Multiple Risk Factors for Non-Alcoholic Fatty Liver Disease in Obese Children and Adolescents

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It is a registry study, 226 morbidly obese patients were recruited in the present study and they had undergone preoperative blood tests and liver ultrasound. Different tests were done for preoperative assessment which includes blood tests e.g. Hb level, blood sugar, TG, SGOT, SGPT, GGT, alkaline phosphatase, serum albumin and bilirubin, T4, TSH and the levels of cortisone both in the morning and evening. Blood pressure was measured and liver ultrasound was done which considered the most commonly used modality for the diagnosis of a fatty liver. The sonographic findings of fatty liver include increased echogenicity of the liver parenchyma and blurring of the vascular margins.

Enrolled patients were evaluated to see the incidence of fatty liver in obese patients. The data were analyzed based on overall and liver status (normal or fatty) to see if there is any significant difference between study groups in terms of abdominal ultrasound and liver function.
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Abstract

**Background:** Obesity is associated with many risk factors as fatty liver and a higher risk of death. Bariatric (weight loss) surgery for obesity is usually only considered in the last step to the morbid obese patients.

**Objective:** The aim of this study was to evaluate the association between obesity and liver fat content in order to evaluate the risk factors associated with obesity in both children and adults.

**Design:** The sample study was eligible for surgery that have a body mass index (BMI) greater than 40 or greater than 35 with some related conditions such as type fatty liver or type 2 diabetes mellitus which was detected by preoperative assessment which was conducted in 226 morbidly obese patients undergoing surgery for obesity. Assessment included blood tests in the form of investigations (blood picture, liver enzymes, lipid profile, blood sugar, insulin and glucagon hormones). Blood pressure was measured and liver ultrasound was done for the entire sample. Then the sample was divided into two groups according to liver condition (fatty liver and normal liver).

**Results:** Of the 226 patients enrolled in the study, 97 (43%) has fatty liver and 129 (57%) has normal liver structure. The body mass index (BMI) of both groups (fatty liver and normal liver) for “children and adults” was of very high significance (p-value = 0.000) with average of 44.42±0.71 and 49.89±1.1 for normal liver patients and fatty liver patients respectively. Obesity has proven to appear more in childhood 162 (76.8%), followed by adults 30 (4.2%), and then at the age of puberty 19 (9%) while 15 (6%) was not detected. Liver enzyme assessment revealed that only serum bilirubin showed significance (p-value = 0.006) between the 2 groups of patients. Diabetes showed significance (p-value = 0.031) in fatty liver patients. For lipid profile and hypertension there was no significance.

**Conclusion:** Obesity is becoming a major health problem as it is considered a risk factor in metabolic diseases and fatty liver. It is also becoming more popular in children increasing the incidence of its morbidity disorders due to the longer exposure. Bariatric surgery for morbid obesity with multiple risk factors is usually only considered when all other treatments have failed.
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