

## Bilateral Caudate Nucleus Infarctions Following Upper Gastrointestinal Bleeding

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A 75-year-old woman presented with consciousness disturbance accompanied by hematemesis. Brain imaging revealed ischemia in the bilateral caudate nuclei and right cerebral watershed area due to stenosis of the right anterior cerebral artery (ACA) and bilateral internal carotid arteries (ICA), and hypoperfusion in the right caudate nucleus. The patient's only symptom was abulia, which gradually resolved. Further brain scans showed that the ICA stenosis had improved, although the right ACA stenosis persisted. This was a rare case of bilateral caudate nucleus infarctions with a hemodynamic etiology. **Key Words:** Bilateral caudate nucleus infarction—hemodynamic change—magnetic resonance angiography—single-photon emission computed tomography—abulia.

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### Introduction

Caudate nucleus (CN) infarctions are rare. They are characterized by a unique symptom called abulia. We report a case of a 75-year-old woman who developed abulia due to bilateral CN infarctions after gastrointestinal bleeding.

### Case Report

A 75-year-old woman had blood vomiting at 3 days before admission but refused calling ambulance. She had diabetes, hypertension, and asymptomatic stenosis (75%)

of the left internal cerebral artery (ICA) without any history of cardiovascular disease. At the day of admission, she had consciousness disturbance and was brought to our hospital. She appeared with tachycardia (122/min), anemia (6.4 g/dl) without hypotension (120/80 mm Hg), arrhythmia, and coagulation abnormality. Neurological examination found semicomatose, abulia, right conjugate deviation but no other neurological deficits. Gastrointestinal fiberoptic endoscopy revealed fresh gastric ulcers, and so endoscopic ablation was performed. On brain magnetic resonance imaging, acute ischemia was detected in the bilateral CN and right lateral lobe. Stenosis was found in the right anterior cerebral artery (ACA)-A1 and the bilateral ICA-C1 on magnetic resonance angiography (MRA). Three-dimensional stereotactic surface projection on single-photon emission computed tomography revealed decreased blood flow in the right CN (Fig 1). We diagnosed the patient with a hemodynamic stroke caused by severe gastrointestinal bleeding and stenosis of the bilateral ICA and right ACA. We started administering heparin from the day after admission, but the heparin was replaced with 200 mg cilostazol 1 week later. Although the patient did not exhibit

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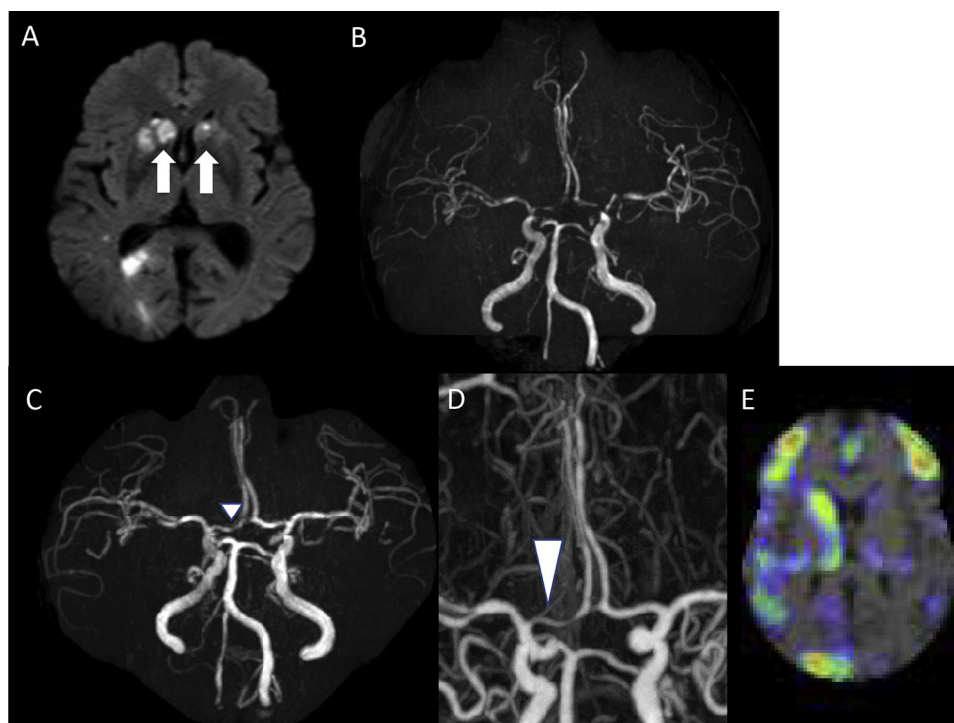
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**Figure 1.** Brain MRI diffusion-weighted imaging (A) performed on admission showed areas of high intensity in the bilateral CN (arrow). Brain MRA was conducted on admission (B) and 2 weeks later (C). The latter scan demonstrated that the stenosis had improved but persisted in the right ACA (arrowhead). Cerebral 3D-CTA (D) showed stenosis of the A1 segment of the right ACA (arrowhead). SPECT (E) revealed hypoperfusion in the right CN. Abbreviations: 3D-CTA, three-dimensional computed tomography angiography; ACA, anterior cerebral artery; CN, caudate nucleus; MRA, magnetic resonance angiography; MRI, magnetic resonance imaging; SPECT, single-photon emission computed tomography.

any increase in spontaneous motor activity, her condition gradually improved, and she finally started to wear makeup and to eat food by herself. A further MRA scan showed improved visualization of the cerebral arteries. However, the right ACA stenosis was still seen on 3-dimensional CT angiography/MRA (Fig 1).

## Discussion

Bilateral CN infarctions are rare. Their frequency is unknown, but 3 bilateral cases were found in a series of 25 CN infarctions.<sup>1</sup> The symptoms of CN infarctions include abulia, dysarthria, dystonia, aphasia, and memory impairment.<sup>2</sup> Bilateral CN infarctions also often cause abulia. Sixty percent of patients who suffer such infarctions completely recover.<sup>2</sup> The etiologies of CN infarctions are considered to include small vessel disease, cardioembolism, and significant carotid stenosis/occlusion.<sup>2,3</sup> Some previous reports showed bilateral CN infarctions due to the unilateral absence of an A1 segment.<sup>3-6</sup> In our case, the subsequent amelioration of the stenosis, which was detected on MRA, was also suggestive of a hemo-

dynamic etiology. This case is important for increasing our understanding of bilateral CN infarctions after gastrointestinal bleeding.

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