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CASE REPORT

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A diagnosis that's hard to swallow: case report of delayed onset lateral medullary syndrome presenting with only dysphagia

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Abstract

Background Lateral Medullary Syndrome (LMS) is a posterior circulation stroke (PCS) that has a broad array of manifestations but most classically presents with Horner's syndrome, ipsilateral ataxia, and ipsilateral hyperalgesia. Although dysphagia is also common, isolated and single presentation of this alone is rare and there are only a few case reports of this in the literature. This presentation can bias a clinician's differential diagnosis and delay diagnosis.

Case presentation A previously healthy 53-year-old-male presented with a complaint of dysphagia. He had no PCS symptoms, a National Institute of Health Stroke Scale (NIHSS) of zero, and an otherwise unremarkable neurological exam. Stroke imaging including non-contrast computed tomography (NCCT) scan of his head and computed tomography angiography (CTA) scan of his head and neck revealed no acute abnormalities. He was found to be positive for Influenza A, but otherwise all other etiologies for his dysphagia were worked up, including consultation with other specialty services, without resolve. Two days later, the patient subsequently developed new right sided sensory deficits and left sided Horner's syndrome, in which a magnetic resonance imaging (MRI) scan of his head revealed an acute infarct of the left lateral medulla with likely thrombus in the left posterior inferior cerebellar artery (PICA).

Conclusions PCS is frequently missed due to the often-vague symptoms and reassuring negative imaging. This case highlights the variability of presentations that ED physicians may encounter. Nonetheless, a high index of suspicion for PCS should be maintained even in young patients without risk factors. Lastly, dysphagia is never normal, and this case demonstrates the need to reconsider neurogenic origin when other causes have been ruled out.

Keywords Stroke, Dysphagia, Posterior inferior cerebellar infarct, Lateral medullary syndrome, Case report

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Background

Posterior circulation stroke (PCS) accounts for approximately one quarter of all ischemic strokes, but they are frequently missed by emergency department (ED) physicians [1]. Lateral medullary syndrome (LMS) is a PCS that has broad manifestations, including vertigo, dizziness, dysphagia, dysarthria, nystagmus, ipsilateral limb ataxia, Horner's syndrome, and decreased sensation ipsilaterally to the face and the contralateral body [2]. However, isolated presentations of dysphagia are rare [3]. Non-contrast computed tomography (NCCT) imaging is often first line when assessing for a stroke, but this may be falsely reassuring due to its inability to detect acute infarcts due to beam hardening artefacts caused by bone and suboptimal brainstem resolution [4]. Magnetic resonance imaging (MRI) continues to remain the gold standard with a sensitivity of 83% and specificity of 96% [5].

Our case report discusses a previously healthy 53-year-old male who presented with sudden onset dysphagia and later developed sensory loss and Horner's syndrome, which helped aid in the diagnosis of LMS. There are a few case reports of dysphagia as the main presenting symptom in LMS and our case aims to highlight the difficulty in making this diagnosis while ruling out others [3, 6–10].

Case presentation

A 53-year-old-male, with reported past medical history of kidney stones, presented to the ED with sudden onset dysphagia to both liquids and solid foods upon awakening at 6 AM. He admitted to having an appetite and had no perceived weakness of swallowing, but did have a burning sensation in his throat along with feeling as if there was something getting stuck. The day before presentation, the patient had intermittent atraumatic shooting pain from his right shoulder that radiated down to his right 3rd and 4th finger, but these symptoms only lasted about 5 min in duration. He denied any dysarthria or facial/extremity numbness or weakness. He denied fevers, vision changes, dizziness, headache, nausea, vomiting, chest pain, shortness of breath, or abdominal pain. He denied any current or previous tobacco intake and denied alcohol consumption for years. He denied any personal or family history of strokes, malignancy, or autoimmune disorders.

His vital signs at initial presentation were as follows: blood pressure 171/89 mmHg, heart rate 67 beats/minute, respiratory rate 18 breaths/minute, oxygen saturation 100% on room air, and temperature 36.6 °C. On examination, the patient was a well-appearing male who was unable to keep down his own secretions, but did not have any issues with articulation of his speech. His oropharynx was erythematous, but his uvula was midline without oropharyngeal exudates or swelling noted. The floor of his mouth was soft without tongue elevation and his mouth examination showed no concern for odontogenic infection. He was fully able to range his neck around without difficulty.

