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Fibrosis scoring systems have 'modest' predictive value in general population

Andrew D. Bowser, December 10, 2019,
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Currently available fibrosis scoring systems appear to have only a modest predictive ability for development of severe liver disease in the general population, according to authors of a large, retrospective cohort study.

Of five noninvasive scoring systems evaluated, all did have high negative predictive value in the general population, according to authors of the study, which included data on more than 800,000 individuals in Sweden. However, their sensitivities were low, with most of the individuals who developed severe liver disease over a 10-year follow-up period initially classified as being at low risk for advanced fibrosis, according to the study authors, led by Hannes Hagström, MD, PhD, of the division of hepatology, Karolinska University Hospital, Stockholm.

The scoring systems tended to perform better in patients at higher risk for nonalcoholic fatty liver disease (NAFLD) at baseline, suggesting the best use of the tools is in patients at increased risk or who have liver disease indications, Dr. Hagström and coauthors wrote in a report on the study.

"Although useful in populations with a high prevalence of advanced fibrosis, current scores lack precision for usage in the general population for which the prevalence of advanced fibrosis is much lower," Dr. Hagström and colleagues said.

The scoring systems were derived from high-risk cohorts with liver diseases, the authors noted, stating that the disease prevalence in any given population will affect the performance of a test that's intended to diagnose that specific disease.

"New and improved" scoring systems should be developed to more effectively pinpoint patients with NAFLD who are at higher risk of a severe liver event, they added in the report, which appears in Gastroenterology.

The population-based cohort study by Dr. Hagström and colleagues was based on data from 812,073 patients enrolled in the Swedish Apolipoprotein Mortality Risk (AMORIS) cohort between 1985 and 1996. Investigators said they excluded patients under 35 and over 79 years of age, patients with severe liver disease at baseline, and those with a prior diagnosis of alcohol or drug abuse.

Investigators used available data to calculate five scores, including the AST to Platelet Ratio Index (APRI); the body mass index, AST/ALT ratio, and diabetes (BARD) score; the Fibrosis-4 (FIB-4) score; Forns Index; and NAFLD Fibrosis Score (NFS).

At baseline, 0.5%-8.0% of patients were considered to be at high risk for advanced fibrosis, depending on the test used, investigators said. With up to 10 years of follow-up, the proportion of individuals who developed severe liver diseases (cirrhosis, liver failure, hepatocellular carcinoma, liver transplantation, or decompensated liver disease) was 0.3%-0.6%, and with the maximum 27 years of follow-up, the incidence ranged from 1.0% to 1.4%.

There was a "strong association" between baseline risk of fibrosis and development of severe liver diseases; however, the majority of cases occurred in patients deemed low risk at baseline, Dr. Hagström and colleagues noted in their report.

For example, 12.4% of individuals classified as high risk by APRI developed severe liver diseases over 10 years, compared to just 0.4% of the low-risk group, yet out of 723 cases, 502 (69%) occurred in the low-risk patients, the data show.

Hazard ratios did increase with risk level, and at the high-risk level, adjusted hazard ratios ranged from 1.7 (95% confidence interval [CI], 1.1-2.5) for the high-risk BARD patients to 45.9 (95% CI, 36.1-58.3) for the high-risk APRI patients, investigators reported.

Taken together, results of this study demonstrate that the performance of all scores was low in an unselected population, according to investigators.

Of all tests, APRI was least likely to falsely classify patients who never developed severe liver diseases and had an intermediate-risk group of 4%, the lowest of any test, which are findings that may have implications for routine primary care, according to investigators.

"APRI could be the currently best score to exclude a high risk of liver-related events in the near future, and thereby reduce unnecessary testing in a general population," they said in a discussion of their results.

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