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E-Selectin S128R Polymorphism Leads to Severe Asthma

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Abstract:

The E-selectin mediates the interaction of activated endothelial cells with leukocytes and plays a fundamental role in the pathogenesis of asthma. It has been suggested that an S/R (Serine128Arginine) polymorphism of E-selectin alters ligand binding function. Our purpose in this study was to determine whether this Serine128Arginine polymorphism influences the risk of asthma and also to analyze the possible correlation of disease severity in Iranian patients with polymorphism of E-selection.

We studied human E-selectin gene polymorphism in 172 asthmatic patients and 173 healthy volunteers by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP). To determine the severity of the asthma's situation, a questionnaire was prepared requesting the following information: age, sex, clinical signs and symptoms and past medical history. After the participants filled in the questionnaire, all active or ex-smoker patients were excluded. A trained observer assessed airway reversibility, peak flowmetry and spirometry in asthmatic patients.

We found increased serum levels of soluble E-selectin (sE-selectin) in asthmatic patients compared with healthy subjects ($P < 0.0001$). Frequencies of the SS, SR, and RR genotypes were found as 66.3%, 31.4%, and 2.3% in the patients and 91.9%, 8.1%, and 0.0% in control subjects, respectively. The 128Arg allele was more prevalent in patients than controls (OR 5.78; 95% CI, 3.07-10.86, $P < 0.0001$). However, in this study the polymorphism was not associated with circulating sE-selectin levels. We found a direct correlation between the level of sE-selectin and the severity of asthma ($P = 0.001$). On the other hand, there was a close relation between 128Arginine carriage and disease severity ($P < 0.0001$).

These results suggest that the Ser128Arg polymorphism of the E-selectin gene is a genetic factor that may be associated with the severity of asthma.

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