ASSESSMENT OF CARDIOVASCULAR RISK IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Abstract: *Non-alcoholic fatty liver disease falls into a spectrum of liver diseases characterized mainly by macrovesicular fatty degeneration that occurs in the absence of significant alcohol consumption (20-30 g pure alcohol per day or under 200g pure alcohol / week.). We studied the cardiovascular risk of 125 patients with ultrasound appearance of fatty liver, using 4 different metods: Framingham cardiac risk score, SCORE system, Hypertensive waist, Hypertriglyceridemic waist. Prevalence of cardiovascular risk factors was high in patients with fatty liver, particularly in patients with type 2 diabetes, association of more than three risk factors increasing with age. Framingham cardiovascular risk score and SCORE system increased with age. The risk was lower in female sex and, as expected, higher in individuals presenting obesity, hypertensive waist or metabolic syndrome*

Cuvinte cheie: *ficat gras non-alcoolic, risc cardiovascular, sindrom metabolic*

Rezumat: *Ficatul gras non-alcoolic (FGNA) sau hepatopatia adipoasă non-alcoolică se încadrează într-un spectru de boli hepatice caracterizate în principal prin degenerescența grăsoasă macroveziculară ce apare în lipsa consumului semnificativ de alcool, respectiv sub 20-30 g alcool pur/zi sau sub 200 g alcool pur/săptămână. Am evaluat 125 pacienți cu FGNA din punct de vedere al riscului cardiovascular utilizând mai multe metode: Riscul Framigham, Riscul SCORE, talia hipertensivă şi talia hipertrigliceridemică. Pacienții cu FGNA au avut un risc cardiovascular mai mare decât cei de aceeaşi vârstă şi sex fără afectare hepatică, riscul crescând odată cu vârsta şi fiind de asemenea, mai mare la pacienții cu obezitate, talie hipertensivă sau sindrom metabolic.*

INTRODUCTION

Non-alcoholic fatty liver (NAFLD) fits into a spectrum of liver diseases characterized mainly by fatty macrovesicular degeneration that occurs in the absence of significant alcohol consumption, respectively under 20-30 grams of pure alcohol per day or under 200g pure alcohol / week.(1)(2)(3)

Disease spectrum is composed of three clinical-pathological entities:

1. Hepatic steatosis: is characterized by predominant in hepatocytes of macrovesicules with fatty acids and triglycerides
2. Steatohepatitis: hepatic steatosis associated with necro-inflammatory process, Mallory bodies and early fibrosis
3. Cirrhosis: liver architecture characterized by fibrosis and inflammatory infiltration associated with fatty liver. (4) (5)

Non-alcoholic steatosis is caused by multiple factors and variations, of which most frequent in practice are: nutritional causes; drugs; metabolic or genetic diseases; insulin resistance syndromes; exposure to toxins.

PURPOSE OF THE STUDY

Increasing prevalence of metabolic syndrome and diabetes mellitus among patients in conjunction with tight connections between these diseases and non-alcoholic fatty liver allow the assumption that there is a rather large mass of undiagnosed patients who have this disease.

Clinical diagnosis of metabolic syndrome is not sufficient to assess the risk of cardiovascular disease. In order to appropriate assessment and management of overall cardiovascular risk in clinical practice, it is important to take into account traditional risk factors and the additional contribution brought by abdominal obesity / insulin resistance and their related complications.

The overall risk resulting from this traditional risk factors with abdominal obesity is called global cardiometabolic risk. (6)

MATERIAL AND METHOD

We aimed to evaluate the cardiovascular risk of patients with non-alcoholic fat liver. We calculated cardiovascular risk to all those 125 patients with NAFLD (group A) and 34 subjects considered as a control group using two forms of assessment in clinical practice - Framingham risk score and SCORE scale(the HeartSCORE ® formula)

We also evaluated patients in terms of two new combinations of clinical and laboratory factors predictive of increased cardiovascular risk: hypertriglyceridemic waist and hypertensive waist.

RESULTS AND DISCUSSION

A. Hypertriglyceridemic waist

Hypertriglyceridemia size is defined as simultaneous presence of above the normal waist circumference associated with triglyceride levels above 150 mg%.

