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ANALYSIS OF TGFb1 (Arg25Pro) GENE IN CHRONIC LIVER DISEASES

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Introduction

Chronic liver diseases (CLD) are a global issue, with complex diagnosis and treatment [1]. Genetic markers, combined with clinical and biochemical studies, aid in early diagnosis and prognosis of CLD progression [2].

The purpose of the research. To analyze TGFβ1 (Arg25Pro) gene's role in chronic liver diseases, focusing on progression, severity, susceptibility, and liver fibrosis.

Material and methods. The study involved 82 adult patients with chronic liver diseases (CLD), divided into two groups: chronic hepatitis (n=38) and liver cirrhosis with AML (n=38). Additionally, 80 healthy individuals without a history of liver disease served as the control group. Patients were selected from the Khorezm Regional Multidisciplinary Medical Center (Urgench) between 2020 and 2023. Polymorphic loci of the TGFβ1 gene (Arg25Pro) were analyzed using standard polymerase chain reaction (PCR) techniques, employing a programmable thermal cyclor from Applied Biosystems 2720 (USA). Statistical analyses were performed with the “OpenEpi, Version 2.3” software package. This study aimed to explore the distribution and clinical significance of TGFβ1 gene polymorphisms in relation to CLD progression and severity.



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Results. In the examined groups, analysis of the observed (H_o) and expected (H_e) genotypic frequencies of the TGF β 1 gene (Arg25Pro) showed no deviations from Hardy-Weinberg equilibrium ($P > 0.05$). Comparing the frequencies of polymorphic loci in patients with chronic liver diseases (CLD) and healthy controls revealed a statistically significant increase in the unfavorable Pro allele, rising 3.4 times ($\chi^2=7.0$; $P=0.01$; $OR=3.4$; 95% CI: 1.37–8.27), and a trend toward increased Arg/Pro heterozygote frequency by 2.3 times ($\chi^2=2.7$; $P=0.1$; $OR=2.3$; 95% CI: 0.85–6.32). Among chronic hepatitis patients, the Pro allele frequency increased 2.6 times ($\chi^2=3.0$; $P=0.1$; $OR=2.6$; 95% CI: 0.87–7.76), while no significant differences in Arg/Pro heterozygote frequency were observed ($\chi^2=1.0$; $P=1.0$; $OR=1.9$; 95% CI: 0.45–6.46). These findings suggest a potential association between the Pro allele and CLD progression,

Conclusion. The study of the TGF β 1 (Arg25Pro) gene in CKD patients suggests that the unfavorable Pro allele may act as a genetic predictor for CKD development, while Arg/Pro heterozygote carriage increases the likelihood of chronic hepatitis progressing to liver cirrhosis, highlighting its role in disease progression and severity.

References:

1. 'Arg25Pro (c.915G>C) polymorphism of transforming growth factor β 1 gene increases the risk of developing Graves' disease.' This study showed that the presence of the Pro25 allele is associated with an increased risk of developing Graves' disease.
(https://pubmed.ncbi.nlm.nih.gov/24742542/?utm_source=chatgpt.com)
2. 'Arg25Pro polymorphism of transforming growth factor-beta1 and its role in the pathogenesis of essential hypertension in the Russian population of the Central Chernozem Region.' The study established that the 25Pro allele and the 25ArgPro genotype are associated with a low risk of developing essential hypertension in men.
(https://pubmed.ncbi.nlm.nih.gov/18256755/?utm_source=chatgpt.com)