

Rate of Fatty Liver Disease in Najran Patients between 20-60 Years Old at King Khalid Hospital (Dec 2011-Dec 2012)

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Abstract: *The aim of this study is to evaluate the results of liver examination by ultrasound in Najran patients during the period Dec 2011- Dec 2012, specifically to discover the rate of incidence of fatty liver and its relationship to risk factors. This is a retrospective, descriptive and quantitative case series using data collected from King Khalid hospital in Najran during the period Dec 2011- Dec 2012, where 957 patients had undergone ultrasound examination for different abdominal diseases. Data of this study was collected using a check list from the PACS (picture archive and communicating system) and the results were analyzed by using SPSS computer system. Data for a total of 957 patients who had completed abdominal ultrasound were collected. 319 were found to have fatty liver as diagnosed by ultrasound. The mean age of the study group was (49.6 ± 14.1), the mean weight was (78± 6.12), and an elevated level of ALT (alanine aminotransferase), AST (aspartate aminotransferase) was detected in 55.7 % and 43.2% respectively . A BMI (Body mass index) > 25kg/m2 was detected in 80 % of the patient. The prevalence of NAFLD (non alcoholic fatty liver disease) was 33.3 % and it was more common in females (178, 55.4%) than in males (141, 44.1%). It is highest in the age group 40-60 years old. Diabetes was present in 24.1 % (77 patients with high fasting glucose), obesity in 45.7% (147 patients). Of the all patients, high cholesterol was present in 23, 7 % of the total. The prevalence of fatty liver in Najran patients is high. It is more common in the female than male. Obesity and diabetes are the common risk factors associated with fatty liver disease.*

Keywords: Fatty liver ultrasound Rate

1. Introduction

Hepatic steatosis or fatty liver is an infiltration of fat, mainly triglyceride, inside hepatocytes, usually exceeding 5% of the liver weight (1). Traditionally, fatty liver has been considered as a benign and reversible condition, usually the expression of a non-specific response of the liver (cause) metabolic stress of different origin (2, 3).

Non-alcoholic fatty liver disease (NAFLD) is a clinical/biochemical condition characterized by fatty liver with or without necro-inflammation and fibrosis and is considered the hepatic expression of the metabolic syndrome (4).

NAFLD is now recognized as the most common liver disease in the United States, with a prevalence of approximately 5% in the general population and reaching 25 % to 75% in patients with obesity and type 2 diabetes mellitus. NAFLD is the most common liver disease in the Western industrialized countries. While it was assumed initially that obese women are particularly at risk for developing NASH (non-alcoholic steatohepatitis), it is well established nowadays that NASH may also occur in lean men and in children (5, 6).

Overweight and obesity are co-existing risk factors for fatty liver in Saudi Arabia and it is more prevalent in females. A prevalence of 7-10% has been reported in the general population of Saudi Arabia (7, 8). In Saudi Arabia, the prevalence of NAFLD as evaluated by computed tomography is about 10% (6). The prevalence of overweight and obesity is increasing in Saudi Arabia amongst Saudis and expatriates, especially in females due to the changes in dietary habits and a sedentary life style. Ultrasound appears

to be a useful non-invasive tool to determine liver involvement with the fatty liver in obese adults even in the absence of hypertransaminasemia (6). Although non-invasive diagnostic procedures, such as ultrasonography or computed tomography, have become sufficiently sensitive in order to diagnose fatty liver, in clinical practice it is still impossible to distinguish between simple steatosis and steatohepatitis without performing a liver biopsy. However, it is often difficult and sometimes unethical to propose a liver biopsy to a subject who is apparently healthy, particularly in view of the lack of an effective therapy. Therefore, in the light of new knowledge, fatty liver, especially macrosteatosis when associated with liver necrosis or inflammation (NASH), is increasingly recognized as a condition that could evolve into fibrosis, cirrhosis and, possibly, hepatocellular carcinoma (9-10). Fibrosis leading to cirrhosis can accompany virtually any chronic liver disease that is characterized histologically by the presence of hepatobiliary distortion and/or inflammation (11). The majority of studies available on the epidemiology of fatty liver have been performed in selected series and with retrospective designs and not on the general population (9).

