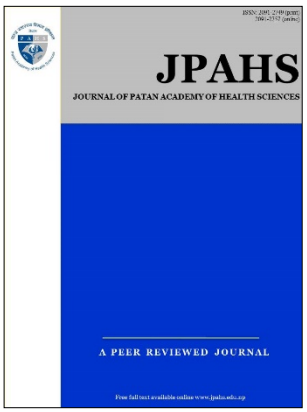

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A rare case of lateral pontine syndrome- Marie Foix syndrome

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Abstract

Lateral pontine syndrome or Marie Foix Alajouanine syndrome refers to the brainstem stroke syndrome involving lateral pons due to the infarction in the distribution of the anterior inferior cerebellar artery. It involves the lateral inferior part of the pons, middle cerebellar peduncle, and floccular region. Computed Tomography (CT) is less sensitive in brainstem infarction than Magnetic Resonance Imaging (MRI). With the introduction of MRI, it is possible to precisely locate the brainstem infarcts. We present a case with a typical clinical picture of brainstem stroke with radiological findings consistent with the lateral pontine syndrome. Proper correlation with the clinical picture and radiological findings is important for the diagnosis of brainstem infarctions.

Keywords: computed tomography CT, infarction, lateral pontine syndrome, Marie Foix syndrome, MRI

Introduction

Stroke syndrome is the set of symptoms that help to identify the part of the brain injured in the distribution of vascular territory. The collective neurological signs and symptoms help the neurologist to precisely locate the anatomy of the insult. Brainstem infarcts are one of the stroke syndromes which is significantly associated with long-term morbidity due to the vital structures involved as a result of vascular injury of the posterior circulation.[1] The common brainstem syndromes are defined according to the medial or lateral location of the midbrain, pons, and medulla. Lateral Wallenberg Syndrome (the commonest) and Dejerine are the lateral and medial syndromes involving medulla oblongata, Foville and Marie Foix syndromes involving medial and lateral pons respectively. Claude and Weber's syndromes involve the medial midbrain whereas Benedikt involves the lateral midbrain.[2] There is no literature on these topics in our settings.

Lateral pontine syndrome or Marie Foix Alajouanine syndrome refers to the brainstem stroke syndrome involving lateral pons due to the infarction of the anterior inferior cerebellar artery.[3] It involves the lateral inferior part of the pons, middle cerebellar peduncle, and floccular region.[4] We are presenting a case of lateral pontine infarction which was diagnosed in correlation with neurological findings.

Case Report

A 52-year-old female presented in the emergency with a sudden onset of weakness of the left half of the body (predominantly incoordination) with facial deviation and one episode of vomiting. The patient had a history of diabetes mellitus and hypertension under medication. On neurological examination, ipsilateral loss of pain and temperature sensation of the face with contralateral/left-sided loss of pain and temperature of arm and leg was observed. The power of the left upper limb was 5/5 and the left lower limb 4/5. However, the power of the right upper and lower limbs was 5/5. Partial Drooping of the eyelid with facial muscle weakness was seen on the right side. A decreased hearing was noted on the right side. MRI (Magnetic Resonance Imaging) brain was done for detailed evaluation.

MRI findings- Obliquely oriented ill-defined T2 and FLAIR high signal intensity lesion was seen involving the right lateral half of the Pons which is extending posteriorly near the right facial colliculus, Figure 1 and 2. The small central area of the lesion shows restriction in DWI (Diffusion-Weighted Imaging), Figure 3, and low in ADC (apparent diffusion coefficient, not shown in image).

