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Original Research Article

Screening for Hepatic Fibrosis Using The FIB-4 Biological Score in Obese Patients: A Case Report of 70 Patients

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Abstract

Non-alcoholic fatty liver disease (NASH) has become the most widespread liver disease in the world, mainly due to obesity and metabolic syndrome. We conducted a retrospective study, selecting the records of patients followed for obesity over a 2-year period. All patients over 18 years of age, with a BMI greater than 30kg/m2, without diabetes or hypertension were included. After eliminating patients with chronic liver disease, thrombocytopenia or elevated liver enzymes associated with other pathologies, notably muscular, drug or thyroid disease, we collected clinical and biological data. The FIB-4 score was calculated according to the formula: (age (years) × ASAT (U/L)/platelets (PLT) (109/L) × √ALAT (U/L)). We found that in 50 patients, a FIB-4 score below 1.30 was associated with a high negative predictive value, suggesting that severe fibrosis was unlikely in these cases. In the zone of uncertainty, corresponding to FIB-4 values between 1.30 and 2.67, we identified 18 cases, and which require further evaluation to accurately determine the level of fibrosis. Two cases had a positive predictive value for advanced fibrosis, underlining the need for early and specialized management. These results may help to improve clinical management by identifying patients at risk of severe fibrosis and providing them with the appropriate treatment.

Keywords: NASH, FIB- 4 score, obese patients, liver.

INTRODUCTION

Non-alcoholic fatty liver disease (NASH) has become the most prevalent liver disease in the world, mainly due to obesity and metabolic syndrome. Its increasing incidence makes it a major cause of liver disease morbidity and mortality, with projections suggesting that it could become the main reason for liver transplantation in Western countries. The management of NAFLD presents challenges, particularly in terms of classification, early diagnosis and prevention.

Most patients with NASH are overweight or obese. Obesity is a key predictor of advanced liver fibrosis, associated with more than three times the risk of all-cause and liver-related mortality.

Current guidelines advocate initial screening for advanced liver fibrosis in patients with non-alcoholic fatty liver disease (NASH) using simple non-invasive serological tests.

These biomarker scores are preferred due to their cost-effectiveness, as they are based on available clinical information and routine laboratory tests. FIB-4 (fibrosis index-4) is a biomarker of severe fibrosis risk based on a specific algorithm for patients under 70 years of age.

The aim of our study is to analyze the use of the FIB-4 score as a screening tool for liver fibrosis in obese patients, with a view to improving early detection of this complication in this at-risk population.

PATIENTS AND METHODS

We conducted a retrospective study, selecting the records of patients followed for obesity over a 2-year period. All patients over 18 years of age, with a BMI greater than 30kg/m2, without diabetes or hypertension were included. After eliminating patients with chronic liver disease, thrombocytopenia or elevated liver enzymes associated with other pathologies, notably muscular, drug and thyroid disorders.

Clinical and biological data were collected. The FIB4 score was calculated according to the formula: (age (years) × ASAT (U/L)/platelets (PLT) (109/L) × √ALAT (U/L)).

RESULTS

➢ **Epidemiological data:**

1. Age:

The mean age of our patients was 41 years, with extremes of 21 and 70 years. The majority of patients were relatively young adults, the most frequent age group being (30-69 years), i.e. 54 patients, corresponding to 77.1%.

