries. 2D echocardiography revealed chordal rupture with mitral prolapse with mild MR. We present one of the rare case of young stroke due to chordal rupture with MVP & mild MR.

Key-words : Young stroke, Chordal rupture, Mitral valve prolapse

Introduction :

Approximately 15% of all ischemic strokes (IS) occur in young adults and adolescents. The causes of IS in the young are heterogeneous and can be relatively uncommon, resulting in uncertainties about diagnostic evaluation and cause-specific management. Risk factors for stroke in young are smoking, hypertension, patent foramen ovale, large vessel atherosclerosis & dyslipidemia.

Case Report :

21yrs. male was admitted to neurology hospital with complaints of weakness on right half of body since last 3 days. There was grade IV power in right upper and lower limb with signs of right supra nuclear VII nerve palsy. There was no past history of hypertension, diabetes or any cardiac disorder. He gave no history of tobacco or alcohol addiction. There was history of road traffic accident 3 years back with injury to his left shoulder. On examination vitals were normal with normal cardiovascular and respiratory system examination. Biochemistry and sickle cell screening were normal. On MRI there was infarct in left MCA territory ***(Figure 1).*** ECG

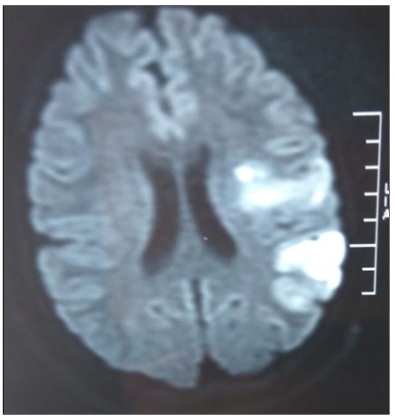

Figure 1 : **MRI brain showing infarct in Left MCA territory**

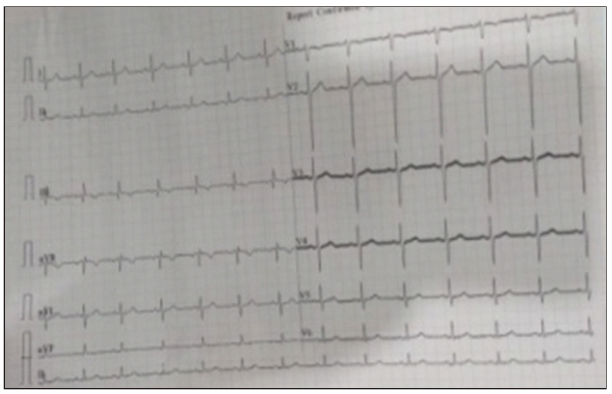

Figure 2 : **ECG showing no significant abnormality**

was not showing any significant abnormality ***(Figure 2).*** As a routine work up for young stroke, 2D Echocardiography was advised which revealed mitral valve prolapse with chordaetendinae rupture with mild mitral regurgitation ***(Figures 3,4,5,6).*** Holter monitoring was normal and there was no evidence of any arrhythmia. Investigative analysis

[1]Assistant Professor, Department of Cardiology, JNMC, Sawangi,
[2]Consultant Cardiologist, Department of Cardiology, Shri Krishna Hrudyalaya & Critical Care Center, Nagpur
[3]Consultant Neurosurgeon, [4]Consultant Intensivist,
Department of Neurosurgery, Neuron Hospital, Nagpur, India

Address for Correspondence -
Dr. Anil R. Jawahirani
E-mail : anilramesh123@rediffmail.com

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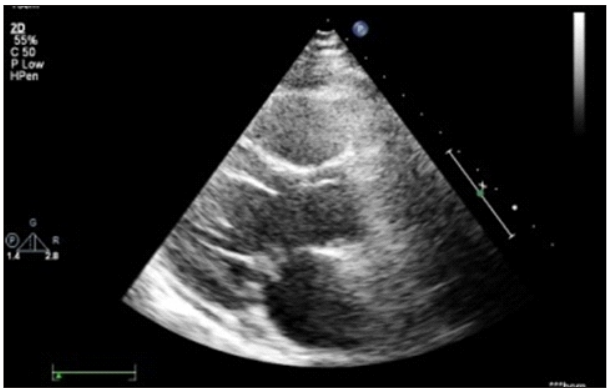

