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The Correlation between Body Mass Index and Levels of Serum Liver Enzymes of 18-32 Aged Healthy Individuals

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Background: Elevated levels of serum liver transaminases and gamma glutamyl transferase (GGT) are good indicators of liver cell and hepatobiliary damages, respectively. But, increased levels of these enzymes mostly prevailed as asymptomatic and eventually leading to chronic hepatic damages. The obesity has been identified as one of the risk factors of liver diseases. If it is possible to build-up a correlation between these enzyme levels and Body Mass Index (BMI), people can go for screening tests by concerning their BMI.

Objectives: To investigate the correlation between BMI and serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and GGT

Methods: This was a descriptive cross-sectional study. Thirty healthy subjects from each BMI category i.e., underweight (<18.5 kg/m^2), normal weight (18.5-22.9 kg/m^2), over-weight (23-24.9 kg/m^2) and obese (≥25 kg/m^2), belonged to 18-32 years were recruited to the study. The enzymes ALT, AST and GGT were analyzed by Mindray BS-240 Full Automatic Biochemistry Analyzer.

Results: In both genders, the highest serum liver enzyme levels (ALT, AST and GGT) were associated with the obese group while the lowest serum liver enzyme levels were associated with the underweight group. There was a significant positive moderate linear correlation between ALT level and BMI in both females ($r = 0.394$, $p = 0.000$) and males ($r = 0.550$, $p = 0.000$). Although there was a significant positive moderate linear correlation between AST level and BMI in males ($r = 0.411$, $p = 0.006$), there was no significant linear correlation between AST level and BMI in females ($r = 0.216$, $p = 0.060$). Though there was a significant positive moderate linear correlation between GGT level and BMI in males ($r = 0.336$, $p = 0.027$), there was a significant positive but a weak linear correlation between GGT level and BMI in females ($r = 0.231$, $p = 0.043$).

Conclusion: ALT can be suggested as the best liver enzyme that can be used in screening purposes by concerning BMI, since it has the strongest correlation with BMI in males and females.

Keywords: *Alanine aminotransferase, Aspartate aminotransferase, Body Mass Index, Gamma glutamyl transferase*