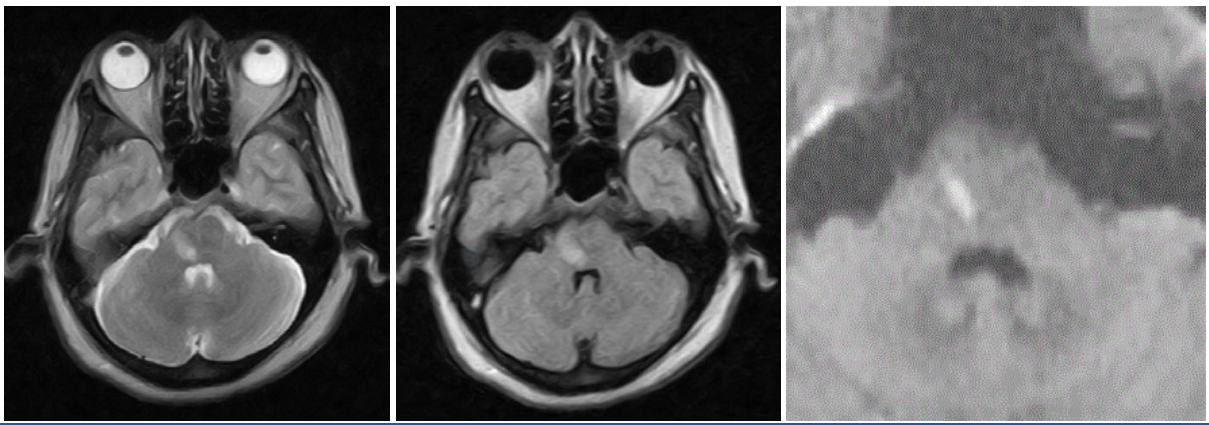
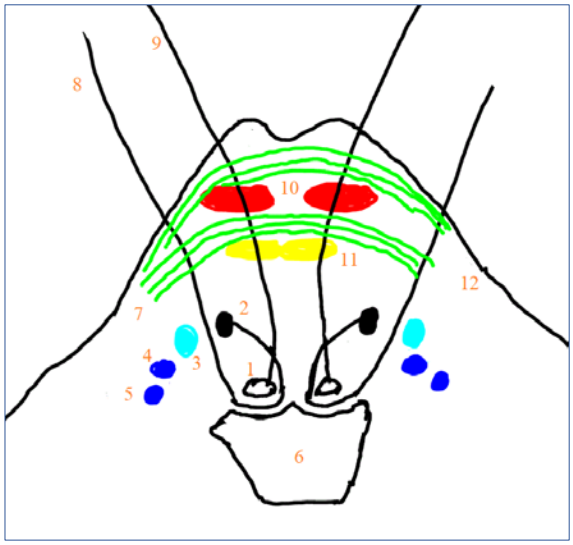


Figure 1. T2 axial MRI shows obliquely oriented ill-defined high signal involving right lateral half of Pons. The lesion is extending posteromedially towards the facial colliculus.

Figure 2. FLAIR axial MRI shows obliquely oriented ill-defined high signal involving right lateral half of Pons.

Figure 3. Axial DWI shows subtle foci of restriction in the lateral Pons.

Diagrammatic depiction shows the axial cut section of Pons, Figure 4a; and the area of involvement (rectangular box) in right lateral pontine syndrome, Figure 4b.



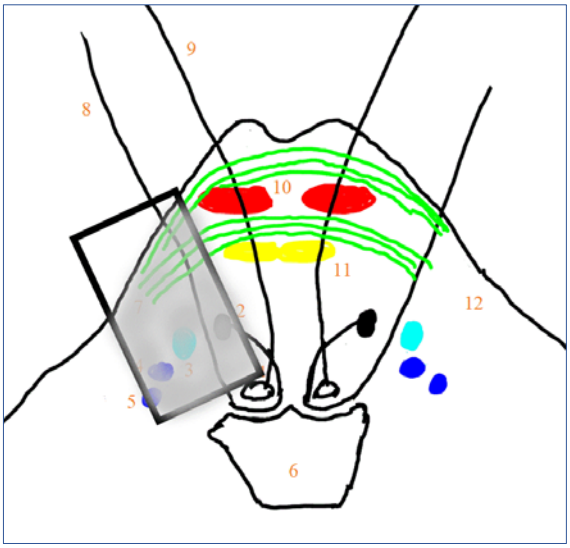


Figure 4a. Diagramatic depiction shows the axial cut section of Pons, 1-Right Abducens nerve nucleus, 2-Right Facial nerve nucleus, 3-Right spinothalamic tract nucleus, 4-Cochlear nucleus 5-right vestibular nucleus, 6-Fourth ventricle, 7-Transverse pontine fibers, 8-Right facial nerve, 9-Right abducens nerve, 10-Cortico-spinal tracts, 11-Medial lemniscus, 12-Middle cerebellar peduncle

Figure 4b. Diaphragmatic representation of Pons shows the area of involvement (rectangular box) in right lateral pontine syndrome

Discussion

Rule of 4 is the simplified approach to identify the brainstem vascular syndrome specific to vascular territory discussed in the article of P. Gates.[5]

First rule- 4 midline structures that begin with letter M (Motor pathway for a cortico-spinal tract, Medial lemniscus, Medial longitudinal fasciculus, Motor nucleus, and nerve).

