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Non-Alcoholic Fatty Liver Disease: Epidemiological, Diagnostical and Therapeutical Aspects in Dakar

Bassene ML[1*], Fall AB[1], Diallo S[1], Fall MP[1], Cisse CK[1] and Thioubou MA[2]

[1]Hospital Aristide Le Dantec, Avenue Pasteur, Dakar, Senegal

[2]Hospital de la Paix, Ziguinchor, Senegal

[*]Corresponding author:

Marie Louise Bassene,
Hospital Aristide Le Dantec, Avenue Pasteur, Dakar, Senegal

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Hepatic steatosis; NAFLD; Metabolic syndrome; Dakar

1. Abstract

1.1. Introduction: Non-alcoholic fatty liver disease (NAFLD) is currently the most common chronic liver disease in the world. Our aim was to evaluate its epidemiological, diagnostical and therapeutical aspects in a region of Senegal.

1.2. Patients and Method: It was a descriptive, retrospective study conducted from January 1, 2018 to June 30, 2021 at the Aristide Le Dantec Hospital (HALD) in Dakar. We included all non- alcoholic patients presenting with hepatic steatosis on abdominal ultrasound or Fibroscan®. Epidemiological, clinical, paraclinical and therapeutic data were collected and analyzed using Excel 2013 and Sphinx version 23.

1.3. Results: Prevalence was 1.56%. The sex ratio was 1.75 and the average age 47 years. Diabetes was noted in 6 patients (12.24%) and high blood pressure in 8 patients (16.32%).

Patients' average weight was 81.3 Kg [60 - 130 Kg], average height 173 cm [163 - 190 cm] and average BMI 32.6 [28 -36] (Table 1). Hepatic cytolysis was present in 4 patients. HBsAg was positive in 14 patients (28.57%). Dyslipidemia was noted in 19 patients (38.77%) and hyperglycemia in 8 patients (16.32%). Metabolic syndrome was present in 11 patients (22.45%). FIB 4 was calculated in all patients. A low risk of fibrosis was noted in 52% of cases. A low-fat diet was prescribed in 75.5% of cases, and regular physical activity in 53%.

1.4. Conclusion: NAFLD is relatively common in the hepato-gastroenterology department of the Aristide Le Dantec Hospital in Dakar. Preventive measures are needed to limit its progression.

2. Introduction

Non-alcoholic fatty liver disease (NAFLD) is currently the most common chronic liver disease worldwide [1]. It is closely linked to the metabolic syndrome. The incidence and prevalence of metabolic syndrome vary according to series, ethnicity and the definition used (WHO or NCEP- ATP III). Socio-economic development and, above all, the westernization of lifestyles in African cities have led to an increase in the prevalence of metabolic syndrome and NAFLD [2- 4]. NAFLD covers a spectrum from fatty liver to non-alcoholic steatohepatitis (NASH) and its complications [5]. Recent studies report a global prevalence of NAFLD of 18%, with great geographical disparity [6]. In Africa, data on NAFLD is poor. In Senegal, a hospital study found a prevalence of metabolic syndrome of 8.9% [7]. No studies have been carried out on NAFLD. The aim of our study was to assess the epidemiological, diagnostical and therapeutical aspects of NAFLD in Dakar.

3. Patients and Method

This was a descriptive, retrospective study conducted from January 1, 2018 to June 30, 2021 at Aristide Le Dantec Hospital (HALD) in Dakar. Our study population consisted of all patients followed up in consultation at the HALD hepato-gastroenterology department. We included all non-alcoholic patients presenting with hepatic steatosis on abdominal ultrasound or Fibroscan®. From the medical records, we collected the epidemiological, clinical, paraclinical and therapeutical data of the patients. The diagnosis of hepatic steatosis

was defined by increased echogenicity of the liver parenchyma compared with that of the right renal cortex.

Regarding the diagnosis of metabolic syndrome, we used the NCEP-ATP III (National Cholesterol Education Program – Adult Treatment Program III) expert panel criteria based on the presence of at least 3 of the following risk factors: fasting blood glucose > 1.10 g/l, blood pressure > 130/85mmHg; HDL cholesterol <1.3 mmol/l in women and <1mmol/ l in men; fasting triglycerides > 1.7 mmol/l for both sexes; waist circumference > 88 cm in women and > 102 cm in men. FIB-4 was calculated in all patients. Calculation of the FIB-4 index requires knowledge of age, transaminase values (ALAT and ASAT) and platelet count. A FIB-4 index < 1.45 in a context of steatosis excludes clinically significant hepatic fibrosis. A FIB-4 index > 1.45 indicates intermediate risk. A FIB-4 index > 3.25 indicates advanced hepatic fibrosis. Data were analyzed using Excel 2013 and Sphinx version 23.

4. Results

During the study period, 3147 patients were seen in consultation. NAFLD was diagnosed in 49 patients, representing a prevalence of 1.56%. The average incidence was 12.25 cases (Figure 1). There were 28 women (57%). The sex ratio was 1.75. The average age of patients was 47 years [17-65 years], and 46.92% were over 50.

