

# A Heart Sign in Medial Medullary Infarction

## INTRODUCTION:

Bilateral medial medullary infarction (MMI) is a rare stroke syndrome. MMI presents acutely or subacutely, presenting with dysarthria, dysphagia, quadriparesis, quadriplegia and sometimes complicated by respiratory disorder, resulting in poor prognosis. Diagnosis of bilateral MMI was initially difficult on brain MRI but with advent of newer sequences like DWI (diffusion weighted images) its been fairly possible.

We report the case of a patient who was diagnosed with bilateral MMI based on MRI features of classical “heart shaped” sign.

## CASE PRESENTATION:

Patient is a 68 years old male presented with heaviness of head. H/o weakness of all four limbs was noted.

## FINDINGS:

### Plain MRI:

- Early subacute infarcts in the antero-medial and antero-lateral territories of medulla oblongata on both sides giving classical “heart shape” appearance.
- These appearing hyperintense on T2 (Fig 2.) and FLAIR (Fig 3.) sequences. Restriction on Diffusion (Fig 4.) with low values on ADC confirmed the recent occurrence of the infarcts.

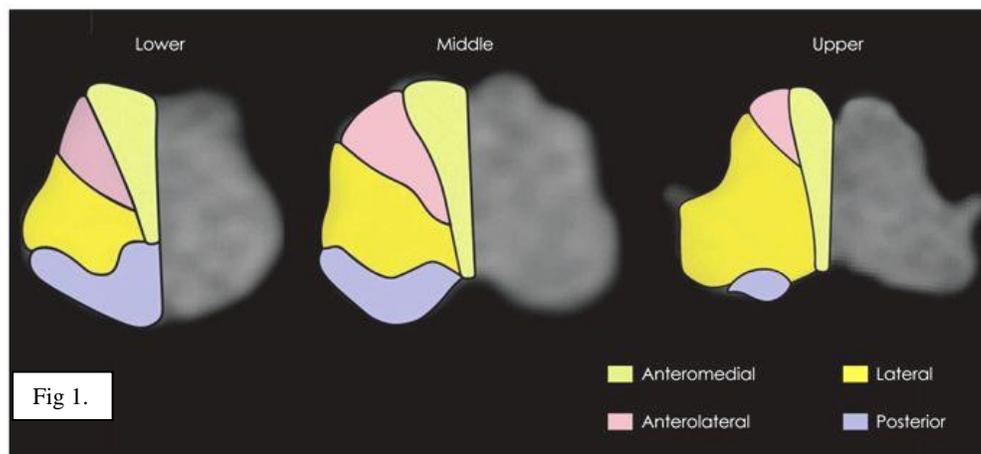
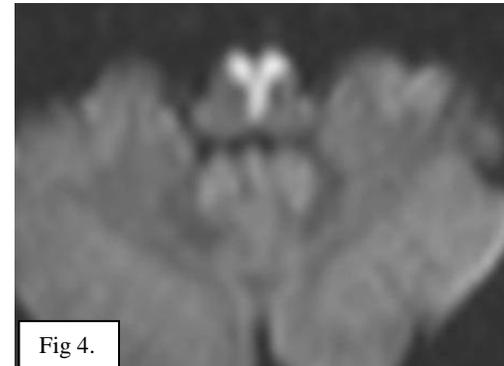
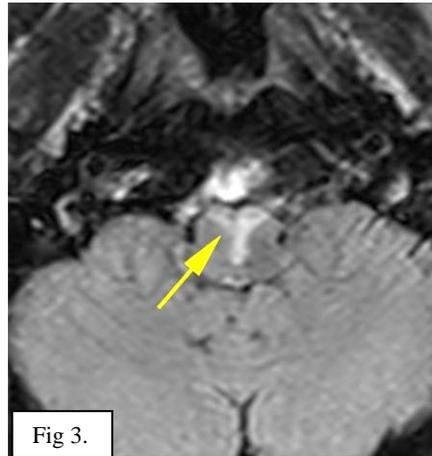
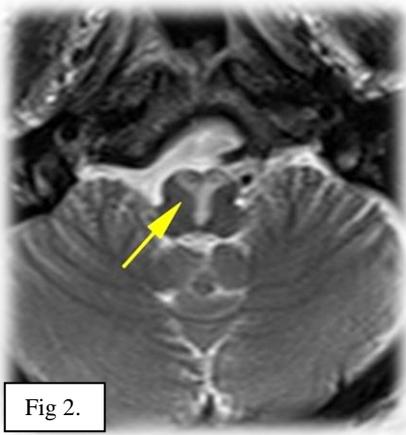


Diagram showing arterial territory of medulla oblongata.



#### **DISCUSSION:**

MMI account for lesser than 1% of vertebrobasilar strokes and in rare instances occur bilaterally. Patients with bilateral MMIs often present with quadriplegia or quadriparesis as the initial symptom and carry a poor functional prognosis. If not clinically suspected, the condition can mimic as that to Guillain-Barré Syndrome (GBS) in the early stages.

The medulla oblongata has a vast and unique vascular network and its arterial supply arises from the anterior and posterior spinal arteries in addition to the perforating arteries and the long circumferential artery that arise from the basilar or vertebral arteries. Infarcts involving the medulla oblongata are categorized on the basis of its vascular supply into four territories: anterior-medial territory, anterior-lateral territory, lateral territory, and posterior territory. It is considered that blood is supplied to these areas by the vertebral artery and the anterior spinal artery, but it is often difficult to identify the occluded blood vessel because of the vastly complex network formed by these blood vessels. The 'heart-sign' appears due to infarction involving the antero-medial and antero-lateral territories on both sides. Diffusion (DW-MRI) is the current gold standard in the diagnosis of acute ischaemic stroke and can detect ischaemic changes within minutes of the onset of symptoms. Within minutes of ischaemia, infarcted areas show up as hyperintense signal areas on DWI with corresponding hypointense signal areas on apparent diffusion co-efficient (ADC) map consistent with restricted diffusion.

#### **CONCLUSION:**

MRI with diffusion-weighted imaging is an accurate way of diagnosing bilateral MMI in the acute setting leading to timely diagnosis and treatment and consequently decreasing the possibility of long-term disability.

Regards,

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N.B: This case is authentic and from the archives of Radiance Diagnostics. For any queries/suggestions / feedback write to us at [radiance@radiancediagnostics.in](mailto:radiance@radiancediagnostics.in)

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