GENETIC FACTOR IN ETIOLOGY OF FEBRILE SEIZURES

Investigators from Istanbul, Turkey, studied R43Q mutations of the gamma-aminobutyric acid A receptor (GABRG2) gene, located on the long arm of chromosome 5, in 44 children with febrile seizure (FS) and 49 without. FSs were simple in 28 (63.6%) and complex in 16 (36.4%). Heterogeneous R43Q mutation of gamma-aminobutyric acid A receptor g2 subunit occurred significantly more often in the patient group (36%) than in the control group (2%); $p<0.001$. The homozygous mutation carrier status was not different in the 2 groups. Family history of febrile convulsion and epilepsy was significantly higher in the study group than in controls ($p<0.01$). (Hancili S, Onal ZE, Ata P, et al. The GABAa receptor g2 subunit (R43Q) mutation in febrile seizures. **Pediatr Neurol** 2014 Apr;50(4):353-6).

COMMENTARY. The febrile seizure trait is inherited as a polygenic or multifactorial model or an autosomal dominant pattern with reduced penetrance [1]. Mutations of several genes have been linked to febrile seizures, including voltage-gated sodium, calcium, and potassium, and ligand-gated ion channels, nicotinic cholinergic receptor and gamma-aminobutyric acid A (GABAa) receptor. R43Q mutation of the GABAa receptor g2-subunit is involved in the cause of absence epilepsy and febrile seizure [2]. Twin studies reveal distinct genetic factors for different FS subtypes and sub-syndromes, especially FS+ [3].

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ENVIRONMENTAL FACTORS ASSOCIATED WITH FEBRILE SEIZURES

Investigators from Taichung, Taiwan, conducted a nationwide population-based retrospective study of the association between febrile seizure (FS) and allergic rhinitis. During an average 6.7 years follow-up of 1304 children with FSs, the incidence of allergic rhinitis in the FS group was higher, and after 11 years, the allergic rhinitis incidence was 4% higher than controls ($p<0.0001$). Risk of allergic rhinitis in the FS group is 1.21 times higher than in the control group, and the risk is even higher (18.9) in patients with more than 3 FS-related medical visits. Both disorders have similar cytokine profiles and viral infection association. (Lin W-Y, Muo C-H, Ku Y-C, Sung F-C, Kao C-H. Increased association between febrile convulsion and allergic rhinitis in children: a nationwide population-based retrospective cohort study. **Pediatr Neurol** 2014 Apr;50(4):329-33).

COMMENTARY. Fever and height of the body temperature as a measure of the FS threshold have an essential role in the mechanism of the FS. The cause of fever is almost always viral, most frequently HHV-6 in the United States and influenza in Japan. Some viruses have neurotropic properties, leading to the theory of a transient encephalitic

or encephalopathic process in some cases. Additional factors involved in the mechanism of the FS include a genetic susceptibility, age and maturation, and cytokine and immune response to infection [1]. The association of allergic rhinitis and FS in the present study was significantly higher in children 0.5 to 2 yrs of age (the age of susceptibility to FS), of male sex, and with frequent FS-related clinic visits. Children with FS had a higher association with other atopic comorbidities, including asthma (8.08% vs 5.62%, p=0.006) [2].

Allergies and immune reactions are proposed as factors in the etiology of FS [3]. In 1953, Dees, reporting on EEG observations in so-called "allergic epilepsy," emphasized the significance of occipital dysrhythmia in children with allergies complicated by convulsions [4]. Allergic disorders may also increase the risk of ADHD [5], and the risk of ADHD is increased in children with FS [6]. A significant association between proinflammatory cytokine, IL-1B, and both ADHD and FS may be a link in the mechanism of these disorders [6].

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SEIZURE DISORDERS

IV METHYLPREDNISOLONE FOR INTRACTABLE EPILEPSY

Investigators at King Abdulaziz University, Jeddah, Saudi Arabia, report their experience with IV pulse methylprednisolone in the treatment of children with severe drug-resistant epilepsy. Patients with infantile spasms, progressive degenerative, or metabolic disorders were excluded. Of 17 children aged 2-14 (mean 5.3) years, 88% had daily seizures and 13 (76%) had been admitted previously with status epilepticus. Cognitive and motor deficits were recognized in 82%. The epilepsy was cryptogenic in 47% and seizures were mixed in 41% (Lennox Gastaut in 4 (23%) and Doose syndrome in 2 (12%)). EEG showed focal or multifocal epileptiform discharges in 7 (41%) and generalized epileptiform discharges in 10 (59%). IV methylprednisolone 15 mg/kg/day, divided every 6 hours for 3 days was followed by oral prednisolone at 1-1.2 mg/kg/day once am for 1 week, then weaned slowly over 2 to 8 weeks (mean 3 wks). After follow-up for 6-24 months (mean 18), 6 (35%) became completely seizure free but 3 relapsed later, and 10 (59%) were improved. Those with mixed seizures were more likely to have a favorable response than those with one seizure type. No major side effects were noted, and 35% had improved alertness and appetite. (Almaabdi KH, Alshehri RO, Althubiti AA, et al. Intravenous methylprednisolone for intractable childhood epilepsy. **Pediatr Neurol** 2014 Apr;50(4):334-6).

COMMENTARY. A trial of add-on steroid therapy may be effective in children with intractable seizures of mixed type, apart from those with infantile spasms. Multiple