Diabetes was noted in 6 patients (12.24%), high blood pressure in 8 (16.32%) and obesity in 10 (20.40%). A sedentary lifestyle was reported in 67.34% of cases.

Abdominal pain was present in 18 patients (36.73%), chronic constipation in 4 (8.16%) and GERD in 5 (10.20%). Average weight was 81.3 Kg [60 - 130 Kg], average height 173 cm [163 - 190 cm] and average BMI 32.6 [28 -36] (Table 1).

Hepatic cytolysis was present in 4 patients. Total bilirubin, alkaline phosphatase, gamma- glutamyl transferase and prothrombin levels were normal. HBsAg was positive in 14 patients (28.57%). B viral DNA was detectable in 10 patients with a mean viremia of 2115 IU/L.

Average total cholesterol was 6.81 mmol/l. The mean HDL level was 1.71 mmol/l and the mean LDL level was 4.49 mmol/l. Average triglyceride level was 9.44 mmol/l. Dyslipidemia was noted in 19 patients (38.77%). Average blood glucose was 3.07 mmol/l. Hyperglycemia was present in 8 patients (16.32%). Metabolic syndrome was present in 11 patients (22.45%).

FIB 4 was calculated in all patients. The average score was 1.23. A low risk of fibrosis was noted in 52% of patients, intermediate in 43% and high in 5%. Fibroscan® was performed in 6 patients (12.24%). Average elasticity was 6.21kPa. Table 2 shows the patients' biological characteristics, while Figure 2 shows the distribution of risk factors. Abdominal ultrasonography was performed in all patients. Apart from steatosis, it showed homogeneous hepatomegaly in 5 patients (10.20%) and vesicular lithiasis in 6.12% of cases.

A low-fat diet was prescribed in 37 patients (75.5%), and regular exercise in 26 (53%). Lipid- lowering treatment was introduced in 4 patients (8.16%), antihypertensive treatment in 5 patients (10.2%) and oral antidiabetic treatment in 6 patients (12.24%).

Table 1: Patients clinical findings

Variable	Effective	Frequency
Medical History/ Underlying condition		
Diabetes	6	12,24 %
High blood pressure	8	16,32 %
Obesity	10	20,41 %
Anemia	2	4,80 %
Lifestyle		
Sedentary lifestyle	33	66,34 %
Physical activity	6	12,24 %
Tobacco	2	4,80 %
Oral phytotherapy	6	12,24 %
Clinical signs		
Abdominal pain	18	36,72 %
Abdominal bloating	7	14,28 %
GERD	5	10,20 %
Constipation	4	8,16 %
Hepatomegaly	2	4,80 %
Overweight	2	4,08 %
Obesity	4	8,16 %
Grade 1	3	75%
Grade 2	1	25%
Abdominal obesity	5	10,20 %

Table 2: Patient biological findings

Variable	Effectives	Frequencies
Cytolysis	4	8,16 %
Hypercholesterolemia	14	28,56 %
Hypertriglyceridemia	5	10,21 %
Low HDL	5	10,21 %
High LDL	9	18,36 %
Positive HBsAg	14	28,56 %
Positive anti HBc	19	38,76 %
HVB DNA 10 20,4 %		

