

Clinico-Radiologic Correlates of Artery of Percheron Infarcts in Three Patients: Case Series and Review Of Literature

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Abstract

Among different causes of ischemic stroke , artery of percheron occlusion is a rare cause of ischemic stroke characterised by bilateral paramedian thalamic infarcts , with or without mesencephalic infarction . Clinical presentation includes mental state disturbances, seizures , amnesia and vertical gaze disturbances. Artery of percheron infarct is rarely reported and this case series highlights interesting varied clinical presentation and neuroimaging features of this entity . To best of our knowledge and available literature this is first ever case series from Indian subcontinent .

Keywords: Artery of percheron , Paramedian thalami, Gaze paresis

Introduction

Blood supply of midbrain and thalami is complex as they have a large number of feeding vessels. ^[1,2] There are significant variations in blood supply of thalami , arterial supply is mainly by perforators from posterior cerebral artery and posterior communicating artery. ^[3]

French neurologist percheron was the first to describe possible anatomic variations in 1976. Artery of percheron as described arises from first part of posterior cerebral artery and supplies bilateral thalami and midbrain . ^[4] Thalamic infarcts are rare and account for only 11% of all

posterior circulation strokes, ^[5] of which artery of percheron infarction is estimated to occur in 0.1% and 0.3% of all ischemic strokes . ^[4] Artery of percheron occlusion causes a characteristic pattern of ischemia involving paramedian thalami and rostral midbrain .

CASE 1

Fifty year old right handed female k/c/o of hypertension , chronic kidney disease and non valvular atrial fibrillation was rushed to emergency department in a stuporous state , after she was found unresponsive in the morning one day prior to admission , no prior history of fever, headache and vomiting. Patient was on continuous ambulatory peritoneal dialysis in view of Chronic kidney disease for ten years .. On examination patient was afebrile , drowsy, confused with irregular irregular heart rate of 84/minute, blood pressure of 140/86 mm hg and respiratory rate of 14/minute and random blood sugar was 86mg/dl . She had left eye ptosis with bilateral external ophthalmoplegia with bilateral semidilated pupils (6mm) sluggishly reacting to light with normal optic fundus and bilateral plantar flexor with movement of all 4 limbs on painful stimulus which were reduced on right side .

Laboratory test results s/o blood urea 67.7 mg/dl , serum creatinine 6.29 mg/dl and dyslipidemia. 2D ECHO was suggestive of cardiomyopathy (EF- 20% to 25%) , USG

was s/o Grade IV Renal parenchymal disease , MRI brain (Figure 1) of the patient showed areas of altered signal in bilateral thalami , midbrain and right cerebellar hemisphere appearing hyperintense on DWI , T2W and FLAIR sequence and iso to hypointense on T1W sequence and appearing dark on ADC . MRA (Figure 2) of the brain showed faint flow signals in left posterior cerebral artery and P1 segment of right posterior cerebral artery near its origin , possibly stenosis . Patient responded well on conservative management

