Serum Glial Cell Line-Derived Neurotrophic Factor (sGDNF) Is a Novel Biomarker in Predicting Cirrhosis in Patients with Chronic Hepatitis B

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Abstract

Objectives: We assessed the potential of glial cell line-derived neurotrophic factor (GDNF) as a useful biomarker to predict cirrhosis in chronic hepatitis B (CHB) patients.

Methods: A total of 735 patients from two medical centers (385 CHB patients and 350 healthy controls) were included to determine the association of serum and tissue GDNF levels with biopsy-proven cirrhosis. The diagnostic accuracy of serum GDNF (sGDNF) was estimated and compared with other indices of cirrhosis.

Results: We showed significantly higher levels of sGDNF in CHB patients with fibrosis (28.4 pg/ml vs. 11.6 pg/ml in patients without) and patients with cirrhosis (33.8 pg/ml vs. 23.5 pg/ml in patients without). The areas under receiver operating curve (AUROCs) of sGDNF were 0.83 (95% confidence interval (CI): 0.80-0.87) for predicting liver fibrosis and 0.84 (95% CI: 0.79-0.89) for cirrhosis. Findings from the serum protein level and hepatic mRNA expression were consistent. Using the best cutoff to predict cirrhosis, we categorized the patients into sGDNF-high and sGDNF-low groups. The sGDNF-high group had significantly larger Masson's trichrome and reticulin staining-positive area, higher Scheuer score, and METAVIR fibrosis stage (all $p < 0.001$) but not steatosis. On multivariable regression, sGDNF was independently associated with cirrhosis with an odds ratio of 6.98 (95% CI: 1.10-17.94). Finally, we demonstrated that sGDNF outperformed AST to platelet ratio index, FIB-4, fibroscore, forn index, and fibrometer in differentiating F4 vs. F3.

Conclusion: Using serum, tissue mRNA, and biopsy data, our study revealed a significant potential of sGDNF as a novel noninvasive biomarker for cirrhosis in CHB patients.