



with uvular deviation to the left and a nasal quality of speech. Nystagmus was also noted.

A striking ocular motor abnormality was observed: the eyes were deviated toward the right side at rest, ipsilateral to the lesion. On further testing, there was right-beating nystagmus, ocular ipsipulsion, with hypermetric saccades to the right and hypometric saccades to the left, a rarely reported finding in lateral medullary infarction. This was documented on video (Video S1). Link here: [<https://youtu.be/BjS7N0yRtxk>].

**Video S1.** There is gaze deviation to the right side in the primary position, with right-beating nystagmus. When the patient is asked to look on the left side, there are hypometric saccades, but hypermetric saccades on the right side.

Magnetic resonance imaging (MRI) performed within 48 hours demonstrated an acute infarct involving the right lateral medulla oblongata (Figure 1). CT angiography (CTA) was performed to assess for vertebral or carotid artery dissection, and transthoracic echocardiography was obtained to exclude cardioembolic sources.

The patient was managed with dual antiplatelet therapy, statins, and optimization of vascular risk factors, including strict control of blood pressure and diabetes.

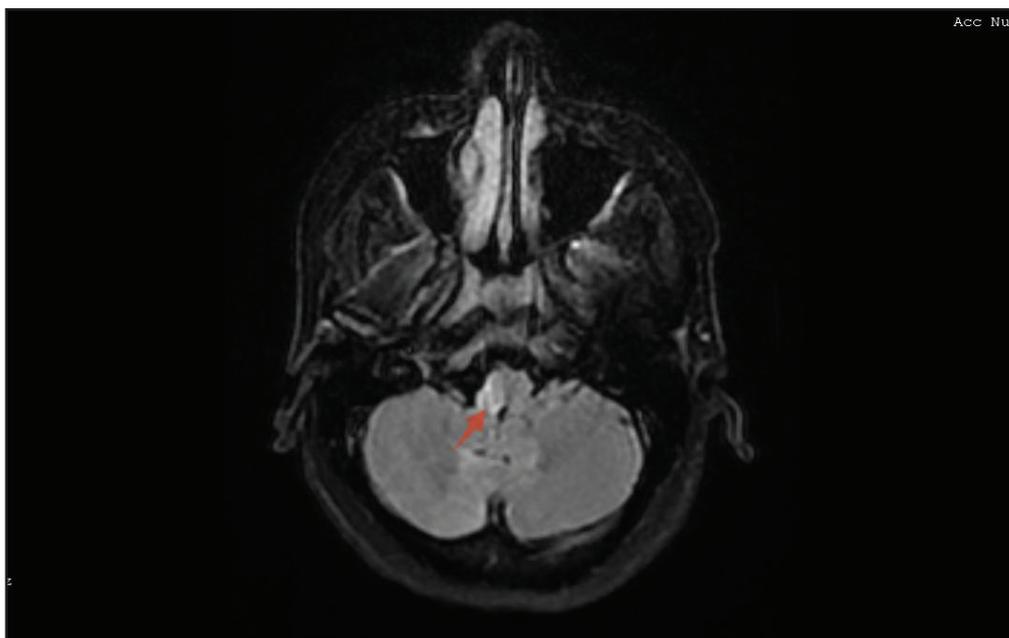
This case underscores three important clinical features: the acute onset with gradual worsening course, the characteristic sensory dissociation with lower cranial nerve involvement, and the rare phenomenon of ipsilateral ocular deviation with ipsipulsion and asymmetric saccades, expanding the phenotypic spectrum of PICA territory stroke.

## Discussion

Lateral medullary infarction, commonly known as Wallenberg's syndrome, is a classic manifestation of posterior circulation stroke, most often resulting from occlusion of the PICA, or its branches. The clinical presentation is typically well defined, with dissociated sensory loss, dysphagia, dysarthria, and lower cranial nerve involvement as key diagnostic clues [4]. However, variations in onset pattern and associated ocular motor abnormalities can considerably broaden the recognized spectrum of this condition.

A notable feature in some posterior circulation strokes, including medullary infarctions, is the gradual and progressive evolution of symptoms rather than a sudden maximal deficit at onset. This temporal pattern has also been described in other brainstem syndromes such as locked-in syndrome and Opalski syndrome [5]. Recognizing this progression is important, as it may delay diagnosis when physicians expect a purely abrupt presentation.