Second rule- 4 lateral structures begin with letter S (Spino-cerebellar pathway, Spinothalamic pathway, Sensory nucleus of 5th cranial nerve, and Sympathetic pathway).

Third rule- 4 Cranial nerves (CN) above pons (2 in the midbrain), 4 CN at pons (5 to 8), and 4 below pons (9 to 12th CN).

Fourth rule- 4 midline cranial motor nerves (3rd, 4th, 6^{th,} and 12th).

The second rule of 4 applies to our case of lateral pontine syndrome i.e. the patient had a loss of pain and temperature sensation of contralateral arm and leg (Spinothalamic tract), ataxia of ipsilateral arm and leg (Spinocerebellar tract), Horner's syndrome of an ipsilateral eye (Sympathetic pathway) and loss of pain and temperature of an ipsilateral face (Sensory nucleus of the trigeminal nerve).

The third rule expects to involve the 4 cranial nerve nuclei in the Pons whereas the fourth rule excludes the 6th CN nuclei because of its midline location. Therefore, the 5th, 7^{th,} and 8th CN nuclei are involved in the lateral pontine syndrome. Differentiating feature with the medial pontine syndrome or Foville syndrome is the involvement of facial nerve.[6]

CT has less sensitivity than MRI in the cases of posterior fossa stroke because of the beam hardening artifacts of the nearby temporal bone. As much as two-thirds of cases with restricted diffusion in MRI in brainstem infarcts

are not visible in CT leading to misdiagnosis of posterior fossa infarcts.[7] However, it is important to rule out other possibilities like haemorrhage. MRI is valuable in the cases of negative CT which is unmatched with clinical findings as in our case. DWI is important for the identification of lateral pontine syndrome.[4,8] The acute management is similar to the other small brainstem insults with emphasis on airway and oxygenation in addition to preventing the further complications of immobility.[1] Availability of 1.5T/3T MRI machines and trained human resources in Nepal has been a great boon for radiologists for identification of the subtle pathology in the brainstem.

Conclusion

Our case represents the typical case of lateral pontine syndrome which was diagnosed with proper correlation with clinical findings.

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Conflict of Interest

None

Funding

None

Author Contribution

Concept, design, planning- PRR; Literature review - PRR and IA, Draft manuscript- PRR and IA; Revision of draft: IA; Final manuscript- PRR, IA; Accountability of the work- PRR.

Reference

1. Balami JS, Chen RL, Buchan AM. Stroke syndromes and clinical management. QJM. 2013;106(7):607-15. | DOI | PubMed | Google Scholar | Full Text | Weblink |
2. Sciacca S, Lynch J, Davagnanam I, Barker R. Midbrain, pons, and medulla: anatomy and syndromes. Radiographics. 2019;39(4):1110-25. | DOI | PubMed | Google Scholar | Full Text | Weblink |
3. Abdelrasoul AA, Elsebaie NA, Gamaleldin OA, Khalifa MH, Razek AA. Imaging of brain infarctions: beyond the usual territories. J Comput Assist Tomogr. 2019;43(3):443-51. | DOI | PubMed | Google Scholar | Full Text | Weblink |
4. Savoiardo M, Bracchi M, Passerini A, Visciani A. The vascular territories in the cerebellum and brainstem: CT and MR study. AJNR Am J Neuroradiol. 1987;8(2):199-209. | PubMed | Google Scholar | Full Text | Weblink |
5. Gates P. The rule of 4 of the brainstem: a simplified method for understanding brainstem anatomy and brainstem vascular syndromes for the non-neurologist. Intern Med J. 2005;35(4):263-6. | DOI | PubMed | Google Scholar | Full Text | Weblink |
6. Cuoco JA, Hitscherich K, Hoehmann CL. Brainstem vascular syndromes: a practical guide for medical students. Edorium J Neurol. 2016;3:4-16. | DOI | Google Scholar | Full Text | Weblink |
7. Hwang DY, Silva GS, Furie KL, Greer DM. Comparative sensitivity of computed tomography vs. magnetic resonance imaging for detecting acute posterior fossa infarct. J Emerg Med. 2012;42(5):559-65. | DOI | PubMed | Google Scholar | Full Text | Weblink|
8. Kim BJ, Kang HG, Kim HJ, Ahn SH, Kim NY, Warach S, et al. Magnetic resonance imaging in acute ischemic stroke treatment. Journal of stroke. 2014 Sep;16(3):131. | DOI | PubMed | Google Scholar | Full Text | Weblink |