Intracranial arachnoid cyst and epilepsy

Intracranial arachnoid cysts are seen more often in patients with focal epilepsy. Explicit association between focal epilepsy and arachnoid cyst is possible but exceptional. More likely, focal epilepsy and AC share a common etiological ancestor but represent distant and distinct entities [1].

It remains ambiguous, whether there is a relationship between epileptic seizures and intracranial ACs without obvious intracranial pressure signs. A review of the literature, however, showed mostly positive results concerning the surgical treatment of ACs under conditions of simultaneous epileptic seizures. However, the results largely depend upon the definition of the decline of the seizures with regard to the postoperative follow-up, therefore we must remain skeptical. Therapy guidelines in the future not only depend on the clarification of the pathophysiology of the ACs, but also on a resonable outcome examination [2].

To establish the causal relationship between arachnoid cysts and epilepsy in patients with epilepsy and arachnoid cysts, probably a multimodality workup is essential. There is an urgent need for systematic studies to determine the ideal surgical approach and also the extent of resection to get a good seizure outcome in patients with arachnoid cyst-related drug resistant epilepsy with a large sample size [3].

Results suggest that epilepsy with ACs is related to the cerebral blood perfusion in the surrounding brain structures rather than to the volume of the ACs. Not only compression but also complicated brain parenchymal lesions may participate in the development of epilepsy [4].

Arroyo et al., findings suggested that arachnoid cysts are often an incidental finding in patients with epilepsy and do not necessarily reflect the location of the seizure focus.

In this retrospective epilepsy clinic-based study of the 867 with epilepsy, 17 (1.96%) patients had associated arachnoid cysts. In six of them other possible or predisposing factors for epilepsy could be established. Of the remaining 12 patients, one had benign epilepsy with centrotemporal spikes and one had bilateral frontal and parietal band heterotopia. In the rest of the patients, clinical and electroencephalography (EEG)/video-EEG features localized seizure focus adjacent to the arachnoid cyst in only four patients [5].

Yalcin et al., suggest that arachnoid cysts may not be related to a specific seizure type and EEG focus.

Eight patients were classified according to the Classification of Epilepsies and Epileptic Syndromes of ILAE as idiopathic generalized or localized epilepsy: three as idiopathic generalized epilepsy, three as Rolandic epilepsy and two as juvenile myoclonic epilepsy. Two patients with rare nocturnal seizures had normal EEGs in the awaking and sleep stage. The EEGs of five patients with simple or complex partial seizures revealed focal epileptiform abnormalities, but only one patient had the same location

with the arachnoid cyst. Five patients with symptomatic epilepsy had diffuse slowing in their EEGs and only one patient had seizure focus in the EEG that was contralateral to the arachnoid cyst. According to the study, seizure type and EEG abnormality corresponds to arachnoid cyst location in only one patient [6].

Case reports

A case is presented of a 3 1/2-year-old girl with a clinical picture of very severe psychomotor retardation, autistic behavior, and repetitive convulsive episodes starting in the neonatal period and resistant to any pharmacological treatment. Electroencephalography showed generalized abnormalities. Magnetic resonance imaging of the brain disclosed arachnoid cysts in both temporal fossae with marked hypoplasia of both temporal lobes. It is proposed that the severity of symptoms is related to the magnitude of underlying anatomical lesions as well as the associated intractable epilepsy [7].

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