

Motor weakness and sensory disturbance of the shoulder due to a cortical infarction

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A 73-year-old man with essential hypertension abruptly developed left-sided moderate shoulder weakness and came to our hospital. General examination demonstrated no abnormalities. Cranial nerve impairment was not detected. The patient was right-handed. Hand grasping power was 29 kg in the right and 23 kg in the left. In the upper extremities, left-sided Barré sign was detected. In the lower extremities, neither Barré sign nor Mingazzini sign was positive. Joint flexibility of the shoulder was normal in both sides. The patient complained of no shoulder pain. Manual muscle testing on the left-sided upper extremity demonstrated that the pectoralis major, deltoid, supraspinatus, infraspinatus, rhomboids, serratus anterior, and latissimus dorsi were at grade 3, despite the trapezius, biceps brachii, triceps brachialis, brachioradialis, extensor carpi radialis longus, extensor carpi ulnaris, flexor carpi radialis, and flexor carpi ulnaris at grade 5. Bend, extension, and wiggle were normal in both sides of the fingers. Muscle tone was normal in the extremities. Muscle atrophy and fasciculation were not observed. Deep tendon reflexes were all normal, and pathological reflexes were not detected in the extremities. In the vicinity of the left-sided shoulder, superficial sensation (touch sensation, pain sensation, temperature sensation, and topesthesia) and combined sensation (two-point discrimination, graphesthesia, stereognosis, and double simultaneous stimulation) were impaired, despite spared deep sensation (joint sensation and vibratory sense). There were no other neurologic abnormalities. As a result, there was moderate weakness of the shoulder with sensory disturbance in the vicinity of the shoulder on the left side. Complete blood cell count and blood chemistry were within normal ranges. Chest roentgenogram, electrocardiogram and echocardiogram findings were all normal. Shoulder roentgenogram demonstrated

no abnormalities. Brain magnetic resonance imaging demonstrated a localized infarction in the precentral and postcentral gyrus on the right side (Figure 1). Because carotid ultrasonography demonstrated an unstable plaque in the right-sided common carotid artery, artery-to-artery embolism was suspected. Under antiplatelet agent and rehabilitation, the patient became asymptomatic within 10 days.

In 1937, based on electrical stimulation of the brain surface during surgery, Penfield¹ reported that there was a broadly somatotopic representation of the different body parts in an arrangement in the primary motor cortex and primary sensory cortex. On the other hand, isolated shoulder palsy is defined as unilateral shoulder motor weakness without other neurologic deficit which is caused by pyramidal tract disorder. Previous reports stated that isolated shoulder palsy was caused by a localized infarction in the precentral gyrus.²⁻⁵ The motor shoulder area might be located more medially than the motor hand area in the precentral gyrus.¹⁻⁵ In our patient, a localized infarct lesion was located at the motor shoulder area in the primary motor cortex as well as sensory shoulder area in the primary sensory cortex on the right side (Figure 1B,E). Consequently, in addition to shoulder palsy, sensory disturbance of the shoulder developed on the left side. We emphasize that this is the first reported case of motor weakness and sensory disturbance of the shoulder due to a cortical infarction.

CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

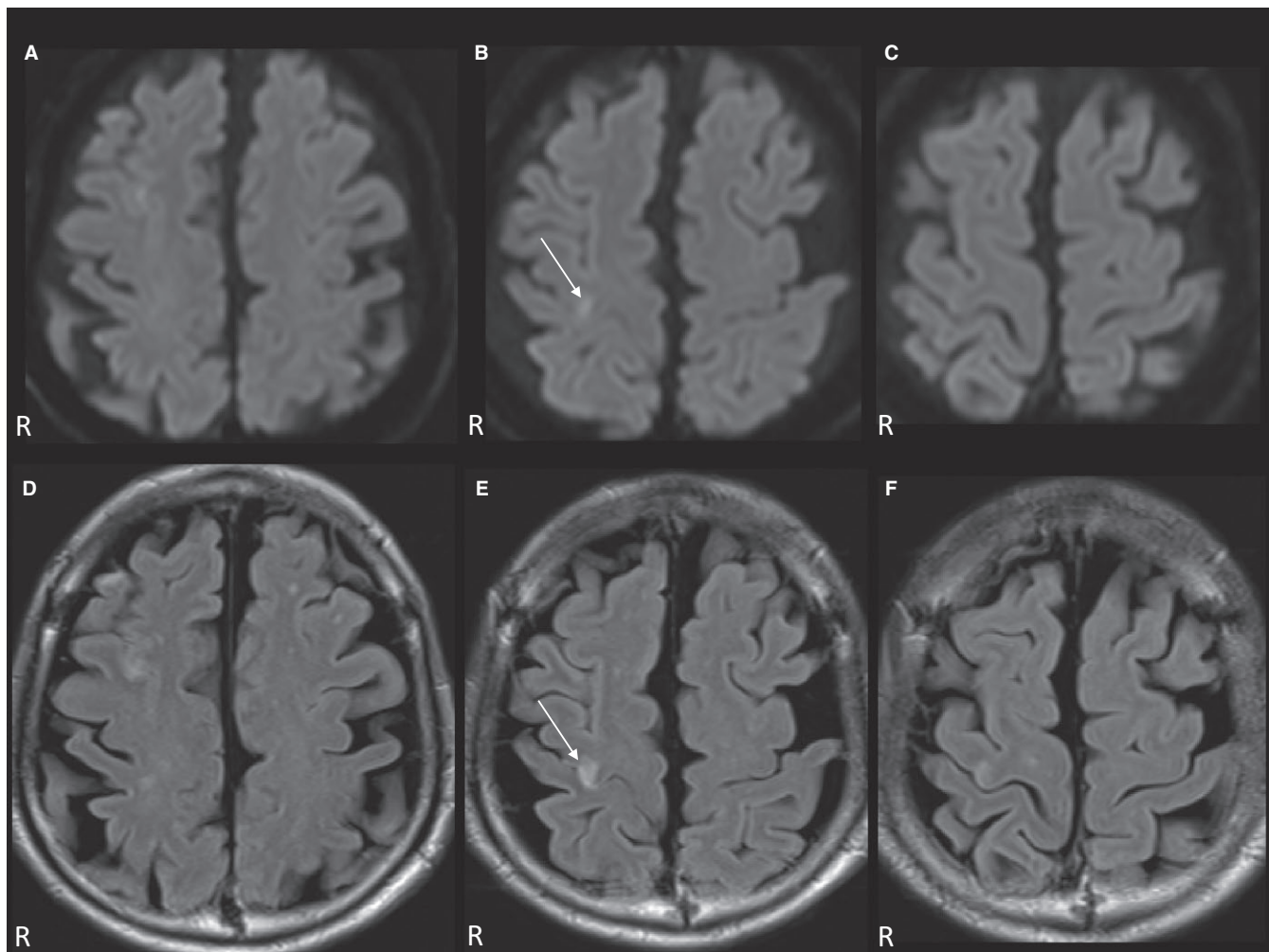


FIGURE 1 Brain magnetic resonance imaging demonstrated a localized infarction in the precentral and postcentral gyrus on the right side (A-C: diffusion-weighted, and D-F: fluid-attenuation inversion recovery, arrows)

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