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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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Autoren

Guangyue Yang Liping Zhuang Tiantian Sun Yee Hui Yeo Le Tao Wei Zhang Wenting Ma Liu Wu Zongguo Yang Yanqin Yang Dongying Xue Jie Zhang Rilu Feng Ebert Matthias P. Steven Dooley Ekihiro Seki Ping Liu Cheng Liu

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.