

Case report

Postcentral gyrus infarction with spared proprioceptive sensation

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ABSTRACT

We here report a patient with postcentral gyrus infarction whose touch and pain sensations in the right forearm and hand were impaired but proprioceptive sensation was spared. We observed the clinicroadiological correlation between sensory impairment of tactile and pain sensation with spared proprioceptive sensation and the posterior postcentral gyrus lesion, which may be important in understanding the function of human primary sensory cortex.

1. Case report

A 33-year-old man noticed the sudden onset of abnormal sensations in the right forearm and hand, when hanging his clothes on hangers on the morning. His past medical history was unremarkable. He did not smoke, but drank alcohol 3 times per week. On admission, his blood pressure was 97/52 mmHg, and his pulse rate was 60 beats/min. The patient was alert and had no cranial nerve palsies or motor weakness. The tendon reflexes were normoactive bilaterally without Babinski's sign. The patient showed reduced touch and pain sensation in the right forearm and hand. Proprioceptive sensations including joint position and vibration sense were unaffected. Two-point discrimination and graphesthesia also remained intact. Diffusion-weighted magnetic resonance imaging revealed increased signal intensity in the posterior part of the postcentral gyrus on the left (Fig. 1). Magnetic resonance angiography showed no severe stenosis or occlusion in the main cerebral arteries. Carotid artery ultrasound did not reveal atherosclerotic changes or stenotic lesions. Electrocardiogram showed sinus rhythm. Transthoracic echocardiography showed a normal cardiac function without left atrial thrombus, but transesophageal echocardiography found a patent foramen ovale; thus paradoxical embolism via a patent foramen ovale was considered as the possible cause of stroke.

2. Discussion

An interesting observation in our patient includes dissociated impairment of sensory modalities (tactile and proprioception) caused by minor involvement of the postcentral gyrus. Bassetti et al. [1] examined 20 patients with parietal stroke and classified sensory impairment to 3 types; pseudothalamic sensory syndrome (impairment of elementary

sensation such as touch, pain, temperature and vibration); cortical sensory syndrome (an isolated loss of discriminative sensations, such as stereognosis, graphesthesia and position sense, involving one or two parts of the body), and atypical sensory syndrome (sensory loss involving all modalities of sensation). In our patient, we observed the clinicroadiological correlation between sensory impairment of tactile and pain sensation with spared proprioceptive sensation and the posterior postcentral gyrus lesion. Our patient's lesion in the primary sensory cortex was more limited and smaller than that in previous studies, which may lead to differences in affected sensory modalities from previous studies [1,2]. Importantly, modality-specific organization for tactile and proprioceptive sense in human primary sensory cortex has been reported [3]. Tactile sensation is localized in Brodmann area 1 and 3b, whereas proprioceptive sensation is in area 3a and 2 in the postcentral gyrus [4]. Therefore, the lesion in primary sensory cortex sparing of area 3a or 2 might play a role in dissociated sensory impairment observed in our patient. Unfortunately, functional MRI or diffusion tensor imaging was not performed in our patient. Further clinical imaging studies including these advanced MRI techniques focusing on impairment of different sensory modalities due to small lesions within the postcentral gyrus could help our understanding of the function of human primary sensory cortex.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Written informed consent was obtained from the patient included in

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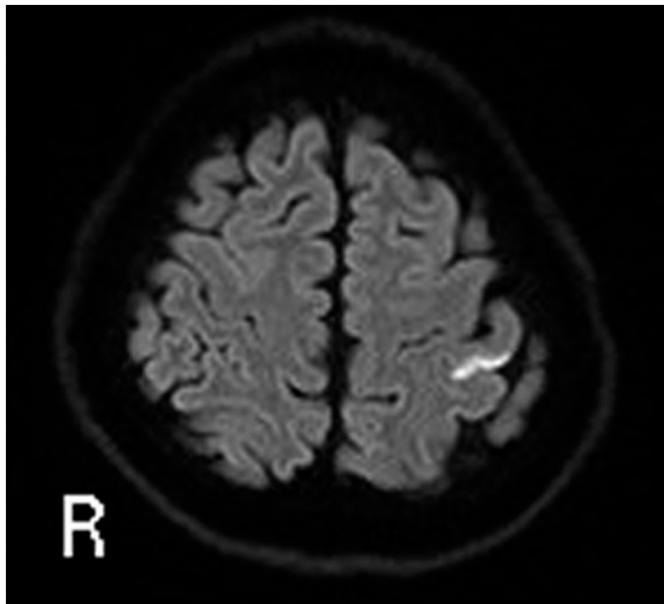


Fig. 1. Diffusion-weighted magnetic resonance images of the patient. Increased signal intensity in the left postcentral gyrus is observed.

the study.

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Author contributions

All authors have read and approved the manuscript. DT, YI, NK, KH and KS contributed to the study concept and design. DT drafted the manuscript. DT and YI contributed to the diagnosis and treatment of the patient. NK, KH and KS revised the manuscript for intellectual content.

Declaration of Competing Interest

The authors declare no potential conflicts of interest in relation to this article.

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