

The “Heart Appearance” Sign in Bilateral Pontine Infarction

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Background: Although rarely seen, bilateral anteromedial infarction of the pons demonstrates the characteristic “heart appearance” sign on magnetic resonance imaging (MRI). This sign has hitherto been described in only 2 patients before this article. This typical pattern can be attributed to atherosclerotic or thrombotic involvement of bilateral paramedian and short circumferential pontine arteries supplying the anteromedial pons. *Methods and Results:* A 60-year-old man, a known patient of primary hypertension and diabetes mellitus, presented with a posterior circulation stroke. Urgent computerized tomography and MRI revealed a “heart-shaped” area of acute infarction in the anteromedian mid-pons. A few scattered infarcts were also noted in the posterior and inferior part of the right cerebellar hemisphere. The basilar artery appeared normal with preserved flow void on MRI, and there were no signs of hemorrhage. These findings were consistent with acute nonhemorrhagic infarcts involving bilateral paramedian and short circumferential pontine arteries and the right posterior inferior cerebellar artery. A repeat MRI performed after a week disclosed hemorrhagic transformation and enhancement of the pontine infarction. The basilar artery appeared normal on magnetic resonance angiography. *Conclusions:* Recognizing the “heart appearance” sign in a stroke-like episode may be helpful in differentiating bilateral anteromedial pontine infarction from other pathologic processes involving the pons. **Key Words:** Heart appearance’ sign—infarction—pons—bilateral.

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Introduction

Appearance of a “medullary heart” in patients of bilateral medial medullary infarction on magnetic resonance imaging (MRI) although uncommon has been reported

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in literature.¹⁻³ A similar ventral “heart appearance” in bilateral anteromedial pontine infarction although rare is characteristic and has hitherto been described in only 2 patients before this article.^{4,5} The aim of this article is to highlight this unique sign and to briefly discuss the etiopathogenesis and differential diagnosis of similar appearances on imaging.

Case Report

A 60-year-old man, a known patient of primary hypertension and diabetes mellitus, on regular medication for the last 19 years was brought to hospital with a history of sudden onset dizziness and unsteadiness of gait, rapidly followed by progressive weakness of all 4 limbs. There was no loss of consciousness. He had been a smoker (6-7 cigarettes/day) for the last 35 years and occasionally consumed alcohol.

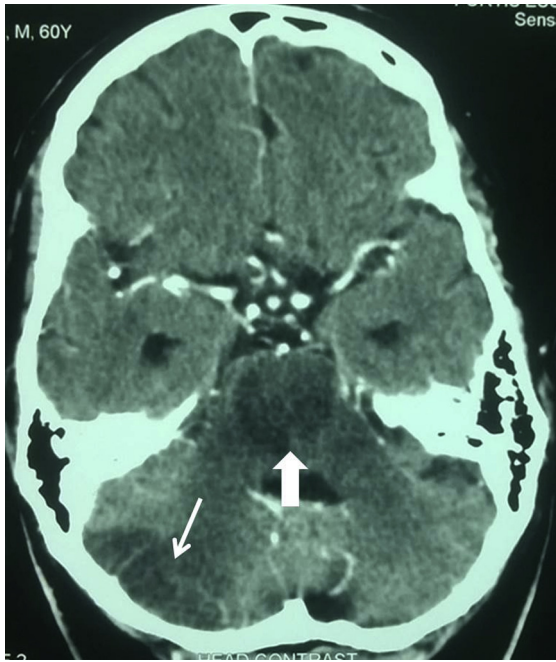


Figure 1. The axial contrast-enhanced computerized tomography section of the brain through the pons shows a relatively well-defined hypodense “heart-shaped” area in the anteromedial pons (thick white arrow). Also seen is a hypodense area in the right cerebellar hemisphere (thin white arrow). The basilar artery is well opacified with contrast.

His general physical examination revealed a regular pulse of 86 per minute, blood pressure of 160/94 mm Hg, and respiratory rate of 18 per minute. On neurologic examination, the patient was drowsy with a Glasgow Coma Scale of E3M3V2. He had quadriparesis (muscle power around the shoulders was grade 3 and the power around the elbows was grade 3-4 with 40% power on hand grip; the lower limbs revealed grade 3 power). The deep tendon jerks were exaggerated and the plantars were extensor. Tactile and proprioceptive senses could not be assessed; however, pain sensation appeared preserved. There was bilateral internuclear ophthalmoplegia and pseudobulbar palsy. Examination of the cardiovascular system did not reveal any other abnormality. Laboratory investigations revealed microcytic hypochromic anemia (hemoglobin 10 g/dL). Serum electrolytes and the rest of the biochemical tests were normal.

An urgent contrast-enhanced computerized tomography of the patient’s brain was performed that revealed diffuse swelling of the pons and a relatively well-defined “heart-shaped” nonenhancing hypodense area in the anteromedian mid-pons (Fig 1). A hypodense area was also noted in the right cerebellar hemisphere. A subsequent MRI corroborated the computerized tomography findings and showed a well-defined lesion in the mid-pons with a “heart-appearance” on both T2-weighted and fluid-attenuation inversion recovery images with restriction on diffusion-weighted imaging. The lateral and dorsal parts of the pons were spared (Fig 2). A few scattered areas of restricted diffusion were also noted in the posterior and inferior part of the right cerebellar hemisphere. The basilar artery appeared normal with preserved flow void. These findings were consistent with acute nonhemorrhagic infarcts involving bilateral paramedian and short circumferential pontine arteries and the right posterior inferior cerebellar artery. The patient was started on conservative supportive therapy. He became quadriplegic over the next few days with worsening of sensorium and had to be put on ventilatory support. A repeat MRI was performed on the seventh day and susceptibility-weighted imaging revealed hemorrhagic transformation of the infarcts. As expected, a heart-shaped area of enhancement was noted at the site of the pontine infarct. The basilar artery appeared normal on magnetic resonance angiography (Fig 3). The patient’s condition progressively deteriorated and he died of cardiorespiratory complications on the 10th day of his admission.

Discussion

Appearance of a “medullary heart” in patients of bilateral medial medullary infarction on MRI although uncommon has been reported in literature.¹⁻³ A similar ventral “heart appearance” in bilateral anteromedial pontine infarction although rare is characteristic and has hitherto been described in only 2 patients before this article.^{4,5} In their seminal paper on 150 pontine infarctions, Kumral et al⁶ schematically depicted 7 cases of bilateral anteromedial pontine infarcts bearing the shape of a “heart”; however, no particular reference was

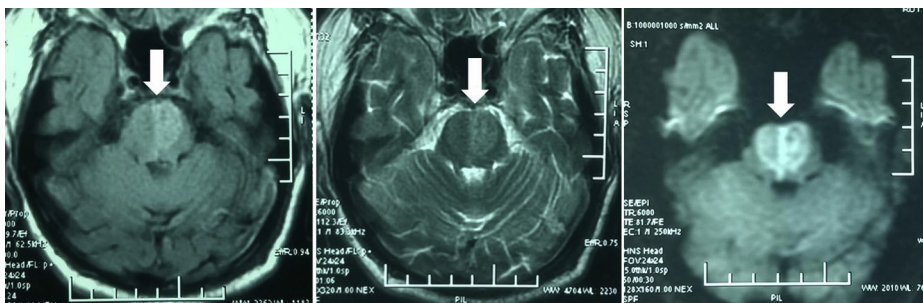


Figure 2. The panel of axial Flair, T2-weighted, and diffusion-weighted images shows the “heart shaped” area of hyperintensity in the pons (thick white arrows).

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