BETA-2 ADRENERGIC RECEPTOR GENE POLYMORPHISM IN EGYPTIAN ASTHMATIC PATIENTS

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Abstract:

Background: Diverse factors, including gene polymorphism, influence the development of asthma predisposing an individual to atopy and airway hyper-responsiveness.

Objective: To explore the contribution of beta-2 adrenergic receptor (β2-AR) gene polymorphisms (Arg16Gly and Gln27Glu) to the risk and severity of adult bronchial asthma in Egypt.

Subjects and Methods: This study was included 75 Egyptian subjects divided into: Group I: 50 bronchial asthma patients subdivided into mild, moderate and severe asthma. Group II: 25 apparently healthy controls. Full history taking, physical examination, plain chest x-ray, pulmonary function tests, and laboratory investigations were performed. Serum IgE was estimated by ELISA. Detection of Arg16Gly and Gln27Glu polymorphisms was performed by PCR-based RFLP using fast-digest NcoI and BbvI restriction enzymes, respectively.

Results: Non-significant differences in Arg16Gly genotype and allele frequencies were found in asthmatics versus controls. There was significant increased Gln/Gln genotype and Gln allele but significant decreased Gln/Glu genotype of Gln27Glu in asthmatics versus controls. Combined haplotypes showed significant increased Arg16Arg-Gln27Gln but significant decreased Gly16Gly-Glu27Gln in asthmatics versus controls. As regard severity, there were significant increased Gln/Gln and 16Arg/Arg-27Gln/Gln in severe asthma (risk factors) while Glu/Glu was significantly decreased (protective). There was also significant increased 16Arg/Gly-27Glu/Glu haplotype in mild asthma and significant increased 16Gly/Gly-27Glu/Gln haplotype in moderate asthma (both protect against severity).
Conclusion: The isolated β2-AR Gln27Glu polymorphism and the combined Gln27Glu and Arg16Gly haplotypes but not the isolated Arg16Gly polymorphism might contribute to asthma risk and grades of severity.

Key Words: Bronchial asthma, β2-AR gene polymorphism

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