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Impact of patatin-like phospholipase domain-containing protein 3 (rs738409-G) polymorphism on post-transplant outcomes after liver transplantation for alcohol-related liver disease

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Introduction: We aimed to evaluate the association between patatin-like phospholipase domain-containing protein 3 (PNPLA3) polymorphism and post-liver transplantation (LT) outcomes related to alcohol relapse (AR).

Methods: We retrospectively analyzed data from patients receiving LT for alcoholic liver disease (ALD) from 04/2014 to 12/2017. Liver-related clinical outcomes were assessed by the gamma-glutamyltransferase (GGT) level and alcohol-related liver failure (ARLF). Genotyping was performed using prospectively collected DNA samples in both donors and recipients.

Results: A total of 83 recipients were enrolled. Post-LT AR occurred in 31 patients (37.3%). Thirty-one patients (14 AR, 9 abstainers) showed elevated GGT levels, and 3 AR patients experienced ARLF. In the multivariate analysis, rs738409-G allele carrier and heavy drinking (HRAR score ≥ 4) were independent risk factors for elevated GGT levels (odds ratio [OR] = 8.69, $p < 0.01$; OR = 13.07, $p = 0.01$) and ARLF (OR = 4.52, $p = 0.04$; OR = 19.62, $p = 0.03$). Among 15 heavy AR patients, being an rs738409-G allele carrier was related to GGT elevation ($p = 0.03$) and ARLF ($p = 0.04$), but it was not to GGT elevation in mild drinkers ($n = 16$) or abstainers ($n = 52$).

Conclusions: PNPLA3 polymorphism of the recipient genotype can independently affect the post-LT prognosis of LT patients for ALD, especially in heavy AR patients. Therefore, strong abstinence education is recommended in patients with this single nucleotide polymorphism.

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