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# SERUM ALANIN AMINOTRANSFERASE (ALT) ACTIVITY IN OVERWEIGHT AND OBESE SUBJECTS

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## Abstract

**Introduction:** ALT activity is frequently observed among overweight obese subjects, and has been used as a marker of nonalcoholic fatty liver disease and nonalcoholic steato-hepatitis. The present study aimed to know the prevalence of ALT elevation in overweight and obese subjects and to determinate the association between ALT level and anthropometric and biochemical parameters.

**Methods:** This cross-sectional was conducted among a sample of 100 overweight (BMI in kg/m2 >25) adults, 47 male (47%) and 53 female (53%), with median age 46.40+/-10.89 years. Blood samples were drown for the measurements of total bilirubin, ALT, glucose, insulin, cholesterol, HDL-cholesterol and triglycerides. Insulin resistance (IR) was calculated by means of the homeostasis model assessment. It was assumed IR when the HOMA-IR >3.7 and BMI >27.5kg/sqm. Fatty liver was diagnosed by ultrasonography detection of the most characteristic features of fatty infiltration of the liver, regarding to its echo texture, echo penetration, live-diaphragm differentiation of echo amplitude and the clarity of the liver blood vessel structure. The scoring system was used in order to graduate the severity of liver pathology. Hi-square test were used for comparison of mean values of ALT by the number of components to the metabolic syndrome. Logistic regression analysis was performed to determinate the risk of elevated ALT according to the number of component of anthropometric and metabolic syndrome. P> 0.005 was considered statistically significant.

**Results:** Overall 34 were (34%) overweight, 36 had obesity (36%) grade I, 19 grade II (19%) and 11 obesity (11%) grade III. Elevated ALT levels was seen in 23% of the subjects and were documented mostly in the category of obesity grade II (12 of 19 subjects) and obesity grade III (11 of 11 participants), respectively 48.8+/-4.56UI/l and 89.7+/- UI/l. ALT concentration was significantly correlated with anthropometric criteria, such as BMI ($p<0.001$) and abdominal parameter ($p<0.001$), severity of fatty liver infiltration ($p<0.001$) and insulin resistance ($p<0.001$). Logistic regression model shown that the prevalence of ALT elevation was positively associated with increasing BMI ($p=0.028$) and blood concentration of insulin ($p=0.028$).

**Conclusions:**The current study established overweight and obesity as a major risk factors for ALT elevation and that BMI and fasting insulin were the strongest risk factors for that elevation of serum concentration ALT.

**Key words:** ALT, overweight, obesity, fatty liver infiltration, non-alcoholic steato-hepatitis.

## Introduction

TThe prevalence of overweight and obesity in adults, as well in children, are rapidly increasing, nearly doubled since 1980, becoming a very serious health problem. Overweight and obesity are in fact the fifth leading risk for global health. The WHO estimates that in 2005 approximately 1.6 billion people worldwide were overweight and at least 400 million adults were obese. They further project that by 2015, approximately 2.3 billion adults will be overweight and that at least 700 million will be obese (1).

Non-alcoholic steato-hepatitis is considered as hepatic manifestation of the metabolic syndrome, a set of disorders which include obesity, diabetes mellitus, dyslipidemia, atheroschlerosis and hypertension and etiologically associated with insulin resistance (2,3). Non-alcoholic steato-hepatitis is classified into 2 categories : simple fatty liver, which has a favorable clinical outcome, and non-alcoholic steato-hepatitis, which can result in chronic liver disease, with the risk of progression to liver cirrhosis or hepatocelullar carcinoma (4,5).

Non-alcoholic steato-hepatitis is considered the major cause of abnormal liver function test of unknown