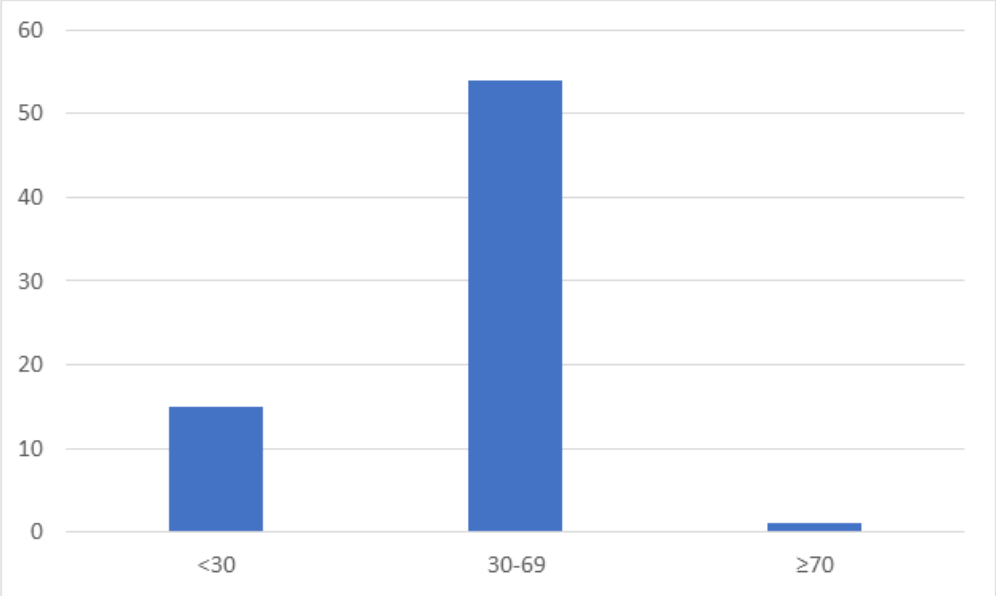

Figure 1: Age Distribution

2. Gender

In our series, 67 women (96%) and 3 men (4%) were predominantly female.

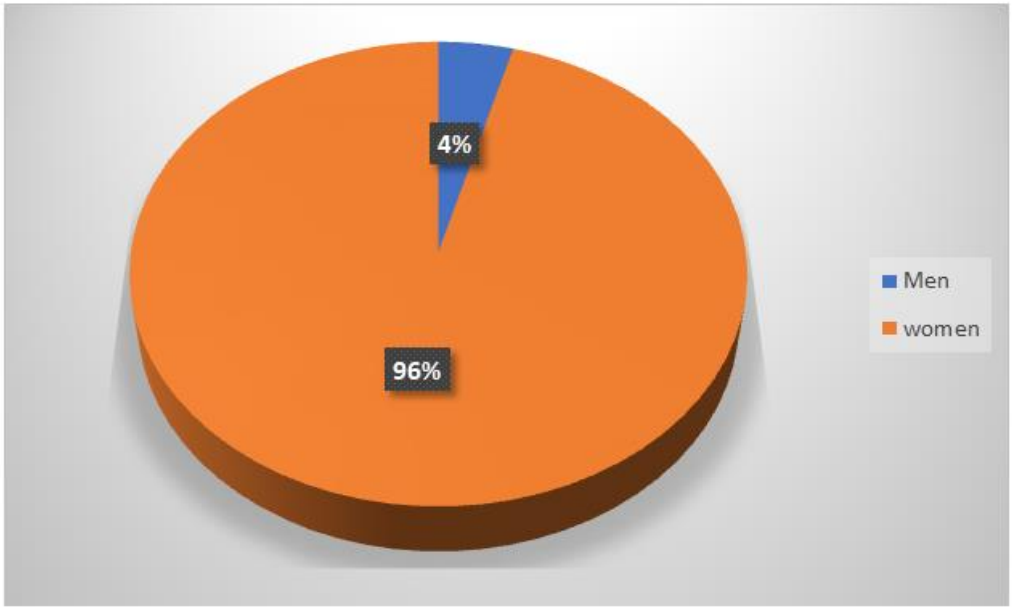

Figure 2: Gender distribution

➢ **Body mass index:**

Our patients' body mass index ranged from 32 to 60 kg/m².

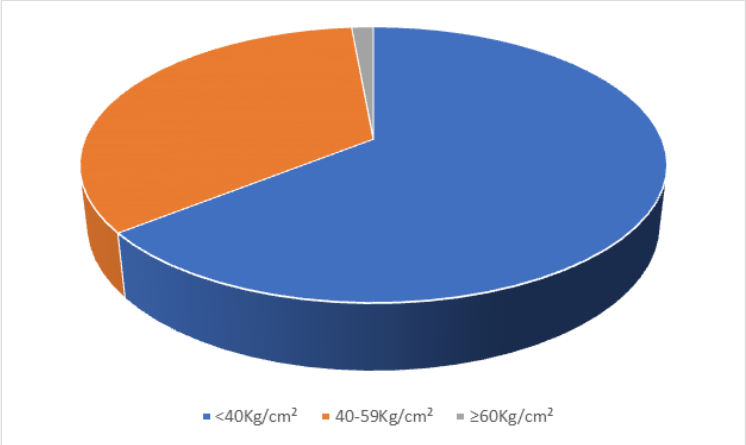

Figure 3: BMI distribution

➢ **Calculating the FIB-4 score:**

A FIB4 score < 1.30 has a high negative predictive value, allowing the exclusion of severe fibrosis - this was the case for 50 patients. The uncertainty zone between 1.30-2.67 corresponds to 18 cases, and 2 cases have a positive predictive value for advanced fibrosis.

