Porencephalic cyst: a rare cause of new-onset seizure in an adult

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ABSTRACT

We present a case of a 56-year-old male with a history of perinatal intracerebral hemorrhage who presented to the emergency department after a witnessed new-onset generalized tonic–clonic seizure. Computerized tomography and magnetic resonance imaging of the head revealed a large frontal lobe porencephalic cyst, with encephalomalacia in the right parietal lobe and temporal lobe (the patient did not have any prior cranial imaging). The patient has subsequently remained seizure-free on levetiracetam. Porencephalic cyst is a rare condition of cerebrospinal fluid accumulation in the brain parenchyma that is usually related to perinatal vascular events. These cysts can have a wide array of clinical presentations. This can include partial or generalized seizures, which are usually managed by antiepileptics.

1. Case

A 56-year-old man with no prior history of seizure disorder presented to the emergency department after a witnessed generalized tonic–clonic seizure. On examination, he was afebrile with Glasgow Coma Scale score of 5. The laboratory tests were unremarkable with no leukocytosis, or hypotension. Computerized tomography (CT) scan of the head revealed a large porencephalic cyst in the right frontal lobe, with encephalomalacia in the right parietal lobe and temporal lobe (Figure 1). There was no hemorrhage associated with the cyst. Magnetic resonance imaging (MRI) of the brain confirmed the findings of the CT head (Figure 2). The patient was given a loading dose of levetiracetam by neuro-critical care, and placed on continuous 24-h electroencephalography (EEG) which did not show any epileptiform or seizure-like activity, but showed diffuse slowing of background. Neurosurgery did not recommend any surgical intervention in the absence of acute hemorrhage or elevated intracerebral pressure. On day 3 of hospitalization, the patient became responsive to verbal and physical stimuli, and was successfully extubated. By day 4, he had returned to his baseline neurological functioning. On further questioning, the patient denied alcohol-use but reported a history of intracerebral hemorrhage as an infant of unclear etiology (he denied alcohol-use but reported a history of intracerebral hemorrhage as an infant of unclear etiology). There was no hemorrhage associated with the cyst. The diagnosis porencephaly is confirmed on imaging; CT head reveals hypodense intracranial cyst with a well-defined border, while MRI brain shows a cyst lined by white matter, containing CSF with low signal intensity on T1/FLAIR, high signal intensity on T2, and no restricted diffusion on MRI [6]. Patients presenting with seizures are generally managed with antiepileptics, and surgery is reserved for refractory cases [6].

Clinicians should have a broad differential while managing new-onset generalized seizures including hypoglycemia, electrolyte derangements (e.g., hyponatremia), infections (e.g., meningitis), cerebrovascular accident, structural brain lesions (e.g., primary or metastatic brain tumors), traumatic brain injury, hyperthyroidism,
and drug intoxication. The patients with structural brain lesions are more prone to seizures, that in rare cases could be a result of perinatal complications such as porencephalic cysts.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

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**Figure 1.** Computerized tomography of the head without contrast revealing a large cystic area is seen within the right frontal lobe communicating with the right frontal horn, consistent with a porencephalic cyst. Linear cystic areas are seen within the right parietal lobe possibly representing dilated perivascular spaces.

**Figure 2.** Magnetic resonance imaging of the brain (T1) showing a large porencephalic cyst in the right frontal lobe with additional small areas of encephalomalacia in the right parietal and temporal lobes.