

**POSTERIOR INFERIOR CEREBELLAR ARTERY [PICA] INFARCTION: AN OVERVIEW**

<sup>1</sup>Dr. S. Pratheep Kumar, <sup>2</sup>Dr. R. Umarani, and <sup>2</sup>Dr. J. Gauri Shankar

<sup>1</sup>Post Graduate, Division of Medicine, Rajah Muthiah Medical College, Annamalai Nagar – 608002, Tamil Nadu, India,

*Article History: Received 5<sup>th</sup> September, 2014, Accepted 6<sup>th</sup> October, 2014, Published 7<sup>th</sup> October, 2014*

**ABSTRACT**

The posterior inferior cerebellar artery is the largest branch of the vertebral artery which supplies a part of the medulla and the cerebellum. Patients with infarctions of the PICA present with a wide range of clinical manifestations. Described below is the spectrum of presentations of PICA infarcts with a case example and imaging assistance.

**Keywords:** PICA, Wallenberg's syndrome, Lateral Medullary Syndrome.

**1. INTRODUCTION**

The posterior inferior cerebellar artery [PICA] is the largest branch of the vertebral artery given off at its terminal course before joining with the vertebral artery of the opposite side. The medial branch of the posterior inferior cerebellar artery supplies the dorsal base and ventral apex of the cerebellum as well as lateral and dorsal medulla oblongata while the lateral branch supplies the anterolateral region of the caudal part of the cerebellar hemisphere.

Occlusion of the posterior inferior cerebellar artery may occur as a result of many cardiovascular events of which cardiac embolism and local artery disease appear to be the commonest. In a study done by Carlos S. Kaseet al, the stroke mechanism was equally divided between cardiogenic embolism and posterior circulation arterial disease.<sup>[1]</sup>

Infarctions of the PICA territory may affect the cerebellum or the brainstem or both. The most common symptoms of the posterior inferior cerebellar artery infarcts are vertigo, headache and gait disturbances.

**Case report:**

A 57 year old male Mr. Paneer Selvam who is fisherman by occupation presented to the casualty with difficulty in standing, walking and coordinating movements. In addition to these the patient had difficulty in pronouncing words. Over the period of days the patient had developed numbness over one half of the face

It was noted that the patient is a known case of coronary artery disease and systemic hypertension for the past 10 years who is off medications for 3 years. The patient is also a known case of diabetes mellitus for which he is on regular treatment. Other risk factors are smoking and alcohol consumption.

Clinical examination of the patient revealed the following positive findings:

1. Radial pulse – 80 per minute, regular
2. Blood Pressure – 150/90 mm Hg
3. Dysarthria
4. Numbness over the left half of the face
5. Diminished gag reflex on the left side
6. Cerebellar signs on the left side
7. Ataxic gait
8. Fundus Examination – Grade II Hypertensive Retinopathy.

The following investigations were done. Random Blood Sugar at presentation – 213 mg/dl.

Renal parameters, liver function tests, coagulation profile and complete blood counts were within normal limits.

2D-ECHO showed features suggestive of coronary artery disease. Chest X-ray did not reveal any abnormality.

CT Brain- Diffuse cortical changes and a lacunar infarct in the left thalamic region.

MRI Brain – Lacunar infarct in the left thalamus and the hippocampus and a sub-acute infarct in the postero-lateral part of the left cerebellar hemisphere.

MRA Brain – Left Posterior Inferior Cerebellar artery [PICA] is not visualized.

**2. DISCUSSION**

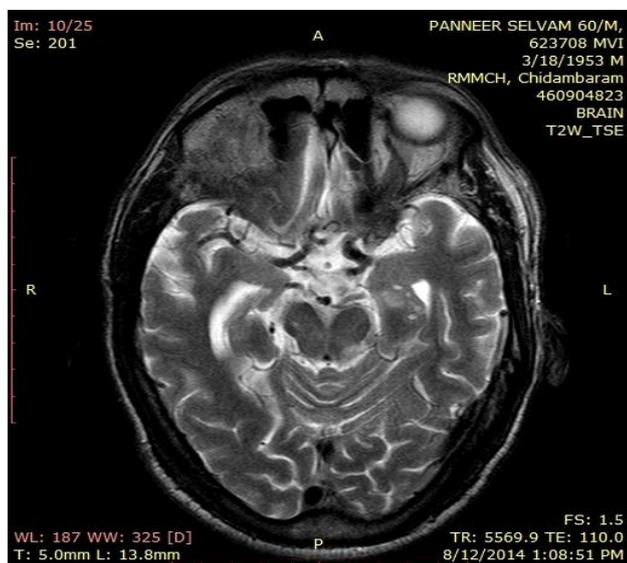
The classical triad of symptoms of cerebellar PICA infarction include vertigo, headache, and gait disturbances. The PICA territory infarctions may also present as acute isolated vertigo that resembles labyrinthitis (Amarenco et al., 1994)<sup>[2]</sup>. In these cases vertigo is due to the involvement of vermal uvulonodular complex. Headaches are usually unilateral and are present in the side of the PICA occlusion. A horizontal nystagmus present in the same side of the lesion is also a feature of PICA infarctions. Gait disturbances are manifested as ataxic gait with the patient swaying to the affected side.

