# Gradual-onset lateral medullary Infarction with ipsipulsion and Asymmetric saccades: expanding The Clinical Spectrum of Posterior Inferior Cerebellar Artery Stroke

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## ABSTRACT

**Background:** Lateral medullary infarction (Wallenberg's syndrome) is a classical posterior circulation stroke, typically presenting with dissociated sensory loss and lower cranial nerve involvement. Ocular motor abnormalities such as ipsipulsion and asymmetric saccadic gain are rarely reported but may provide important diagnostic clues.

**Case Presentation:** We describe a 45-year-old Asian woman with diabetes, hypertension, and dyslipidemia who presented with acute-onset dysphagia, vomiting, and right-sided facial numbness, which progressed over 24 hours. Neurological examination revealed dissociated sensory loss, impaired gag reflex with uvular deviation, and nasal speech. Ocular motor findings included right-beating nystagmus, ipsilateral gaze deviation with ocular ipsipulsion, hypermetric saccades to the right, and hypometric saccades to the left. Magnetic resonance imaging confirmed an infarction of the right lateral medulla. CT angiography and echocardiography excluded arterial dissection and cardioembolism. She was treated with dual antiplatelet therapy, statins, and optimization of vascular risk factors.

**Conclusion:** This case highlights three uncommon but clinically significant features of lateral medullary infarction: gradual onset with progressive worsening, ocular ipsipulsion, and asymmetric saccadic gain. Recognition of these atypical findings may expand the clinical spectrum of posterior circulation stroke and assist in the early diagnosis of posterior circulation stroke.

**Keywords:** Lateral medullary syndrome, Posterior circulation stroke, Ipsipulsion, Saccadic abnormalities, Gradual symptom progression.

**Type of Article:** CASE REPORT **Specialty:** Neurology

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## Background

Lateral medullary syndrome (Wallenberg's syndrome) most often results from infarction in the posterior inferior cerebellar artery (PICA) territory. It is classically characterized by dissociated sensory loss, dysphagia, dysarthria, and ocular motor abnormalities [1,2]. Posterior circulation strokes, unlike anterior circulation infarcts, may occasionally exhibit a gradual onset with progressive worsening, as has been described in syndromes such as locked-in syndrome and Opalski syndrome [3]. Ocular motor findings such as ipsipulsion and asymmetric saccadic gain are rarely reported in lateral medullary infarction, making their recognition clinically important.

We report the case of a middle-aged woman with vascular risk factors who developed acute but progressively worsening symptoms of lateral medullary infarction, accompanied by the rare ocular motor finding of ipsilateral gaze deviation with ipsipulsion and asymmetric saccadic gain.

## Case Description

A 45-year-old Asian woman with a history of diabetes mellitus, hypertension, and dyslipidemia presented with an acute onset of vertigo, recurrent episodes of vomiting, dysphagia to both solids and liquids, and numbness on the right side of her face. The symptoms progressively worsened in severity over the subsequent 24 hours.

On examination, there was a dissociated sensory loss, with impairment of pain and temperature sensation over the right side of the face and contralateral body, while vibration and proprioception were preserved. The gag reflex was diminished, more on the right than on the left,

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].

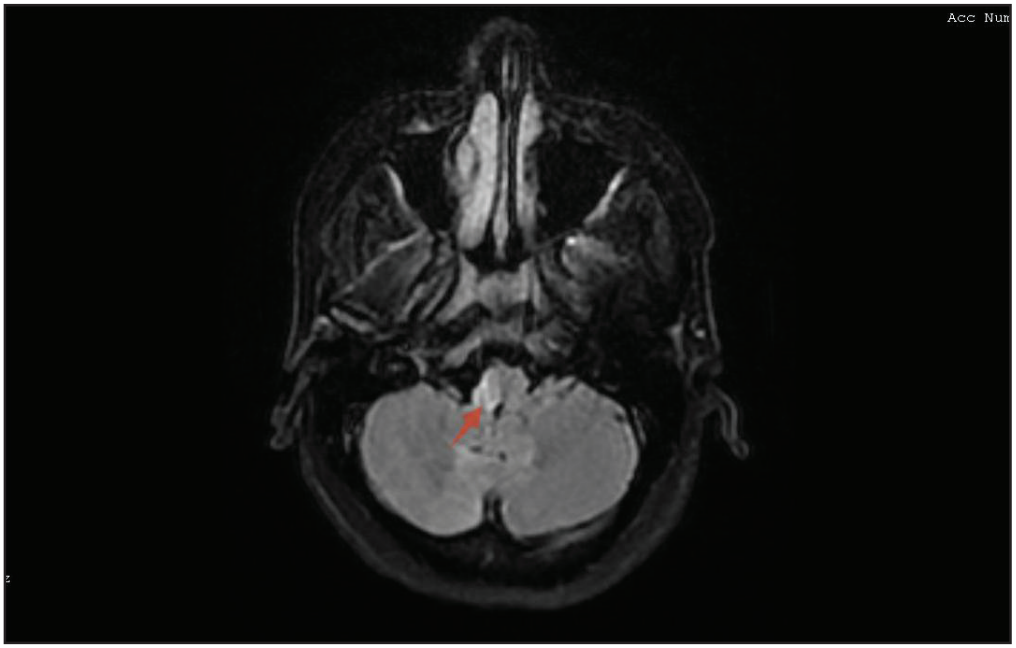


***Figure 1.*** *Fluid attenuation inversion recovery sequence showing hyperintense signals in the right medulla oblongata suggestive of a lateral medullary infarct (marked by red arrow).*

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

| | |
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| 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.

### Funding

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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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### Summary of the case

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|---|---|---|
| 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 |