Brief Communication

False Lateralization of Seizure Perceived by a Patient with Infarction of the Right Parietal Lobe Who Showed the Neglect Syndrome

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Summary: A 66-year-old right-handed man developed seizures characterized by an electric sensation and convulsive movements involving the left arm, which sometimes secondarily generalized. The patient, however, reported that the seizures occurred in his right arm. Neurological examination showed many features of left hemineglect, including allesthesia, secondary to acute infarction of the right parietal lobe.

Unilateral ictal somatosensory, motor, and visual phenomena are generally reliable indicators of the hemisphere of seizure onset, whereas other types of phenomena provide less reliable lateralizing information (1). As an exception, we report a patient with a right hemispheric infarction who incorrectly indicated that his seizures began in the ipsilateral arm and hand.

CASE REPORT

A 66-year-old right-handed man was admitted to the hospital because of partial seizures. His son had noticed that his father's left shoulder drooped and that he had begun dragging his left foot several hours before the first seizure. On the day of admission, he developed five partial seizures, three of which secondarily generalized. There was recovery of consciousness between seizures. He recalled that his seizures began abruptly with an electric sensation in his right hand and that his right hand became twisted. However, his family and attending physicians observed dystonic postures and clonic movements of his left hand and arm at the beginning of the seizures and postictal left hemiparesis.

The patient drank alcohol socially and smoked one pack of cigarettes a day. General medical examination was unremarkable. The day after admission, he was alert and oriented but indifferent to his neurological deficits. He had Although allesthetic response was not documented during the seizure, it is likely that sensory symptoms of the seizures were localized inappropriately or that he had false memory for lateralization of seizures. In this case, the neglect syndrome caused by infarction of the right parietal lobe extended to symptoms of the seizure itself. **Key Words:** Allesthesia—Neglect—Seizure—Cerebral infarction—Right parietal lobe.

mild dysarthria, a left homonymous hemianopsia, mild left hemiparesis, and slight bradykinesia on the left. He recognized that his left-sided arm and leg belonged to him. There was no aphasia, acalculia, or left-right disorientation. He could not draw a cube or cross well, and when he performed a crossing-out task he failed to strike out 17 of the 36 marks, all of which were on the left side. He also bisected a line far to the right. When tested for extinction, with use of unilateral right-hand tactile and right-sided auditory stimuli, his performance was flawless. However, when given unilateral left-hand tactile and left-sided auditory stimuli, he detected all stimuli but displaced the stimuli to the right hand and ear in most trials. With simultaneous bilateral stimuli, he neglected the left-sided stimulus in all trials. When eating, he ate only from dishes on the right side of the table. He also neglected the left side of his face when shaving and had difficulty dressing.

Magnetic resonance imaging demonstrated a new infarct in the right parietal lobe (Fig. 1). There was significantly reduced perfusion in the right parietal and temporal lobes and in the right basal ganglia, as shown by single-photon emission computed tomography (SPECT) with [⁹⁹m]technetium hexamethyl propylene-amineoxime. Transcranial Doppler study indicated stenosis of the M1 segment of the right middle cerebral artery.

DISCUSSION

Patients with right-hemisphere lesions often neglect sensory stimuli emanating from the left limbs and visual field and even noises from the contralateral space. They

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FIG. 1. Proton-weighted magnetic resonance image scan showing area of increased signal in the right parietal lobe, consistent with ischemic infarction.

typically extinguish or ignore contralateral stimuli when both sides of the body are stimulated simultaneously. Some patients recognize a single stimulus applied to the contralateral side of the body but report it as coming from the ipsilateral side, a condition termed allesthesia. Allesthesia is a disturbance of cortical integration and is usually accompanied by anosognosia, extinction, and neglect. Brain (2) believed that allesthesia was due to a disturbance in the body schema representation in the parietal lobe. Several anatomic/clinical studies have implicated the right parietal lobe, particularly the inferior parietal lobule, as the crucial region associated with the neglect syndrome (3–5). Our patient had an acute infarction of the right parietal lobe that included the inferior parietal lobule, and he manifested a complete neglect syndrome with allesthesia.

Ictal manifestations in the form of allesthesia have been reported. Heilman and Howell (6) described a man with seizures arising from the right parietooccipital region who showed extinction and allesthesia when tested during ictal events. They attributed this to seizure-induced dysfunction of the right parietal lobe. Jacobs (7) reported a patient with a right parietooccipital arteriovenous malformation who had episodes of visual allesthesia accompanied by other manifestations of seizures. Because images of visual stimuli presented in the intact right visual field were transposed to the defective left field, Jacobs hypothesized that seizureinduced dysfunction stimulated interhemispheric transfer and perseveration of visual perception.

In patients with structural lesions and seizures, the epileptogenic brain region is highly congruent with the lesion. There is no doubt that our patient mislocalized his seizure to the same side as his infarct, and there was no evidence of seizure activity arising from the left hemisphere. We believe that allesthesia for seizures involving the left arm and hand is the most likely mechanism to explain the patient's false lateralization of the seizure. We cannot exclude the possibility that left-right confusion developed transiently and formed a false memory for lateralization of the seizure. However, left-right disorientation is most often associated with disease of the left hemisphere and aphasia. Sauguet et al. (8) reported that left-right disorientation for one's own body parts was rarely observed in patients with right-hemisphere lesions and without aphasia.

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