

# Sensitivity and Specificity Analysis of Hepatic Enzyme Blood Tests for the Diagnosis of Nonalcoholic Fatty Liver

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**Abstract:** Background/Aims: Hepatic enzyme blood tests including analyses of serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) and gammaglutamyl transpeptidase ( $\gamma$ -GTP) levels are widely performed as screening tests, however, the performance of such tests remains controversial. The aim of this study was to evaluate the sensitivity and specificity for a diagnosis of nonalcoholic fatty liver by AST, ALT,  $\gamma$ -GTP and the body mass index (BMI). Methods: Among the 5901 subjects without overt liver diseases who were confirmed by health checkups provided by a commercial health care center in 1995 and 2000, a receiver operating characteristic (ROC) analysis was performed to evaluate the performance of AST, ALT,  $\gamma$ -GTP and BMI for a diagnosis of fatty liver based on ultrasonography findings. Subjects with hepatitis as diagnosed by HBs antigen positive or HCV antibody positive and excess alcohol drinkers with a daily alcohol intake more than 180 ml of Japanese sake or equivalent and were thus excluded from the analysis. Results: The area under the ROC curve of ALT was largest among the four indexes. The area under the ROC curve of ALT was significantly greater than that of the BMI for men. The cutoff values that minimized the misclassification for a diagnosis of fatty liver of AST, ALT and  $\gamma$ -GTP were lower than the current cutoff values used in health checkups in both males and females. Conclusion: Based on our findings, ALT had better performance for a diagnosis of fatty liver than BMI. The evaluation of the results of hepatic enzyme blood tests must be reconsidered.

**Key words:** Fatty liver, Receiver operating characteristic curve, Screening test, Hepatic enzyme blood test