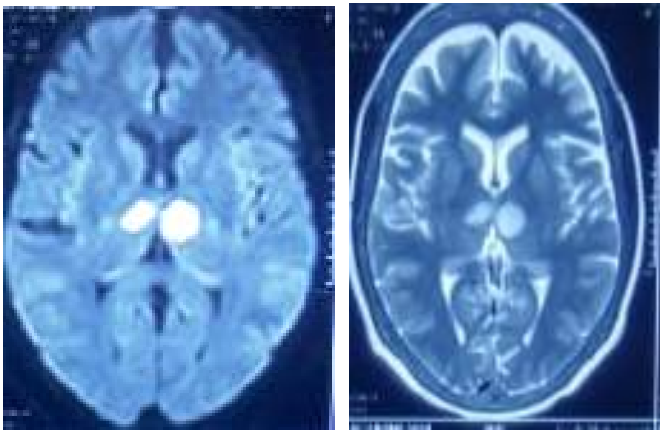


Figure 1: MRI Brain

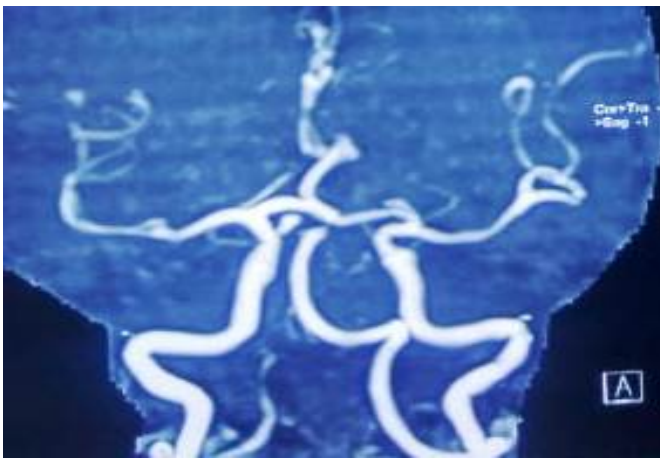


Figure 2 : MR Angiography

CASE 2

Sixty two year old right handed female known case of hypertension on irregular treatment presented with seizures followed by dysarthria and altered level of sensorium for one day . No h/o preceding fever , headache , rashes . On examination patient was drowsy , arousable

on deep painful stimuli with bilateral external ophthalmoplegia and ptosis , moving all four limbs , no meningeal signs . Routine blood investigations were normal , 2D echo , lipid profile , thyroid function test and metabolic profile was normal . Scalp EEG was s/o generalised epileptiform discharges . MRI brain was s/o infarct involving bilateral paramedian thalami and periaqueductal region of mid brain . Patient was started on antiplatelets , antihypertensives and antiepileptics and responded well to treatment .

CASE 3

Sixty two year old male known case of hypertension and diabetes on regular treatment presented with vertigo , dysarthria and right hemiparesis for one day . On examination patient was confused , extraocular movements were normal in all direction and no ptosis was there , right hemiparesis (power – 3/5) . MRI brain with angiogram was s/o bilateral paramedian thalami infarcts (FIGURE 3) and fetal origin of bilateral posterior cerebral arteries. Routine investigation, lipid profile, 2D Echo was normal. Patient responded well to conservative management.

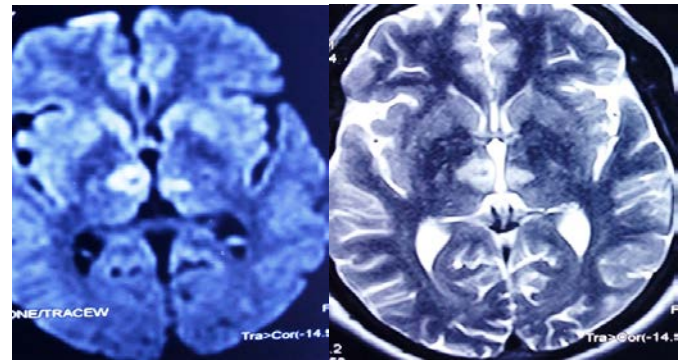


Figure 3: MRI brain showing artery of Percheron infarction

Discussion

There is a wide variability in posterior circulation involving thalami and brain stem. Posterior communicating artery contributes to 60% of thalamic

blood supply in humans . Possible variation in paramedian thalamic-mesencephalic arterial supply was first identified by a French neurologist percheron .^[6] Occlusion of artery of percheron results in bilateral medial thalamic and rostral midbrain infarction in relatively symmetrical distribution.^[7]

Occlusion of artery of percheron resulting from cardioembolism or arterioarterial embolism or atherothrombosis is a rare cause of ischemic stroke and give rise to characteristic pattern of bilateral paramedian thalamic infarcts , with or without rostral midbrain infarction .^[8]

Presentation can be variable with signs and symptoms ranging from motor deficits to behavioural and sensory alterations but most commonly reported in available literature are vertical gaze paresis(65%), memory impairment (58%), confusion (53%) and coma (42%).^[9]

Clinical features can be quite variable and include mental state disturbances , coma , hypersomnolence, aphasia , dysarthria , amnesia , ocular movement disorders (including vertical gaze palsy), and pupillary abnormalities in different combinations.^[10]

Our patients had variable presentations , based on clinical features and imaging findings other differential diagnosis which produce bilateral thalamic lesions include deep cerebral venous thrombosis , wernicke's encephalopathy , extrapontine myelinolysis , viral or demyelinating encephalitis , wilson's disease, metabolic and toxic encephalopathies, Bilateral thalamic glioma and Creutzfeld-Jakob disease were ruled out .^[11,12]

It is very important for general/emergency care physicians and neurologists to be aware of artery of percheron infarct to properly diagnose and to initiate appropriate treatment and timely management of ischemic stroke symptoms . Successful intra-arterial thrombolysis has been reported in a case of Artery of percheron infarction .¹³

To conclude artery of percheron infarction is a rare cause of ischemic stroke involving bilateral paramedian thalamic. Awareness of clinical and neuro-imaging features of this stroke syndrome is essential for timely diagnosis and appropriate management.

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