



Hypodense lesion in the territory of anterior inferior cerebellar artery

Dr.Amit Agrawal*

***Professor of Neuro Surgery, Dept of Neuro Surgery
Narayana Medical College & Hospital, Nellore-524002(AP) India
Email :-dramitagrawal@gmail.com**

Abstract

Acute infarcts in the territory of the anterior inferior cerebellar artery (AICA) are rare. Infarction in the territory of the AICA alone involve lateral portion of the pons, the middle cerebellar peduncle and the cerebellar hemisphere either alone or in combination depending on the severity of the lesion. Most patients with unilateral affection of both middle cerebellar peduncle and inferior lateral pontine area usually present with the main symptoms of vertigo, ataxia, peripheral facial palsy and hypoacusia. Neuroimaging, including magnetic resonance imaging, is strongly recommended for patients with sudden deafness and vertigo to exclude infarction of the vertebral-basilar artery territory. The prognosis is relatively good, but the residual cranial nerve palsies and contralateral superficial sensory disturbance may persist. We discuss a case of AICA infarct and correlate the topography of the lesion by brain MRI.

Key Words

Anterior inferior cerebellar artery,Vertebrobasilar infarction,Magnetic resonance imaging

Introduction

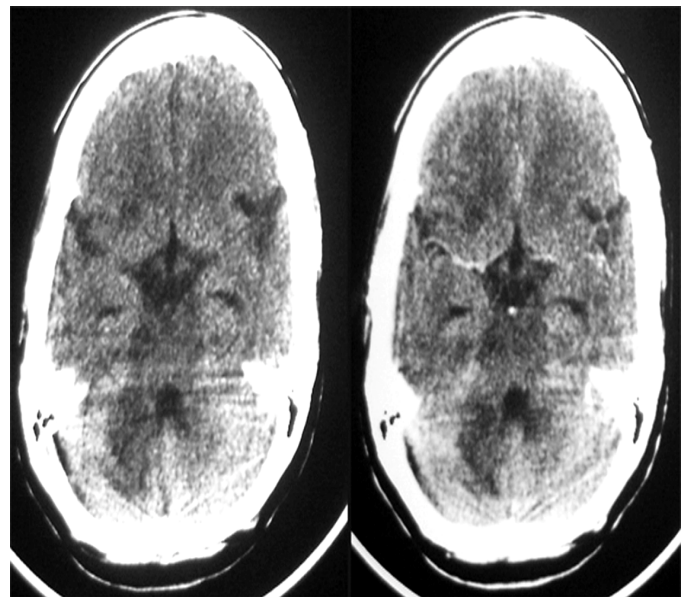
Acute infarcts in the territory of the anterior inferior cerebellar artery (AICA) are rare. ^(1, 2) The underlying high risk factors for AICA infarctions include chiefly hyperlipidemia, hypertension, and diabetes mellitus. ^(1,3,4) In some cases AICA infarction can be of unknown aetiology. ⁽¹⁾ We discuss a case of AICA infarct and correlate the topography of the lesion by brain MRI.

Case report

A 30-year-old woman presented with sudden onset of giddiness, a roaring sound in the right ear, swaying while walking, vomiting off and on of one month duration. On examination there was facial paralysis (upper and lower) on the right, at rest; her eyes deviated toward the left, diminished sensation on the right face with bilateral gaze evoked nystagmus. There was no history of hypertension or diabetes mellitus.

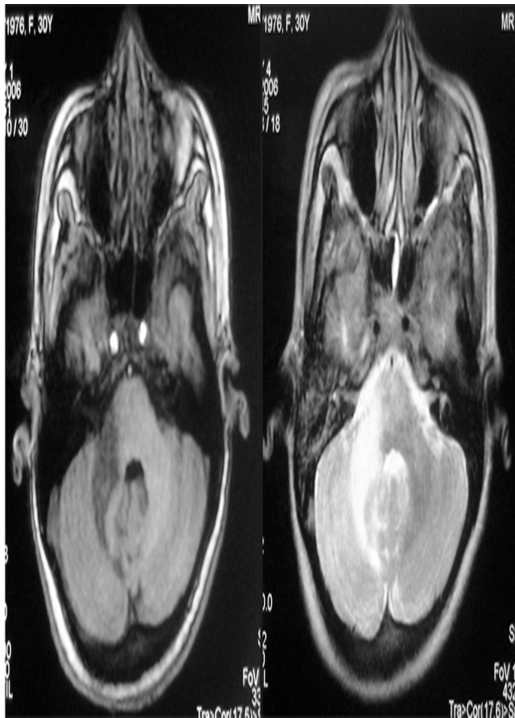
Initially plain and contrast computerized tomography (CT) scan was performed for the patient (Fig. 1).

Figure-1



Axial CT scan revealing a subtle, non-enhancing, poorly-defined, nonspecific, hypodense area in the right middle cerebellar peduncle, adjacent pons and cerebellum Two weeks later this was followed by magnetic resonance imaging (MRI) of brain (Fig. 2 and 3).