Because metabolic syndrome increases the risk of type 2 diabetes and cardiovascular disease, several organizations have proposed this screening approach to identify patients with metabolic syndrome features. Based on the consideration that waist circumference and triglyceride levels may be as important as other more demanding approaches, such as NCEP-ATP III criteria, hypertriglyceridemic waist may be the simplest tool

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available for rapid initial screening assessment of the metabolic syndrome in clinical practice. (7)

Patients in group A had a prevalence of hypertriglyceridemic waist in men of 43.2% (n = 16) and 46.6% in women (n = 41), with an overall prevalence of 45.5% (n = 57), unlike the control group, where this condition was present in 2 women (5.8%) and no man.

B. Hypertensive waist

Hypertensive waist is defined as simultaneous presence of above the normal waist circumference associated with systemic hypertension (SBP> 140mmHg or antihypertensive treatment).

Many studies consider the method to have a high sensitivity and specificity, very useful in screening for metabolic syndrome because of the ease of measuring the two parameters. Subsequently, patients with hypertensive waist will need further determinatin of other elements necessary to define the syndrome (blood glucose, triglycerides, HDL-cholesterol). (8)

In hypertensive patients of group A we detected at a size of 48 (54.5%) in women and 19 (51.3%) in men, with an overall prevalence of 67 patients (53.6%).

C. Framingham cardiac risk score

The absolute risk of developing cardiovascular disease is defined as the probability of a clinical event (in this case cardiovascular death) that will occur to a person in a period of time. In this case, the prediction interval is set at 10 years.

Over 15 years ago, the Framingham Heart Study, which followed 3 generations of men and women from Framingham, Massachusetts, revolutionized the evaluation of cardiovascular pathology in terms of treatment and especially of its prevention. Framingham risk score is being used today in clinical evaluation, taking into account a number of personal factors - age, sex, cholesterol, smoking, hypertension, diabetes mellitus - and establish the risk of developing either myocardial infarction or cardiovascular death in the next 10 years. A risk of 10% means that 10 of the 100 people who will develop heart disease or die of cardiovascular disease in the next 10 years. (9)

We calculated the risk in patients aged 30-74 years in the 2 groups and obtained these results: a total of 113 patients in group A were framed in terms of age and we calculated an average risk of 12.21239%, with a statistically significant difference compared to score of the population at the same age and sex (p = 0.000515).

Risk in the control group was 3.473684%, calculated from the 19 subjects who fit the age criteria.

We also found weak positive linear correlation between waist circumference (r = 0.137) respectively mean blood pressure (r = 0.238) and Framingham risk, signifying that patients with elevated waist circumference and blood pressure have a high average 10 years risk to suffer a major cardiovascular pathology. D. SCORE Cardiovascular risk

European Society of Cardiology has initiated development of a risk estimation (SCORE) using data from 12 European cohort studies (N = 205,178) covering a wide geographic area, at different levels of cardiovascular risk. To calculate cardiovascular risk according to SCORE system we used the formula HeartSCORE ®, which is a web program of management and risk prediction in order to assist clinicians in optimizing individual cardiovascular risk reduction. (10)

In patients of group A which were included in the age criteria for calculating cardiovascular risk according to HeartSCORE ® (n = 101), we obtained an average of 3.03%, statistically significant higher than the people of the same age and sex (1.88 %) - p = 0.001739.

A total of 20 patients in group A showed an increased cardiovascular risk (≥ 5) quantified by SCORE system and many were men (n = 13).

Cardiovascular risk score estimated using Framingham and SCORE systems increased with age (Spearman coefficient r = 0.64, r = 0.47 respectively).

The risk was lower in women and greater in those presenting obesity, hypertensive waist or metabolic syndrome.

CONCLUSION

Cardiovascular risk of subjects with liver fat is extremely large and often overlooked by the treating physician that is generally concerned only with digestive pathology. Information and involvement of professionals from all levels of health care is unfortunately not enough supported, while addressability, adherence and compliance to lifestyle changes of patients is too far from an acceptable threshold.

In response, many patients with cardiovascular disease are neglected in terms of existence for other associated pathologies which reiterates the assertion that non-alcoholic fatty liver can be considered as hepatic component of the metabolic syndrome.

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