

# Claude Syndrome After Middle Meningeal Artery Embolization: A Case Report

Jaeun Koo, MD<sup>1</sup>, Youngkook Kim, MD, PhD<sup>1</sup>

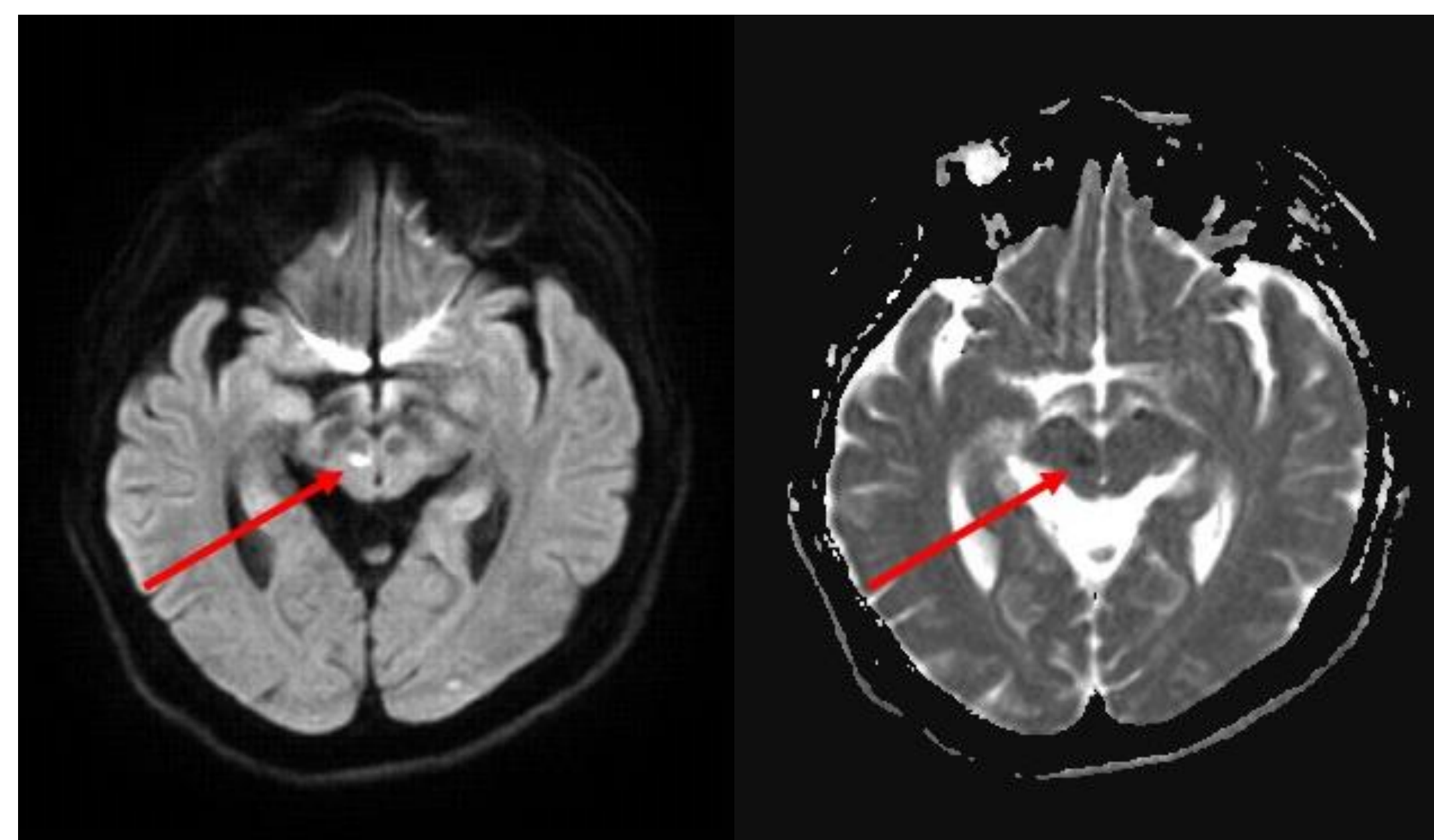
<sup>1</sup> Department of Rehabilitation Medicine, The Catholic University of Korea Yeouido St. Mary's Hospital

## Introduction

- **Claude syndrome** is a distinctive brainstem syndrome characterized by **ipsilateral third cranial nerve palsy** and **contralateral hemiataxia**.
- It was first described by Claude who suggested the **red nucleus as the main contributor** to the syndrome, while recent reviews suggested lesions of the **superior cerebellar peduncle just below the red nucleus** responsible for the syndrome.

## Case

- A 76-year-old woman with hypertension and dyslipidemia was referred to our hospital complaining of left lower limb weakness for three days. She stated the history of head contusion 3 months ago. Subdural hemorrhages (SDH) in both cerebral convexities were found on the CT imaging. The patient underwent bilateral burr hole trephination two days after admission and was discharged with the symptoms resolved.
- Two months after the discharge, she revisited our hospital with right hemiplegia and dysarthria, which started a month ago after a head contusion on the handle of an electric scooter. The CT imaging revealed a **recurrent SDH** along the left cerebral convexity. Left burr hole trephination was done on the day of admission. Eight days following the surgical drainage, **bilateral middle meningeal artery (MMA) embolization** was performed to eliminate the recurrence of SDH.
- The day after the procedure, the patient reported **incoordination of the left hand, diplopia**, and dizziness. She manifested mild limitation of left downward gaze (Fig. 1). Dysdiadochokinesia of the left hand was observed and left terminal dysmetria was shown in the Finger-to-nose test. She was able to perform indoor gait with supervision but showed a tendency to fall to the left. Furthermore, she complained of **vertical diplopia**, although the detailed examination by the ophthalmic department did not reveal definite ptosis or limitation of extraocular movement.
- The diffusion-weighted imaging (DWI) revealed an **acute infarction in the right midbrain tegmentum around the dorsal part of the red nucleus** (Fig. 2).



**Fig. 1 (Left)**

Left downward gaze is mildly limited during the examination of extraocular movements in eight different directions.

**Fig. 2 (Right)**

Axial diffusion-weighted image shows diffusion restriction in the right midbrain tegmentum around the dorsal part of red nucleus (red arrow).

## Conclusion

- Our case depicts an acute ischemic stroke after MMA embolization in the right midbrain tegmentum with the involvement of the superior cerebellar peduncle with left cerebellar symptoms and diplopia. The clinical presentation and image findings of our patient were consistent with Claude's syndrome, which suggests that **Claude's syndrome may result from the MMA embolization**.
- MMA embolization is an emerging procedure in chronic SDH that targets the vascular supply of the neomembranes, which are known as the key mechanism of the initiation and recurrence of chronic SDH. In addition to its efficacy in lowering the recurrence of chronic SDH, the exclusive involvement of the external carotid circulation has shown minimal risk of complications involving stroke.
- Physicians should be aware of the possibility of an embolic infarct after MMA embolization and Claude's syndrome should be considered if diplopia and unilateral hemiataxia are observed.

**Corresponding author: Youngkook kim, MD, PhD**

*Department of Rehabilitation Medicine, Yoeouido St. Mary's Hospital,  
The Catholic University of Korea, College of Medicine  
england2@hanmail.com*