Paradoxical Lateralization of Convulsive Movements in a Subtle Status Epilepticus

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Case

A 68-year-old woman visited emergency room due to repetitive involuntary movement of right limbs. Thirty minutes prior to the involuntary movement, she experienced two episodes of generalized tonic-clonic seizures. At emergency room, orientation and verbal responses were fairly preserved but general cognitive function was minimally slowed. Four month ago, she was admitted our neurologic department with left side hemiplegia due to right middle cerebral artery infarction (Fig. 1). Left side motor weakness was sustained. About 20 years ago, she medicated antiepileptic drugs due to generalized tonic-clonic seizure. Since 1993, there was no fit so she stopped medication several years ago. These seizures were first event after the cerebral infarction. During the video-EEG monitoring, continuous ictal discharges with intervening flat periods were noted in the right hemisphere and these ictal discharges occasionally spread to the contralateral side. Her right side involuntary movement was identifiable when the epileptic discharges were found on her right hemisphere.

Hospital Course: Initially 900 mg of phenytoin was injected without response. Involuntary movement and electrical abnormalities were continued.

In the next step, midazolam 5 mg was infused as a loading dose and was followed by maintaining dose of 0.75 μg/kg/hr. Involuntary movement was stopped and electrical activity was normalized as well.

Discussion

Current definition of status epilepticus is recurrent epileptic seizures without full recovery.
of consciousness before the next seizure begins or more- or- less continuous clinical and/or electrical seizure activity lasting for more than 10 min whether or not consciousness is impaired.

Although the classification of SE is still controversial, three subtypes of generalized convulsive SE (includes both primary and secondary generalized seizure), nonconvulsive SE (epileptic twilight state), and simple partial SE (no impairment of consciousness) are frequently used in the clinical practice. Generalized convulsive SE includes overt (GTC or major motor status epilepticus) and subtle (most cases of “myoclonic status epilepticus” and “electrical” status epilepticus) SE. Similarly, nonconvulsive SE has two subtypes of complete partial SE and absence SE. These uncertainty of classification made a lot of confusion in the diagnosis of SE.

Especially in the case of trace convulsive movements or no visible movements, Treiman et al. (1984) suggested subtle SE. Usually, subtle SE is suspected in the considerable confusion with subtle signs of convulsive activity in patients with severe encephalopathies caused by underlying systemic illness, primary brain lesions such as massive cerebral infarctions of infections, or prolonged uncontrolled overt generalized convulsive SE. Similar SE was differently named according to the authors as somatomotor status epilepticus or generalized status myoclonus.

Most significant clinical features of subtle SE is subtle convulsive motor activity. Usually these motor activities are continuous and rhythmic and frequently found in the small area in the body such as eyelid, facial, or jaw. Sometimes, only minor twitching or rhythmic nystagmoid eye jerks, or rhythmic subtle focal twitches of the trunk or extremities can be a clue of clinical suspicion. Profound impairment of consciousness and usually small amplitude, bilateral EEG ictal discharges are key factors to the precise diagnosis.

Suggested mechanism of subtle SE is “electro-mechanical dissociation”.

As SE progresses, pathophysiological changes begin to occur that appear impair rostral-caudal transmission. These dissociation result in increasingly subtle clinical manifestations of the seizure activity. When SE occurs in the presence of a severe underlying encephalopathy, an “electro-mechanical dissociation” occurs such that, in spite of the presence of bilateral ictal discharges on the EEG, the encephalopathic brain is unable to transmit message from the cortex with seizures to muscles in the trunk and extremities to cause

Figure 1. Brain MRI of acute stage of right middle cerebral artery infarction.
full clinical expressions of overt generalized convulsions.

In this case, we suggest that this unexpected convulsive movement is a reflection of earlier exhaustion in the right hemisphere or deferentation of right hemisphere because of preexisting neuronal damage may cause earlier dissociation in the defected brain.

REFERENCES