

Poor correlation of liver transaminases with obesity: a retrospective analysis of data on 50204 adults in the UAE

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Introduction:

Non-alcoholic fatty liver disease (NAFLD) affects some 30% of the general population in many parts of the world including the US and is a common reason for raised serum markers of hepatocyte function including alanine transaminase (ALT) and/or aspartate transaminase (AST). Prevalence of hypertransaminasaemia and NAFLD and the strength of their association among UAE population is not known.

Methods:

Electronic database of patients (n=116835) attending Imperial College London Diabetes Centre (ICLDC) was accessed and relevant data on patients above age 18 (n=50204; 47.5% male, 52.5% female) including age, ALT, AST, BMI, gender and waist circumferences were retrieved. Patients with ALT and AST over five times the upper limit of normal (n=35), and those with unknown glucose tolerance status were excluded from the analysis (n=10629). Patients at high risk of NAFLD (defined as ALT ≥ 30 for males and ALT ≥ 19 for females) and those with ALT and or AST above the normal range ((ALT ≥ 45 , AST ≥ 35) were identified. SPSS 20.0 was used for statistical analysis.

Results:

Elevated ALT and AST were seen in 15.8% and 8.8% of men respectively. Whereas in women ALT was high in 5.3% and AST in 5.5% of patients. 39.5% of men and 45.0% of women were identified as high risk for NAFLD as defined by ALT thresholds of ≥ 30 and ≥ 19 U/l for men and women respectively (Prati, et al, 2002). Mean ALT and AST levels were 26.3 ± 17.5 and 21.6 ± 10.5 U/L respectively. These values were higher in men than women (27.1 ± 18.8 and 22.1 ± 11.4 v 25.5 ± 16.2 and 21.1 ± 9.6 U/L). There was a significant, but weak correlation between liver transaminases and BMI (ALT: $p < 0.001$, $r = -0.033$; AST: $p < 0.001$, $r = -0.032$), and age (ALT: $p < 0.001$, $r = 0.072$; AST: $p < 0.001$, $r = 0.064$). No correlation was seen between waist circumference and ALT (p value= 0.18) or AST (p value =0.4).

Conclusions:

Relying on elevated AST and/or ALT can lead to underestimation of the magnitude of the NAFLD prevalence. Other screening methods including liver ultrasound should be employed in the high risk UAE patients including those with obesity and diabetes.