Ipsipulsion - characterized by a tonic drift or pulsion of eye movements toward the side of the lesion - is an uncommon but well-documented ocular motor sign in lateral medullary infarction. Although reported frequencies vary, small observational series and case-based literature suggest that ipsipulsion occurs in roughly 10%-20% of cases. This phenomenon reflects disruption of cerebellar and vestibular projections traversing the dorsolateral medulla [6]. Abnormalities of saccadic amplitude have also been reported in isolated cases of brainstem stroke, but asymmetric saccadic gain - hypermetric saccades toward the ipsilateral side and hypometric saccades contralaterally - remains particularly rare [7,8].



**Figure 1.** Fluid attenuation inversion recovery sequence showing hyperintense signals in the right medulla oblongata suggestive of a lateral medullary infarct (marked by red arrow).

The present case demonstrates the coexistence of three uncommon features: gradual symptom progression, ipsilateral ocular ipsipulsion, and asymmetric saccadic gain. These findings highlight the heterogeneity of lateral medullary syndrome and underscore the clinical value of a meticulous bedside ocular motor examination. Careful assessment of gaze holding, pursuit, vestibulo-ocular responses, and saccades can reveal highly localizing signs, especially when early imaging or clinical presentation is atypical.

### Conclusion

This case highlights a rare clinical profile of lateral medullary infarction, marked by progressive symptom evolution and distinctive ocular motor abnormalities. Early recognition of such atypical features is essential for timely diagnosis, deepens our understanding of posterior circulation stroke phenotypes, and careful bedside ocular motor examination remains essential for identifying atypical presentations of posterior circulation stroke.

#### What’s New/Take-home Message

1. Gradual progression of symptoms in a posterior circulation stroke.
2. Presence of ipsipulsion with ipsilateral gaze deviation.
3. Asymmetric saccadic abnormalities (hypermetric and hypometric).

#### List of Abbreviations

MRI           Magnetic resonance imaging  
 PICA           Posterior inferior cerebellar artery

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#### Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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#### Consent for publication

Due permission was obtained from the patient to publish the case.

#### Ethical approval

Not required

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#### References

1. Shaikh AG, Ghasia FF. Ocular motor dysfunction in brainstem and cerebellar strokes. *Curr Opin Neurol*. 2017;30(1):98–104.
2. Serra A, Liao K, Martinez-Conde S, Optican LM, Leigh RJ. Eye movement abnormalities in neurologic disorders. *J Neurol*. 2018;265(9):2484–500.
3. Kim HA, Lee H. Recent advances in lateral medullary syndrome. *Curr Opin Neurol*. 2019;32(1):140–7.
4. Lee SH, Kim JM, Schuknecht B, Tarnutzer AA. Vestibular and ocular motor properties in lateral medullary stroke critically depend on the site of the medullary lesion. *Front Neurol*. 2020;11:390.
5. Zuo CB, Zhao M, Zhao L, Meng N, Xing X, Li N. Case report: lateral medullary syndrome with eight-and-a-half syndromes. *Medicine (Baltimore)*. 2024;103(6):e34409.
6. Tanaka Y, Kinoshita T. Hypermetric and hypometric saccades in medullary infarction. *J Stroke Cerebrovasc Dis*. 2020;29(12):105367.
7. Saber H, Narayanan S. Diagnosis and management of posterior circulation stroke. *Neurol Clin*. 2021;39(2):495–512.
8. Lee H, Kim JS. Isolated ocular motor palsies and brainstem infarction. *Nat Rev Neurol*. 2022;18:417–32.

#### Summary of the case

1	Age, sex	45-year-old, woman
2	Final diagnosis	Lateral medullary syndrome with ipsipulsion
3	Symptoms	Dysphagia, right facial numbness, contralateral loss of pain and temperature, gradual worsening of symptoms
4	Medications	Aspirin 75 mg daily, Clopidogrel 75 mg daily (1 month, then single antiplatelet), Rosuvastatin 40 mg at bedtime
5	Clinical procedure	Neuroimaging (CT, MRI, CTA), glycemic control
6	Specialty	Neurology