The patient's neurological examination did not reveal any dysarthria, ataxia, sensory or motor deficits. His National Institute of Health Stroke Scale (NIHSS) was 0. His electrocardiogram showed sinus bradycardia with heart rate 57 with normal axis/intervals without ST segment changes. Laboratory tests showed an unremarkable white blood cell count, hemoglobin, platelet count, thyroid stimulating hormone, and electrolyte panel. The patient's influenza test came back positive for influenza A. Given the patient's new onset dysphagia and subjective pain in his fingers, a stroke work up was performed using advanced imaging. A NCCT scan of his brain showed no acute abnormalities, and a computed tomography angiography (CTA) head and neck showed no aneurysms, stenoses, dissections, or evidence of a large vessel occlusion.

Other etiologies for dysphagia such as masses, obstruction, and structural causes were ruled out with a dedicated contrasted-enhanced neck CT and chest X-ray. The neurology team was consulted to evaluate for a potential neuromuscular cause and their exam was unrevealing of any focal motor, sensory or visual deficits and with no other bulbar symptoms. Since the patient was unable to tolerate any oral intake, he was admitted to the hospital where the speech therapy team evaluated him and recommended a modified barium swallow study. The XR esophagram revealed concerns for cricopharyngeal dysfunction (CPD) and he was seen by otorhinolaryngology who agreed with dobhoff tube placement for enteral nutrition.

Two days later, he developed numbness and inability to sense cold on his right arm and leg. He was noted to have decreased sensation to light touch, pinprick, and cold temperature sensation on his right hemibody along with left sided ptosis and miosis, consistent with Horner's syndrome. The neurology team re-evaluated the patient with these new symptoms, and a MRI scan of the head without contrast showed an acute infarct in the left lateral rostral medulla with concern for thrombosis in the left posterior inferior cerebellar artery (PICA) (Fig. 1). The patient was started on aspirin and a statin, and a stroke workup including serial neurological examination, transthoracic echocardiogram with bubble study, and continuous telemetry monitory were unremarkable. His swallowing slowly improved throughout his hospitalization, and his dobhoff tube was eventually removed. He subsequently was able to tolerate oral intake and was discharged home on hospital day 7.

