

Distribution of the AST/ALT (de Ritis) ratio in a cohort of patients with NASH cirrhosis and portal hypertension and correlation with portal pressure

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In patients with Non-Alcoholic Fatty Liver Disease (NAFLD), an increased AST/ALT ratio may indicate the progression to liver cirrhosis.

In a well-documented cohort of patients with liver cirrhosis due to NASH and hemodynamically measured portal hypertension, we evaluated transaminases, the de Ritis ratio (AST/ALT), as well as their correlation with the Hepatic Venous Pressure Gradient (HVPG).

The corresponding baseline data of patients participating in a phase 2 clinical trial (NCT02462967) were explored. The presence of NASH and liver cirrhosis (Ishak stage 5 or 6) was confirmed on liver histology by a central pathologist. Portal hypertension was evaluated hemodynamically by measuring the gradient between wedge pressure and free hepatic vein pressure (HVPG).

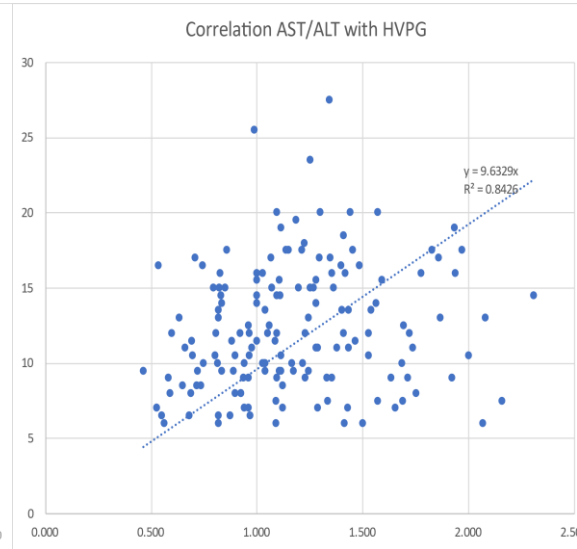
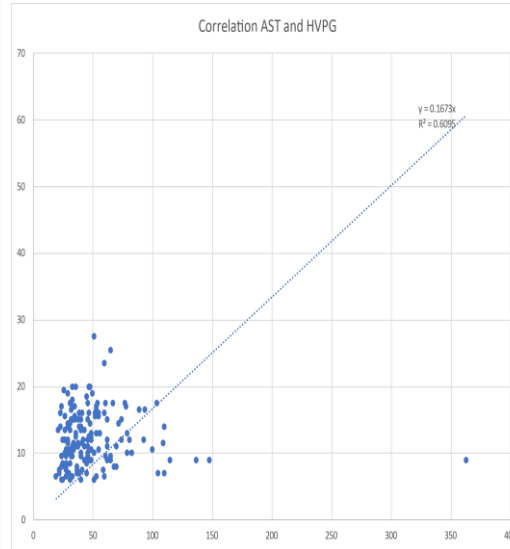
Eligible patients had a HVPG gradient of 6 mm Hg and above. Patients were further classified as having moderate portal hypertension (MPH, HVPG 6 to <10) or clinically significant portal hypertension (CSPH, HVPG ≥ 10). AST and ALT were measured at baseline and their ratio calculated.

Patients with decompensated cirrhosis, an AST or ALT ≥ 10 x upper limit of normal, or a gradient below 6 mm Hg were excluded. Descriptive statistics were used and linear correlations between AST, ALT, AST/ALT and HVPG were analyzed.

A total of 161 patients, 70% females and 30% males, 98% white and 17% Hispanic, were included in the study. The mean (SD) age was 58 (8) years. The mean (SD) AST, ALT, AST/ALT and HVPG were 50 (34) UI/L, 47 (34) IU/L, 1.17 (0.4), and 12.2 (4) mm Hg, respectively.

The AST/ALT (de Ritis) ratio ranged from 0.46 to 2.3. The ratio was above 1, 0.9 and 0.8 in 65%, 74%, and 86% of patients, respectively. 108 patients had clinically significant portal hypertension (CSPH) and 53 moderate portal hypertension (MPH). The AST/ALT ratio for CSPH and MPH were 1.21 and 1.09, respectively.

The coefficient of correlation (R^2) between ALT, AST, AST/ALT and HVPG were 0.55, 0.61, and 0.84, respectively.



An AST/ALT (de Ritis) ratio above 1 is frequently seen in patients with compensated NASH cirrhosis and portal hypertension.

The AST/ALT ratio is strongly correlated with HVPG.

The AST/ALT ratio could help physicians to suspect cirrhosis in a patient with NAFLD. When cirrhosis is present, the ratio provides a simple non-invasive way to estimate the degree of portal hypertension.

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