

A Case of Sinus Arrest and Post-hiccup Cough Syncope in Medullary Infarction

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We describe asymptomatic sinus arrest and post-hiccup cough syncope in a patient with medullary infarction. A 78-year-old woman developed arrhythmia, hiccup, and cough syncope attacks. Neurological examination was not remarkable. Cough syncope occurs after hiccup attacks. Bradycardia and decreased blood pressure were also present after the beginning cough. Holter 24-hour electrocardiography monitor exhibited 65 episodes of asymptomatic sinus arrest more than 3 seconds. Magnetic resonance imaging disclosed acute infarction in the bilateral medial regions and the right tegmentum of the upper and middle medulla oblongata. Cerebral angiography showed severe atherosclerotic changes in the vertebral arteries. These clinicoradiological findings suggested that a distinct topography of medullary lesions could cause a series of cardiovascular and respiratory dysfunction. Thus, physicians should pay more attention to the medullary lesion in patients with arrhythmia and syncope. **Key Words:** Hiccup—cough syncope—sinus arrest—bradycardia—decreased blood pressure—medulla oblongata—tegmentum.

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Cough is an infrequent cause of syncope. The episode of cough syncope starts with an attack of cough. After 5-10 seconds, patients lose consciousness. The loss of consciousness persists for a few seconds. After recovery from syncope, patients return to previous activity and remember the beginning cough. The most common cause of cough syncope is chronic obstructive pulmonary disease

(COPD). This syncope is induced by other many etiological diseases, including pulmonary arterial hypertension, cardiac arrhythmia, sick sinus syndrome, cardiomyopathy, hypersensitive carotid sinus, cerebral artery occlusion, and brain tumors.¹⁻⁴ However, little is known about cough syncope derived from the isolated lesion of the medulla oblongata. We describe a distinct lesion topography of medullary infarction in a patient with various cardiorespiratory findings, including sinus arrest, hiccup, and cough syncope with bradycardia and decreased blood pressure (BP). We also review the clinicoradiological hallmarks of medullary lesion-associated sinus arrest without intracranial hypertension.

Case Report

A 78-year-old hypertensive woman developed dizziness for 1 week and visited our department. Neurological examination showed cerebellar ataxia in the right extremities. Brain magnetic resonance imaging (MRI) disclosed acute infarction in the right lateral medulla oblongata

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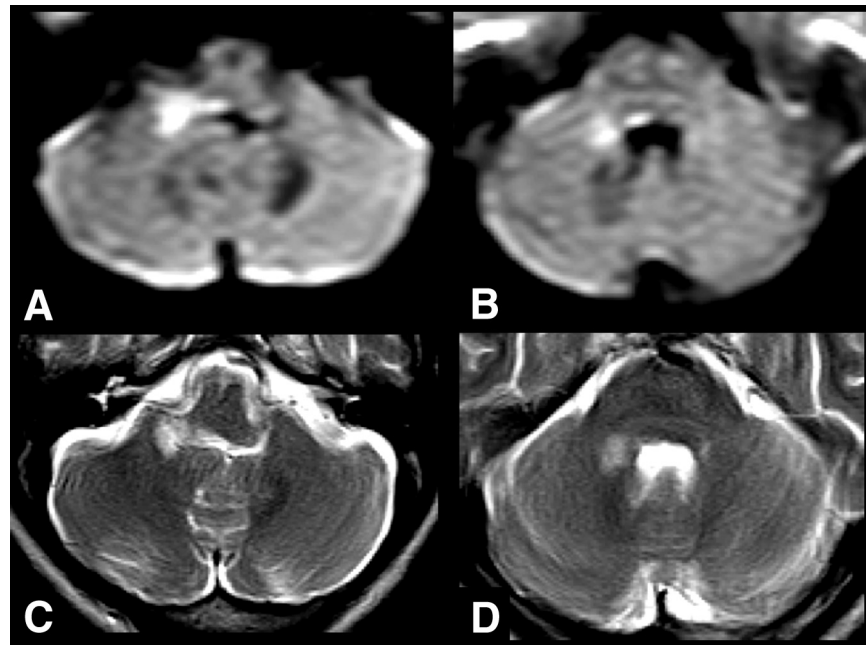
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Figure 1. Brain magnetic resonance imaging at 10 days after dizziness. Diffusion-weighted imaging (A and B) and T2-weighted imaging (C and D). Hyperintense lesions were found in the right lateral medulla oblongata and the right inferior and middle cerebellar peduncles.

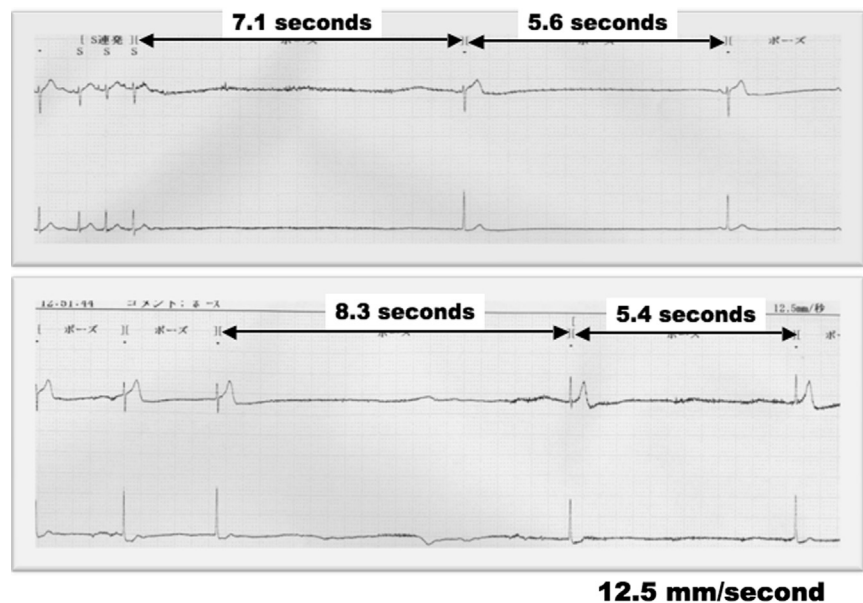


and the right inferior and middle cerebellar peduncles (Fig 1). She was treated with clopidogrel (75 mg/d, per os). Two months later, hiccups, cough, and syncope were present daily. Sick sinus syndrome was suspected at a neighboring hospital. For evaluating causative diseases of arrhythmia and syncope, she was admitted to our department.

Physical examination showed body mass index of 23.4 kg/m² and BP of 124/80 mm Hg without orthostatic hypotension. The heart rate was 62 beats/minute and regular. The respiratory rate was 18/minute. Neurological examination was not remarkable, including cognitive, motor, and sensory functions. She experienced hiccup

for 2-5 minutes during waking day and night time. Subsequently, cough started for 10-15 seconds and she lost consciousness. Approximately 20 seconds later, the patient regained consciousness by calling her name. Simultaneously sinus bradycardia of 30-50 beats/minute and lowering BP of 60-70/20-30 mm Hg were detected on electrocardiography (ECG) and BP monitor. The frequency of hiccup and cough syncope were 10 and 2-3 times per day, respectively. Apnea was not accompanied during the episode of cough syncope and sleeping time on respiratory monitor. The syncope could not be reproduced by provocative tests, including forced cough or Valsalva maneuver.

Figure 2. Holter electrocardiography monitor showed asymptomatic sinus arrest more than 3 seconds.



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