Interleukin-1 receptor antagonist and interleukin-1β-511 gene polymorphisms among Egyptian children with febrile seizures

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Abstract

Febrile seizures (FSs) are the most common form of childhood seizures. The higher levels of pro-inflammatory cytokines in children may induce seizures, and alternatively, higher levels of anti-inflammatory cytokines may act as a defense mechanism against seizures.

We aimed to investigate whether interleukin (IL)-1β-511 C/T (pro-inflammatory cytokine) (rs16944) and IL-1 receptor antagonist (IL-1Ra) (an anti- inflammatory cytokine) gene polymorphisms could be used as markers for prediction of susceptibility to FSs. The current study included 22 patients with FSs and 22 normal control subjects. All patients were subjected to thorough history taking, full neurological examination, electroencephalography, and peripheral blood sampling for genotype analyses. Detection of IL-1Ra gene polymorphisms was done using polymerase chain reaction (PCR), while a restriction fragment length polymorphism analysis of the PCR products was used for the detection of IL-1β-511 C/T gene polymorphisms. The mean age of onset of first febrile seizures was 15.7 months. Eighteen (81.8 %) cases had the criteria of complex FSs. Frequencies of alleles C and T for IL-1β-511 were 26/44 and 18/44, respectively, in FS patients and 22/44 for both in the control subjects. The CC genotype was significantly more common in the FS patients than in the control group. The IL-1Ra-I homozygote was more frequent in patients with FSs than in healthy controls. The IL-1Ra homozygous I/I and IL-1β-511 CC gene polymorphisms are associated with a higher susceptibility to febrile seizures, which may be useful markers for predicting the development of febrile seizures.

Keywords Febrile seizures . Interleukin-1 receptor antagonist . Interleukin-1beta-511