Figure 3 : **PLAX parasternal long axis view in 2D Echocardiography showing Mitral valve prolapse with ruptured Chordae tendinea**

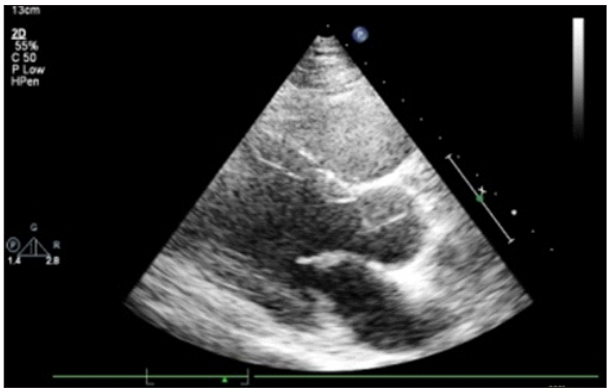

Figure 4 : **PLAX parasternal long axis view in 2D Echocardiography showing Mitral valve prolapse with ruptured Chordae tendinea**

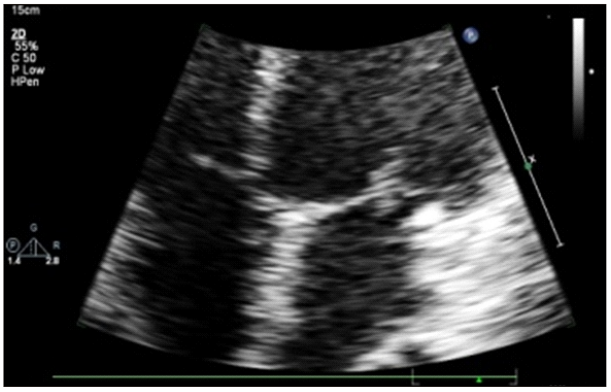

Figure 5 : **Apical 4 chamber view showing Mitral valve prolapse with ruptured Chordae tendinea**

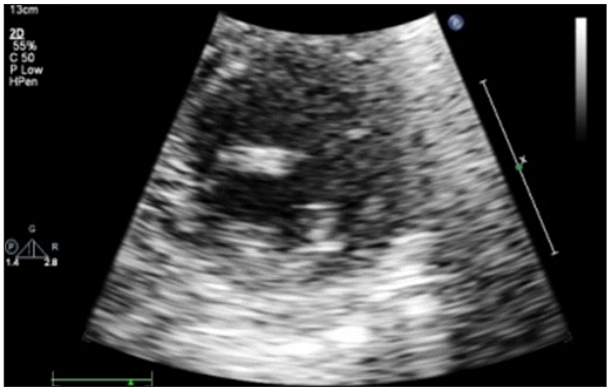

Figure 6 : **Short Axis view showing Mitral valve prolapse with ruptured Chordae tendinea**

