Hemispheric epilepsy

Case series

Pacetti et al. report the results of hemispheric surgery in children under three years of age, along with clinical, neuroradiological and EEG features, from two Italian epilepsy surgery centres. After reviewing our epilepsy surgery databases (2008-2018), we identified 14 patients (seven males) submitted to hemispheric surgery, under three years (range: 2-29 months), with a follow-up of at least 12 months. No deaths occurred, and surgical complications were observed in 3/17 procedures. At final follow-up visit (mean: 30.8 months; range: 12-90), 10/14 patients (71.4%) achieved Engel Class I (eight Class 1A, one Class 1B, and one Class 1C). Antiepileptic drugs were completely discontinued in three and reduced in eight, thus a significant decrease in drug regimen after surgery was achieved in 11/14 patients (78.6%). Before surgery, the severe developmental delay was present in 10 patients, moderate in two and mild in two. At the last follow-up visit, the degree of developmental delay changed from severe to moderate in five patients, remained unchanged in six cases (four severe and two moderate), and changed from mild to moderate in two following surgery. In many cases, hemispheric surgery in children under three years is effective in achieving seizure freedom or reducing seizure frequency, with the possibility of simplifying complex drug regimens. Moreover, it appears to be a safe and well tolerated procedure, leading to improvement in cognition and posture [1)].

A report documents clinical and EEG features of 13 patients whose most frequent EEG abnormality was unilateral interictal spike-waves that occurred consistently over the same hemisphere on multiple recordings. These 13 patients were selected from a 25000-patient database encompassing 25 years. The hemisphere involved was the left in 8 (62%) of the 13 patients. Bisynchronous spike-waves also appeared on a majority of recordings in 10 (77%) patients. Focal spikes occurred in a majority of recordings in 7 (54%) patients; these usually predominated in the frontal or frontal temporal regions and were always ipsilateral to hemispheric spike-waves. Their field distribution often merged with regional or hemispheric spike-waves. EEG evidence of ictal origin ipsilateral to hemispheric spike-waves appeared in 7 of 8 patients whose seizures were recorded; ictal potentials never predominated contralaterally. All patients had seizure disorders beginning in childhood or adolescence. Eleven (85%) had more than one type of seizure. Principal ictal types contained no focal phenomena in 10 (77%) patients. Bilateral motor seizures were tonic-clonic (12 patients), myoclonic (3), tonic (3) and atonic (1). Absence-like attacks occurred in 10 patients: only staring, automatisms and loss of awareness occurred in 6, with aurae in 3, and with motor phenomena in 3. Features of some seizures in 9 patients (69%) suggested a focal or unilateral origin or involvement, but these consistently occurred contralaterally to principal spike-waves in only 4 patients. At a median follow-up of 19 years, 11 patients (85 %) continued to have seizures; the 2 seizure-free patients required two anti-epileptic drugs each. History, neurological examination and neuro-imaging failed to disclose an aetiology or structural lesion in any patient. Eleven patients (85%) had normal intelligence. This newly documented syndrome of hemispheric epilepsy therefore comprises four components: (i) diffuse unilateral spike-waves on EEG which consistently appear over the same hemisphere in a given patient; (ii) a persistent, usually intractable seizure disorder with generalized ictal features in all patients and focal in most; (iii) onset of seizures in childhood or adolescence; and (iv) no apparent aetiology or related structural abnormality of the CNS [2)].

1)

Pacetti M, Giacomini T, Cossu M, Russo GL, Prato G, Morana G, Tortora D, d'Orio P, Lodi M, Casellato S, Scarpa P, Cama A, Tassi L, Mancardi MM, Nobili L, Consales A. Hemispheric surgery for severe epilepsy in early childhood: a case series. Epileptic Disord. 2021 Jul 14. doi: 10.1684/epd.2021.1303. Epub ahead of print. PMID: 34259155.

2)

Blume WT. Hemispheric epilepsy. Brain. 1998 Oct;121 (Pt 10):1937-49. PubMed PMID: 9798748.