

TEMPORAL EVOLUTION OF RASMUSSEN'S ENCEPHALITIS

The Natural History of Rasmussen's Encephalitis

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Rasmussen's encephalitis (RE) is a chronic inflammatory disease of unknown origin, usually affecting one brain hemisphere. In the present study, a comprehensive assessment of the natural history of the disorder is presented. Seizure frequency, degree of hemiparesis, and degree of cerebral hemiatrophy in 13 patients with histopathologically proven RE were analyzed over the time course before resective epilepsy surgery or introduction of long-term immunosuppressive pharmacotherapy. For the assessment of the degree of cerebral hemiatrophy, on defined slices comprising the sylvian fissure of hard copies of serial magnetic resonance imaging (MRI) investigations, the hemispheric ratio (HR) was determined. The data show an initial prodromal phase with an intermediate frequency of focal onset seizures and mostly no hemiparesis. The occurrence of this stage was observed mainly in adolescent and adult patients. All patients went through an acute phase with a median duration of 8 months. During this stage, there were frequent simple partial motor seizures, development of hemiparesis, and volume loss of the affected hemisphere. After this, the patients passed into a residual stage with a marked decrease in seizure frequency. Twelve months after the onset of the acute stage, the average HR was 0.72. These data allow an estimation of the prognosis of newly affected patients and demonstrate that most of the brain damage in RE occurs during the first 8 to 12 months. These findings should be taken into consideration when future therapeutic approaches to RE are evaluated.

stances one hemisphere. It clinically presents with intractable focal seizures, *epilepsia partialis continua*, and progressive deterioration of neurologic function of the affected hemisphere leading to hemiplegia, hemianopia, and aphasia (in case of involvement of the dominant hemisphere) (1). Neuroradiologic studies have demonstrated an initial cortical edema and increased intensity of T₂/FLAIR signals involving primarily (but not exclusively) frontocentral regions, followed by progressive atrophy over time (2). For a long time, RE was considered a disease of childhood, but cases beginning in adolescence and adulthood have been reported in the last 9 years.

In this study, Bien et al. described the progression of RE in 13 patients: in eight, the first seizure occurred in childhood; in two, in adolescence; and in three, in adulthood. They recognized three stages in the evolution of the disease: a prodromal stage during which patients had rare seizures and minimal neurologic deterioration; an acute stage corresponding to the period of severe seizure occurrence, neurologic deterioration, and atrophy of the brain; and finally, a residual stage during which the seizure frequency decreases significantly. These stages are equivalent to the three phases described by Oguni et al. (3) (initial, progressive, and plateau phases) in the Montreal Neurologic Institute patient series. Yet Bien et al. are the first to describe differences in the duration of the initial stage, type, and severity of seizures and of residual deficit, depending on the age at onset of the disease. The authors divided the 13 patients into two groups: group 1 included eight patients whose seizures began before age 6 years, and group 2 included the five patients whose disease began in adolescence and adult age. Patients of group 1 had a significantly shorter prodromal phase (8 months vs 3.2 years). Whereas the duration of the acute phase was comparable between the two groups (mean, 8 months), the type of seizures and frequency was different. Simple partial seizures were the rule among patients of group 1, whereas those in group 2 were more likely to have complex partial and secondarily generalized tonic-clonic seizures but with a lesser frequency. The measured residual atrophy and neurologic deficits were significantly more severe among patients of group 1. Despite these differences, the histopathologic findings did not differ between the two patient groups.

Hart et al. (4) had reported 13 patients with RE that began in adolescence ($n = 5$) and adulthood ($n = 8$). These

COMMENTARY

Rasmussen's encephalitis (RE) is an inflammatory disease of the brain of unknown origin that involves in most in-

authors also identified a more benign course than that reported in childhood-onset RE. Yeh et al. (5) reported a patient with adult-onset RE whose seizures were controlled with traditional antiepileptic therapy, whereas Villani et al. (6) reported a 45-year-old woman with adult-onset RE that responded to therapy with human IV immunoglobulin. In their study, Bien et al. did not address therapeutic issues, and yet their findings raise important questions: (a) Does intervention with immunosuppressive therapy during the initial or acute stages minimize the seizure frequency, neurologic sequelae, and hemispheric atrophy in patients with group 2 RE? (b) Will surgical treatment with multiple subpial transection yield a permanent seizure remission in type 2 patients, in contrast to the transient reduction in seizure frequency reported by Morrell et al. (7) in type 1 patients? Of course, the early suspicion of RE in adolescents and adults will be pivotal for an early intervention.

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