Ultrasound is the noninvasive imaging tool of choice in the clinical diagnosis of NAFLD. The liver displays a homogeneous hyperechogenicity (bright liver) and, if more than 50% of the hepatocytes contain fat, its lower margin usually becomes rounded. If more than 30% of hepatocytes are fat-laden, ultrasound diagnosis of hepatic steatosis has a sensitivity of 85% (12). Hepatic MRI (Magnetic Resonance Imaging) has a number of advantages, including operator independence and reproducibility and the possibility of acquiring in-phase (water) and opposed-phase (fat) images in one breath hold. Like ultrasound, MRI cannot distinguish NASH from simple steatosis or detect the presence of

fibrosis (13). Non-contrast CT scan of the abdomen gains accuracy in predicting steatosis only when the steatosis is greater than 30% (14).

The aim of this study is to screen the liver of Najran patients between (20-60) years old in King Khalid Hospital during the period Dec 2011- Dec 2012 to assess the prevalence (rate) of fatty liver and its relation with risk factors.

2. Material and Methods

This is a retrospective, cross sectional study using data from King Khalid Hospital in Najran, with an aim to assessing the rate of fatty liver among Najran patients 20-40 years old during the period Dec 2011 to Dec 2012 using ultrasonography and CT scan. The data for 957 patients who had undergone ultrasound for different abdominal disease was collected. 319 cases were found to have fatty liver. Data of this study were collected by check list from King Khalid hospital using PACS (picture archive and communicating system) which included personal information and information from the result of the ultrasound and CT scan examinations. Fatty liver was diagnosed by ultrasonography using an ATL HDI 5000 abdominal probe at 2.5-3 MHz. Longitudinal, sub-costal ascending and oblique scans were performed.

The ultrasonographic criteria of liver, kidney echo discrepancy, presence of hyperechoic (bright) echo penetration into the deep portion of the liver and clarity of liver blood vessel structures were used to diagnose fatty liver. Ethical aspect was very carefully considered at the time of the study informed and verbal consent was taken from King Khalid hospital and Najran university to preformed and published the study.

3. Data Analysis

Statistical analyses were performed using the SPSS software (Statistical Package for the Social Sciences).

4. Result

Data for a total of 957 patients who had undergone abdominal ultrasound were collected. 319 were diagnosed to have fatty liver disease. 10% of the patients had been given a CT scan. The mean age of the study group was (49.6 ± 14.1), mean weight was (78 ± 6.12). An elevated level of ALT (alanine aminotransferase) and AST (aspartate aminotransferase) was detected in 55.7% and 43.2% of the patients, respectively. All investigations for liver enzyme were not done in all patients. A BMI (Body Mass Index) > 25kg/m² was detected in 80% of the patients. The prevalence of NAFLD was 33.3% and it was more common in 178 females (55.4%) than in 141 males (44.1%). See figure 1. It is highest in the age group 40-60. In the patients with NAFLD diabetes (high fasting glucose) was present in 77 (24.1%) of the patients; obesity in 147 patients (45.7% of all patients); high cholesterol was present in 23 patients (7%), (see figure 2) and 182 of the patients (57%) had hepatomegally as assessed by ultrasound.

Table 1: Characteristic of Study group. Mean ± SD (Standard Deviation)

Variable	Value
Age year	49.6 ± 14.1
Sex %	Male 44.2 %
	Female 55.4%
Diabetes %	24.10%
Obesity %	45.70%
High cholesterol%	7%
Hepatomegally %	57%

