Accuracy of Noninvasive Fibrosis Scores to Detect Advanced Fibrosis in Patients With Type-2 Diabetes With Biopsy-proven Nonalcoholic Fatty Liver Disease

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Background: Recent guidelines have recommended screening for nonalcoholic fatty liver disease (NAFLD) and case finding of advanced disease with fibrosis in patients with type-2 diabetes (T2D). The aim of this study is to assess the accuracy of commonly used noninvasive scores to predict the presence of advanced fibrosis (AF) in a large cohort of diabetics in real-life settings.

Patients and methods: Using International Classification of Diseases, Ninth Revision (ICD-9) codes, all patients with the diagnosis of T2D who had a liver biopsy for suspected NAFLD between January 2000 and December 2015, were identified and analyzed. Patients with secondary causes of hepatic steatosis were excluded. AST/ALT ratio, aspartate aminotransferase to platelet ratio index (APRI), fibrosis-4 (FIB-4) index, and Nonalcoholic fatty liver disease Fibrosis Score (NFS) were calculated to predict advanced disease. Sensitivity, specificity, and area under the receiver operator curve were calculated and compared with liver biopsies to predict the overall accuracy of each score.

Results: A total of 1319 patients with T2D underwent liver biopsy for suspected NAFLD. After exclusions, 1,157 subjects were included in the final analysis. Our cohort consisted of 64.6% females and 88.4% were whites. Overall, 85% of the population was overweight or obese (body mass index>25 kg/m).

Liver biopsy showed 31.7% with AF [Nonalcoholic Steatohepatitis Clinical Research Network (NASH-CRN) stage 3 to 4]. In comparison to liver biopsy, for the diagnosis of AF, AST/ALT>1.4, APRI>1.5, FIB-4>2.67, and NFS>0.676 had reasonable specificities of 84.2%, 97.4%, 69.9%, and 93% but poor sensitivities of 27.4%, 16.5%, 6.7%, and 44.1%, respectively. Even at lower cutoff values of AST/ALT≥1, APRI≥1, and FIB-4≥1.45 sensitivities remained low at 60.7%, 27.9%, and 72.6%, respectively, except for NFS ≥-1.455 with sensitivity of 94.6%, but at this cutoff, its specificity decreased to 16.9%. The area under the receiver operator curve to detect AF was 0.62, 0.74, 0.77, and 0.72, respectively.

Conclusions: In this large cohort of adult patients with T2D and NAFLD, commonly used fibrosis scores had reasonable specificity, but poor sensitivity for detecting AF in diabetics. The development of reliable biomarkers for NAFLD/NASH in diabetics is urgently needed.