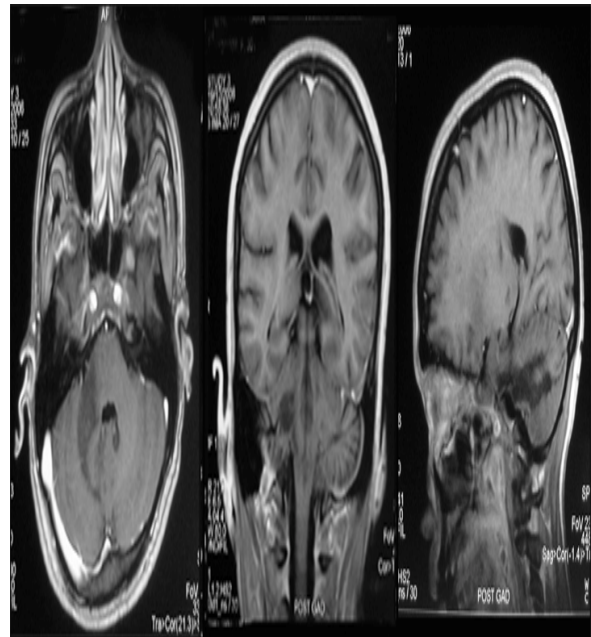
Figure-2



MR images showing an infarct confined to the right middle cerebellar peduncle, adjacent pons and cerebellum sparing the dentate nuclei. The lesion is hypointense on T1W images and hyperintense on T2W images

Figure-3

The lesion was not enhancing after contrast administration



CT scan showed a non-enhancing hypodense lesion in the right middle cerebellar peduncle region (Fig. 1). MR imaging examination revealed a hypointense lesion on T1, becoming hyperintense on T2 and it was not enhancing after contrast administration suggestive of infarct in the right middle cerebellar peduncle, pons and adjacent cerebellum (Fig. 2 and 3). MR diffusion-

and perfusion-weighted images could not be obtained. No definite infarcts were found in the cerebral hemisphere or the left cerebellar hemisphere on T1-or T2-weighted images. Due to lack of facilities cerebral angiography was not performed. Infarction located within the territory of the anterior inferior cerebellar artery. Clinical findings of dizziness (vertigo), nausea and nystagmus suggest the involvement of the vestibular nerve or nucleus. Tinnitus with diminished hearing on right side can be due to injury to the cochlear nerve or nucleus. Paralysis of the muscles of facial expression suggests injury of the right facial nerve or its motor nucleus. Difficulty in walking suggests the involvement of the right middle cerebellar peduncle. The patient was managed conservatively and improved significantly except mild weakness of facial weakness.

Discussion

Infarction in the territory of the AICA alone involve lateral portion of the pons, the middle cerebellar peduncle and the cerebellar hemisphere either alone or in combination depending on the severity of the lesion. ^(2,4-6) Most patients with unilateral affection of both middle cerebellar peduncle and inferior lateral pontine area usually complain of vertigo, ataxia, peripheral facial palsy and hypoacusia. ^(1,3,4) Horner's syndrome, and dysphagia are rare. The main contralateral sign are superficial sensory disturbances. ^(2,4) Some patients may have associated motor weakness. ⁽²⁾ Neurological examination will demonstrate involvement of brain stem structures i.e. horizontal nystagmus, diminution in the right facial sensation, right peripheral facial palsy, right hearing loss and cerebellar ataxia. ⁽³⁾ Neuroimaging, including magnetic

resonance imaging (MRI), is the investigation of choice for patients with sudden deafness and vertigo and very effective to exclude infarction in the territory of the vertebral-basilar artery.⁽⁶⁾ MRI T2, T1, and gadolinium-enhanced T1-weighted scans will show the lesions very well⁽⁷⁾ and most infarcts can easily be matched to the known anatomic arterial territories.⁽⁸⁾ Compared with conventional CT and conventional MR imaging, diffusion weighted images (DWI) is more sensitive and specific in evaluating ischemic lesions.⁽⁹⁾ The use of diffusion weighted images/magnetic resonance angiography (MRA) within 24 hours of clinical onset of symptoms will substantially improve the accuracy of the diagnosis of early ischemic stroke subtype.^(10,11) DWI also offers the advantage of differentiating acute from chronic small subcortical and brainstem ischaemic lesions.⁽¹²⁻¹⁵⁾ DWI and MRA

findings also help to differentiate large-vessel involvement from small-vessel disease.⁽¹⁰⁾ Based on MRI findings posterior circulation infarcts are classified into isolated mesencephalic infarcts, distal territory infarcts, middle territory infarcts and proximal territory.⁽⁸⁾ It is important to evaluate MRI images in both axial and coronal planes to estimate the extension of AICA territory infarct.⁽⁴⁾ The prognosis is relatively good, but the cranial nerve palsies and contralateral superficial sensory disturbance may persist.^(1,4)

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