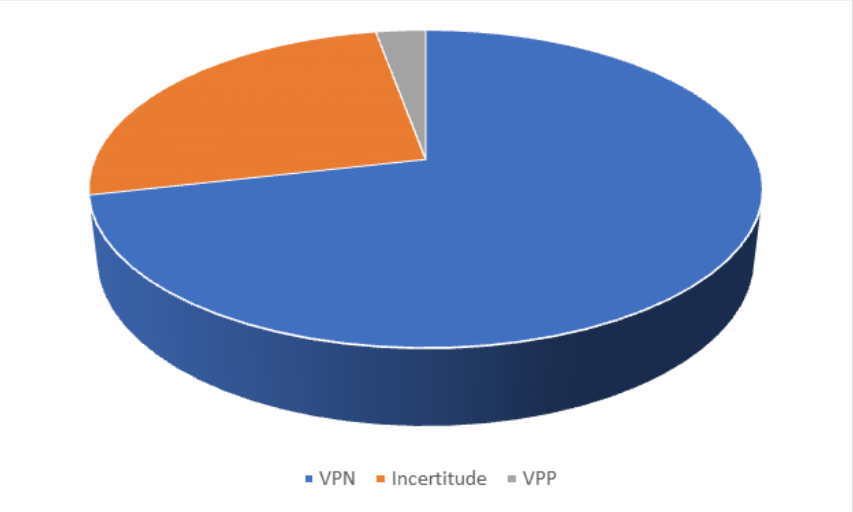

Figure 4: Distributions according to FIB-4

DISCUSSION

Hepatic steatosis is characterized by the excessive accumulation of fats, mainly triglycerides, in hepatocytes, visible in conventional histology as optically empty intracytoplasmic vacuoles. Steatosis is generally considered significant when more than 5% of hepatocytes are affected [1, 7].

Non-alcoholic hepatic steatosis (NASH) presents a variety of manifestations, ranging from inflammation to hepatocyte damage and fibrosis at different stages. Without appropriate management, it can progress to cirrhosis and severe liver complications such as hepatocellular carcinoma (HCC) and liver failure, as well as extra-hepatic complications such as insulin resistance and cardiovascular disease [2].

Longitudinal studies assessing the prognostic significance of lesions in chronic liver disease have consistently concluded that the degree of hepatic fibrosis is the main lesion associated with patient prognosis. They have shown that hepatic morbidity and mortality increase significantly in patients with advanced hepatic fibrosis [2, 8].

Non-alcoholic hepatic steatosis (NASH) is a frequent complication in obese individuals, as obesity is a major risk factor [4, 9]. It is therefore crucial to develop early and reliable screening methods for this population.

A meta-analysis suggested that a FIB-4 threshold of 2.67 had a sensitivity of 26.6% and a specificity of 96.5%, and that a threshold of 3.25 had a sensitivity of 31.8% and a specificity of 96.0% for advanced fibrosis [3].

An optimized FIB-4 threshold of 0.99 showed a sensitivity of 60.6% and a specificity of 84.0% for advanced fibrosis. FIB-4 ≥ 2.67 is the high-risk criterion for liver fibrosis [4,5], using the recommended FIB-4 threshold of 1.3 [6].

The results of our study underline the importance of the FIB-4 score in assessing the risk of liver fibrosis in obese patients. We found that in 50 patients, a FIB-4 score below 1.30 was associated with a high negative predictive value, suggesting that severe fibrosis was unlikely in these cases.

In the zone of uncertainty, corresponding to FIB-4 values between 1.30 and 2.67, we identified 18 cases, requiring further evaluation to accurately determine the level of fibrosis.

Two cases had a positive predictive value for advanced fibrosis, underlining the need for early and specialized management.

CONCLUSION

Our study highlights the diagnostic value of the FIB-4 score in the assessment of liver fibrosis in obese patients. These results may help to improve clinical management by identifying patients at risk of severe fibrosis and providing them with appropriate follow-up and treatment.

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