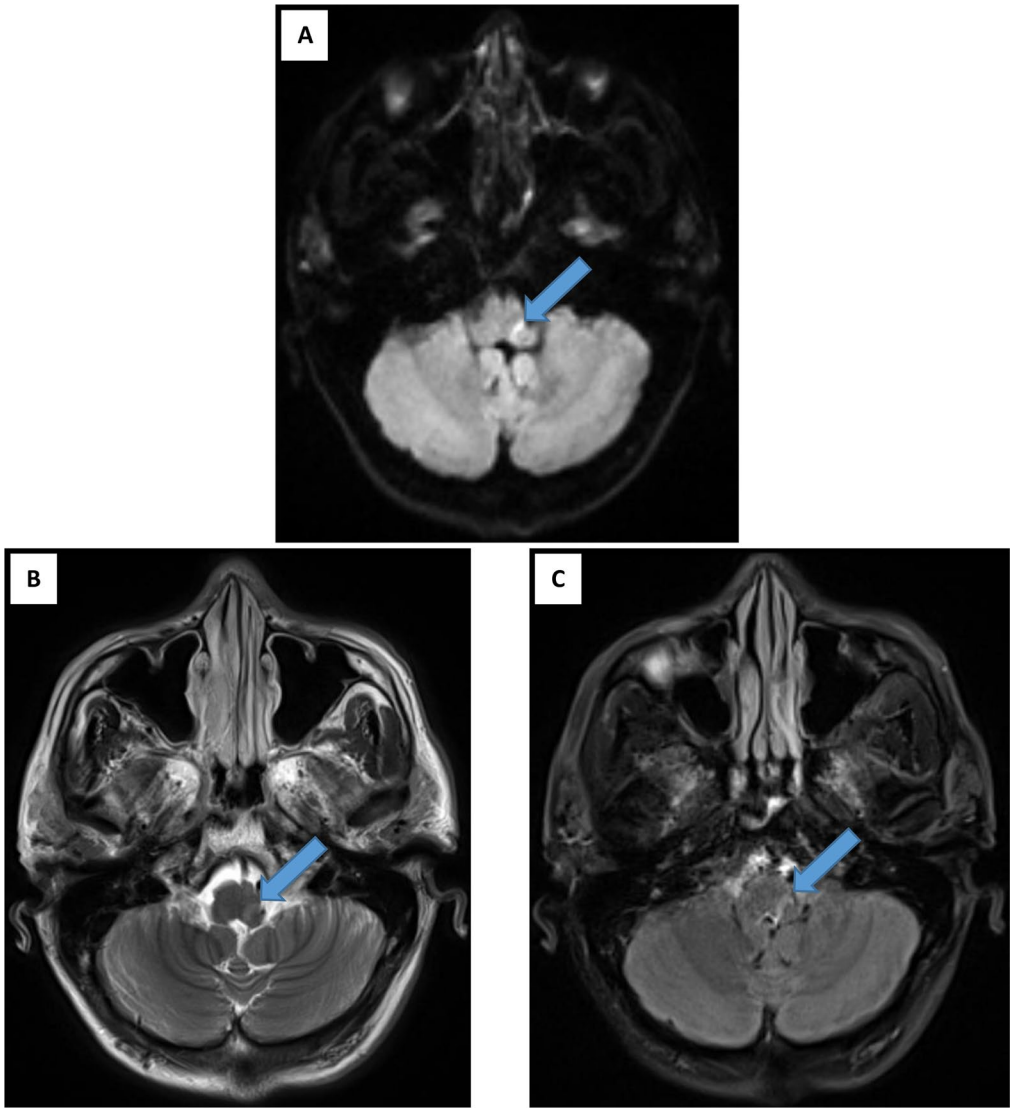

Fig. 1 Infarct of the left lateral medulla as seen on MRI brain study – diffusion weighted imaging (image **A**), axial T2 BLADE (image **B**) and axial T2 FLAIR (image **C**)

Discussion and conclusions

PCS is a challenging diagnosis to make, as patients can present with vague symptoms and often have normal CT imaging findings. In addition, NIHSS scores are typically lower in patients with PCS due to several of its clinical features not being measured such as vertigo, dysphagia, gait imbalance, nystagmus, and cranial nerve palsies [11]. It is estimated that between 28 and 59% of these strokes are initially misdiagnosed and is two to three times more likely to be missed compared to anterior circulation strokes [12, 13]. A delay or missed diagnosis can lead to poor clinical outcomes, lifelong complications, and increased mortality [14].

Our patient had no significant risk factors and did not present with any other PCS symptoms aside from dysphagia. He also was diagnosed with influenza in the ED, which likely correlated to him having some oropharyngeal pain. Our patient's diagnosis of a lateral medullary infarct was ultimately confirmed on MRI brain following further progression of his neurological deficits on hospital day 2. The area of brainstem infarct affected his descending sympathetic fibers, spinothalamic tract, and central pattern generator of swallowing and correlated with his symptoms of ipsilateral Horner's syndrome, contralateral loss of pain and temperature sensation, and dysphagia, respectively [2, 4, 15].

Dysphagia as the main symptom at onset is rare, and there have been only a few case reports of this in the literature [3, 6–10]. Sensory signs and symptoms along with vertigo, dizziness, and ataxia almost always present first with LMS and our patient had none [2]. This atypical presentation of LMS highlights how challenging these

strokes can be to diagnose. In the ED, stroke was worked up with unrevealing CT imaging. Further etiologies of his dysphagia were then explored with additional imaging and specialty consults without resolve. Of note, his XR esophagram demonstrated CPD as the mechanism of dysphagia. In a study by Yang and colleagues, they identify that lateral medullary infarction is the single best independent predictor of CPD [16]. This suggests that the etiology of his dysphagia was from an infarct affecting the central pattern generator of swallowing in the medulla and is consistent with the MRI findings.

We present a unique case of LMS in which dysphagia was the only complaint and symptom at onset in LMS. Although not uncommon, single and isolated presentation with no other neurological findings is rare. The delayed appearance of his Horner's syndrome and sensation changes is what ultimately helped the diagnosis to be made, but it is still unclear why he did not have other symptoms. This case emphasizes the importance to reconsider a neurogenic cause of dysphagia once structural, iatrogenic, and neuromuscular causes have been ruled out. Furthermore, ED physicians should always continue to maintain a high-index of suspicion for PCS even in younger patients with no known risk factors.

Abbreviations

LMS	Lateral Medullary Syndrome
PCS	posterior Circulation Stroke
NIHSS	National Institute of Health Stroke Scale
CT	Computed Tomography
NCCT	Non-Contrast Computed Tomography
CTA	Computed Tomography Angiography
MRI	Magnetic Resonance Imaging
PICA	Posterior Inferior Cerebellar Artery
ED	Emergency Department
CPD	Cricopharyngeal Dysfunction

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Author contributions
JG selected the case and wrote the main manuscript text. EH reviewed, edited. and finalized the main manuscript text. EH also prepared Fig. 1. All authors read and approved the final manuscript.

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No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Written informed consent was obtained from the patient for publication of this study and accompanying images.

Competing interests
The authors declare no competing interests.

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