\*Corresponding author Dr. S. Pratheep Kumar, Division of Medicine, Rajah Muthiah Medical College & Hospital, Annamalai University, Annamalai Nagar – 608 002, Tamilnadu, India

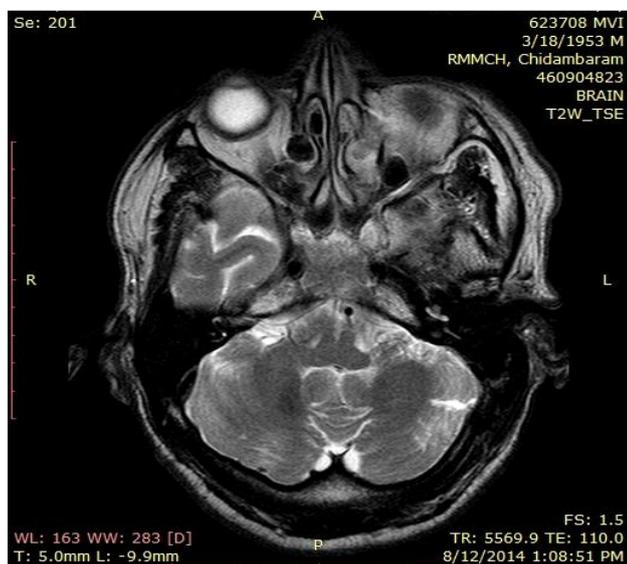
**Figure 1: MRA Brain of the patient. The left PICA is not visualized.**



**Figure 2: MRI Brain T2W showing a hyperintense foci in the left thalamic region which is attenuated in FLAIR.**



**Figure 2: MRI Brain T2W showing a hyperintense foci in the left thalamic region which is attenuated in FLAIR.**



Medial PICA territory infarcts involve the dorsal base and ventral apex of the cerebellum as well as lateral and dorsal medulla oblongata in cases. Patients may present with any of these patterns.

- a) Pseudo labyrinthine signs with or without concomitant dysmetria, ataxia, and lateropulsion (sparing the medulla),
- b) Wallenberg's syndrome (complete or partial), and
- c) Clinically silent pattern (Amarenco and Hauw, 1990; Barth et al., 1993) [3].

**Lateral PICA territory (LPICA) infarcts are rare** and involve the anterolateral region of the caudal part of the cerebellar hemisphere. The most common symptoms include ataxia of the limbs and ataxic gait. The most common etiology of the IPICA infarcts is vertebral artery atherosclerosis (Barth et al., 1993, 1994) [4].

Our case had involvement of the medial posterior inferior cerebellar artery sparing the medulla. However partial features of Lateral medullary syndrome were present which slowly resolved with treatment. Occlusion of the PICA is the second most common cause of lateral medullary syndrome with an occlusion of the vertebral artery being the most common.

Imaging with a CT brain failed to pick up a lesion in the cerebellum but cerebellar involvement was established with the help of a MRI brain. The posterior inferior cerebellar artery was found to be the culprit vessel using a MRA of the brain.

### 3.CONCLUSION

Occlusion of the Posterior inferior cerebellar artery may present with a constellation of signs and symptoms with the most common symptoms being vertigo, headache and gait disturbances. It is noted that PICA occlusion may also present as the clinical silent type. MRI/MRA is superior to CT brain in imaging vascular events related to the posterior circulation stroke.

### 4.REFERENCES

1. Carlos S. Kase, MD; Bo Norrving, MD; Steven R. Levine, MD; Viken L. Babikian, MD; Eliot H. Chodosh, MD; Philip A. Wolf, MD; and Kenneth M.A. Welch, MD. Cerebellar Infarction Clinical and Anatomic Observations in 66 Cases. (Stroke 1993;24:76-83)
2. Amarenco P, Levy C, Cohen A, et al. (1994). Causes and mechanisms of territorial and nonterritorial cerebellar infarcts in 115 consecutive patients. Stroke 25: 105-112.
3. Barth A, Bogousslavsky J, Regli F (1994). Infarcts in the territory of the lateral branch of the posterior inferior cerebellar artery. J Neurol Neurosurg Psychiatry 57: 1073-1076.
4. Barth A, Bogousslavsky J, Regli F (1993). The clinical and topographic spectrum of cerebellar infarcts: a clinical- magnetic resonance imaging correlation study. Ann Neurol 33: 451 —456.