A ying and yang brain

A young adult patient with a history of childhood epilepsy assisted to an outpatient clinic for follow-up. On the routine magnetic resonance imaging (MRI), it was found that the patient was missing half a brain (Figure 1).

The patient is a 22-year-old left-handed male who underwent a left hemispherectomy at the age of 11 years to treat medically intractable epilepsy and has been off antiepileptic medications thereafter.

At the age of 18 months, he had a prolonged febrile seizure. A month later, he had another prolonged seizure, both involving the right side of the body. MRI after the second seizure apparently showed left hemispheric atrophy with `cortical expansion of the left hemisphere`. When he was 7 years old, he had difficult-to-control seizures with left head and eye deviation, clenching of his right hand and having his right hand pulled forward to his chin. These occurred 6–12 times a day. EEG revealed frontal and parietal spikes. He underwent a presurgical evaluation in 2001, which revealed frequent spikes and sharp waves from the left hemisphere. The 12 seizures recorded revealed diffuse onset maximal in the left hemisphere. It showed a left hemispheric hypometabolism. He underwent placement of subdural grids and strips in January 2012, which revealed a multiple onset of seizures within the left hemisphere. He underwent an anatomical left hemispherectomy in 2002, with complete seizure remission and residual right arm greater than leg hemiparesis and intellectual impairment. He also presents with an impulse control disorder and emotional dysregulation since this surgery. On physical examination, he is alert, oriented to place and time. There is some spasticity on the right side but reasonable gait. No erythema or redness around shunt site in scalp.

Anatomic hemispherectomy is a procedure in which half of the brain is removed or disconnected, leaving intact the deep structures of the brain (thalamus, brainstem and basal ganglia). It differs from functional hemispherectomy, because in the latter there is no resection of all the brain lobes.\(^1\) Drug-resistant epilepsy is the most common indication. There are some unusual cases of uni-hemispheric damage with or without seizures, also treatable by this procedure (Rasmussen encephalitis, Sturge Weber syndrome, hemimegalencephaly, pediatric stroke and tumors). It can be performed at any age, but preferably as young as possible, so that the remaining side takes over

Figure 1. Axial T1 sequence MRI (a) shows a large hypointense image corresponding to the absence of the left hemisphere and abnormal accumulation of cerebrospinal fluid after anatomic hemispherectomy. Coronal MRI T-2 image (b) evidencing left hemispherectomy, the image also evidences enlargement of ventricles.
functions from the opposite lost side.² Operative risks include besides of death, infections, bleeding, brain shift and hydrocephalus (seen in this case).

A hemispherectomy is a radical operation. Most often, this surgery is considered in patients with severe seizure disorders coming from one side of the brain. It is, however, a highly effective surgical procedure for treating refractory epilepsy in the pediatric age group, particularly for acquired and progressive etiologies.³

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References