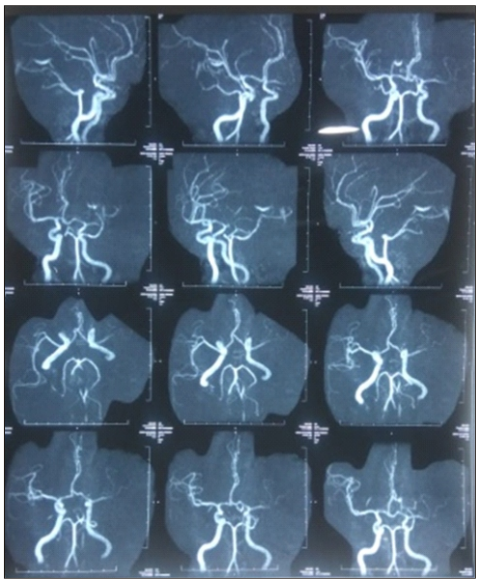

Figure 7 : **MR angiogram didn't show any dissection of cerebral arteries**

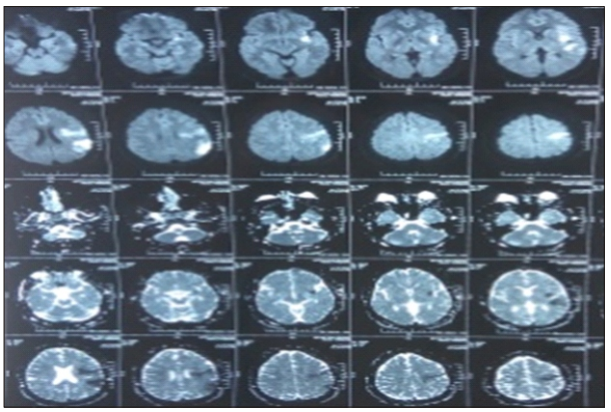

Figure 8 : **MR angiogram didn't show any dissection of cerebral arteries**

for hypercoagulable state & vasculitis was not performed. He was treated with dual antiplatelet and statin. MR angiogram didn't show any dissection of cerebral arteries ***(Figure 7,8).***

Discussion :

The age group for stroke in young has been variable between different studies but perhaps should be restricted to 15-49 years as this age group tends to have a unique set of causes and risk factors. Age has the strongest association with the incidence of stroke. For example, an 80 year old has about 30 times the risk of ischemic stroke than a 50 year old.[1] The age-specific incidence of stroke increases progressively with increasing age. In a systematic review of 15 population-based stroke incidence studies,[2] the rate of total stroke for those aged less than 45 years ranged from 0.1-0.3 per 1000 person years, while for those aged 75-84 years, the range was 12-20 per 1000 person years in most studies. However, the impact of stroke on the individual family and society is strongest when it affects a young individual. The causes of ischaemic stroke in young adults are many and diverse. Principal causes are extracranial arterial dissection, cardioembolism, premature atherosclerosis, haematological and immunological disorders and migraine. Drug abuse is becoming increasingly important. Isolated angiitis of the central nervous system, heritable disorders of connective tissue and other genetically determined disorders (mitochondrial cytopathies, CA-DASIL) account for a small proportion of ischaemic strokes in the young.[3]

In our case patient had chordal rupture with mitral valve prolapse and had developed stroke at younger age and mitral valve prolapse is known to shower thrombi and cause cardioembolic stroke.

MVP is probably the most common cause of so-called spontaneous chordal rupture.[4]

In one of the study by Grenadier E et al, 512 echocardiographic studies were performed on 264 consecutive unselected patients with the idiopathic mitral valve prolapse syndrome. Twenty-eight patients (10.6%) had evidence of ruptured chordae tendineae of the mitral valve on M-mode examination and in 24 the diagnosis was confirmed by two-dimensional echocardiography. Mild to severe mitral insufficiency was proven in all of them by left ventriculography during cardiac catheterization. Eight patients underwent surgery to relieve symptomatic severe mitral regurgitation. At operation all had myxomatous degeneration of the mitral valve, two patients were found to have rupture of anterior mitral chordae, and six had rupture of posterior mitral chordae. Twenty (71%) patients with chordal rupture had either mild symptoms or were completely asymptomatic. It is concluded that chordal rupture in patients with the mitral valve prolapse syndrome may be present in asymptomatic patients and go undetected clinically in a substantial number of patients unless a high index of suspicion is maintained. So we also think in our case, chordal rupture must have been not detected until screening echocardiography was done for young stroke. Serial M-mode and two-dimensional echocardiographic studies are of importance in identifying the progression of prolapse findings and may reveal the natural history of this pathologic condition in asymptomatic patients.[5]

Emergent treatment of younger stroke patients is similar to older patients.[6]

Recommendations for physiologic management, e.g., blood pressure, temperature, glucose, and oxygenation, as well as thrombolysis, are the same as for older stroke patients. Younger patients benefit from access to stroke expertise and ideally should be admitted to comprehensive stroke centers with neurocritical care units.[7]

In our case patient reported 3 days after the onset of symptoms so thrombolysis was not performed. He had small infarct with mild neurological deficit so he was managed conservatively with antiplatelets & statins. He was discharged on day 5 with dual antiplatelets and statin. We did not start him on anticoagulants like warfarin. It remains still unanswered whether he requires anticoagulation for MVP with chordal rupture which is a thrombogenic state.

Conclusion :

Stroke in young patients is uncommon. Whenever a young patient presents with ischemic stroke especially with no risk factors like smoking, hypertension, obesity & dyslipidemia, one should rule out cardiac causes like chordal rupture & mitral

valve prolapse. Author suggest to do screening echocardiography in all young patients who presents with ischemic stroke.

Conflict of interest :

None

Funding :

None

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