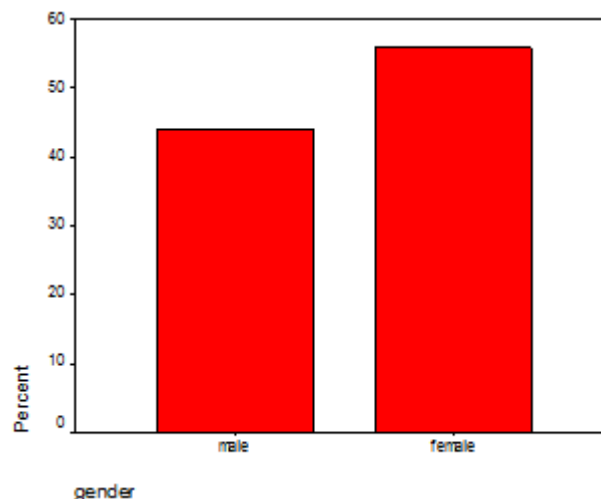


Figure 1: Relationship between NAFL and patient gender in study group

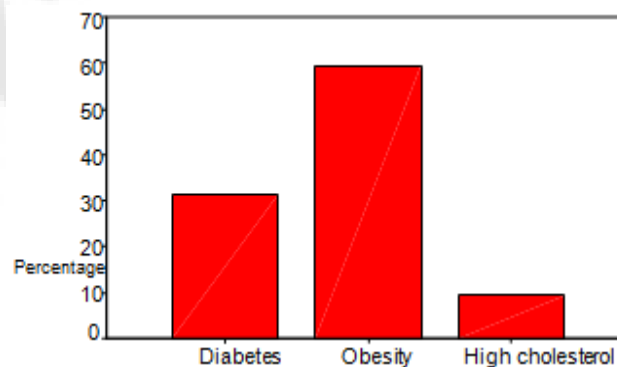


Figure 2: Risk factors associated with fatty liver

5. Discussion

Fatty infiltration of the liver can be detected by ultrasonography or CT scan (15). Since the fat distribution in the liver is uneven, the sensitivity of these imaging techniques for fatty infiltration is only 60% (16, 17). However, this sensitivity may increase to 80 to 90% when more than half are hepatocytes in the image region infiltration. The rate of NAFL, as diagnosed by ultrasound in our study population, was high (33.3%) and it was more common in 178 female (55.4%) than in 141 male (44.1%) patients and this agrees with a previous study done on obese patient in the western part of Saudi Arabia (18).

To our knowledge, this is first study to detect the rate of FLD using ultrasonography done in Najran-King Khalid Hospital. In Saudi Arabia, the prevalence of NAFLD as evaluated by computed tomography is about 10% (6). Our study found that only 10% of the patients had a CT scan.

Overweight and obesity are co-existing risk factors for fatty liver in Saudi Arabia and it is more prevalent in females. This agrees with our study which shows a strong relationship between obesity and fatty liver.

The number in the fatty liver disease group was small. This is probably due to using a PACS system in operation for only one year in Najran-King Khalid Hospital.

The majority of patients with fatty liver are asymptomatic (19). Some patients may come for evaluation of hepatomegaly, others present with mild abnormalities of the serum aminotransferases and alkaline phosphatase detected on routine visits to their physicians or detected incidentally by sonograms and/or a computed tomography (CT) scan performed to investigate other conditions.

Fatty liver can present with non-specific abdominal discomfort. In addition, patients with fatty liver of different etiologies will have systemic symptoms and signs related to their underlying disorders. In our patients the presenting symptoms were more or less in accordance with that reported by Matteoni (20). The commonest underlying risk factors for FLD in the study population were similar to those reported earlier (19, 21, 22) (Table.2).

Table 2: Comparison of studies of patients with NAFLD

Author	n	Age (years)	Female (%)	Diabetes (%)	Obesity (%)
Bacon ²¹	33	47	42	21%	39
Ludwig ²²	20	54	65	50%	90
Lee ¹⁹	49	53	78	51%	69
Matteoni ²⁰	132	53	53	33%	70

6. Conclusion

The prevalence of fatty liver in Najran patients is high. It is more common in females than in males. Obesity and diabetes are the common risk factors associated with fatty liver. A prospective study which includes a large sample size is needed in the future.

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