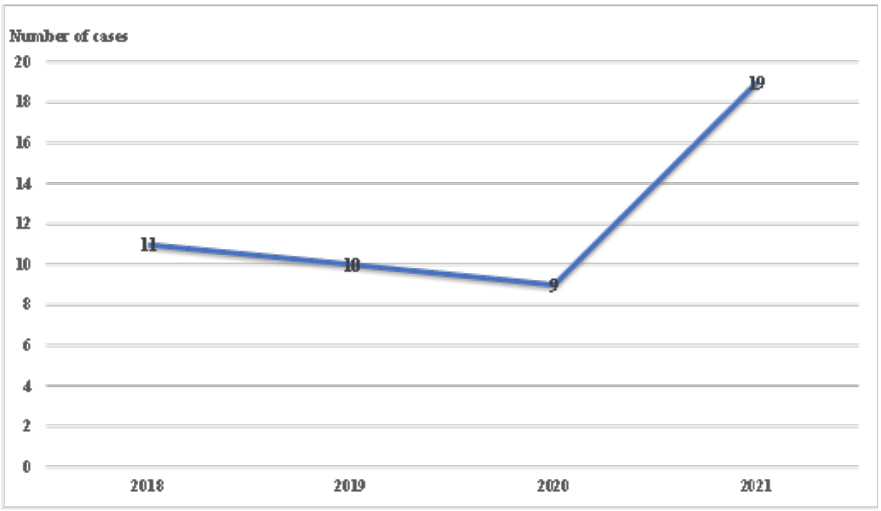

Figure 1: Distribution of patients by annal incidence

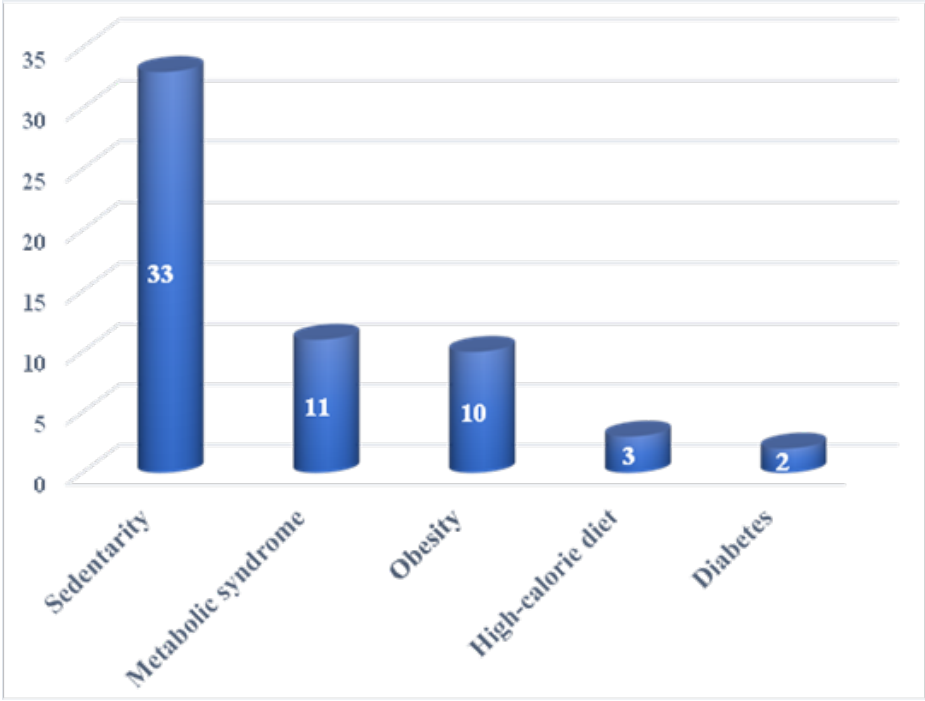

Figure 2: Distribution of NAFLD risk factors

5. Discussion

In our study, the prevalence of NAFLD was 1.56%. This is lower than those reported in literature. In Burundi, it is 5.8% [8] and 12.5% in Ethiopia [9]. The average prevalence in Africa is 14% [10, 11]. The low prevalence in our study may be linked to its single-center nature. Higher prevalence (>20%) are found in Hispanics and Caucasians [12, 13], thus constituting a real public health problem in the West. Age at diagnosis of NAFLD is often between 40 and 50 years [13]. In our study, it was 47 years. The majority of patients were women, with a sex ratio of 1.75. Our data are similar to those reported in some African series [8, 9, 12]. However, NAFLD is more common in men than in women before menopause [6]. Furthermore, one study showed that married African women are often exposed to weight gain in urban environments [14]. NAFLD is often asymptomatic. However, most patients may present with trivial right hypochondrial pain [15]. Cytolysis was present in 8.16% of patients. Cytolysis is rare in NAFLD. It correlates poorly with disease activity and severity [1,15]. Degrees of inflammation and fibrosis are prognostic markers of hepatic injury [2, 15]. Non-invasive serum or physical markers are recommended for fibrosis assessment [15]. FIB 4 was calculated in all our patients and was able to rule out advanced fibrosis in 52% of patients. It revealed advanced fibrosis in 5% of cases. No patient underwent liver biopsy. In fact, it is indicated when fibrosis is advanced or when non-invasive markers are inconsistent [15]. The frequency of metabolic syndrome found in our study is comparable to those reported in other studies carried out in Sub Saharan Africa [16, 17]. High blood pressure, low HDL levels and abdominal obesity are the most frequently found factors in studies carried out in Kenya, South Africa, Nigeria, African Americans and blacks population in Great Britain and Belgium [16, 17]. It is imperative to screen for underlying

NAFLD in the presence of metabolic syndrome, and conversely, the discovery of NAFLD requires screening for metabolic syndrome [18]. In addition to the Westernization of the diet, the increase in the frequency of metabolic syndrome in our populations is also linked to the high rate of sedentariness [14, 19]. In our study, most patients were sedentary (66.32%). Hepatitis B virus infection and age over 50 were the main factors in fibrosis progression in our patients. Fibrosis progression factors in NAFLD include age over 50, diabetes, high blood pressure, metabolic syndrome, dyslipidemia, cytolysis, hepatitis B virus (HBV) and hepatitis C virus (HCV) infections [1, 15]. HBV infection was noted in 28.56% of our patients in accordance with African literature [9, 10, 11]. Africa is an area of high HBV endemicity, with major perinatal transmission constituting the essential mode of HBV transmission [20]. Management of NAFLD aims to normalize liver enzymes, reduce histological damage, and improve insulin resistance. Management is based essentially on a low-calorie diet, regular physical activity, risk factors and fibrosis progression control [15, 21].

6. Conclusion

NAFLD is a relatively frequent emerging pathology in the hepato-gastroenterology department of the Aristide Le Dantec Hospital. It is often asymptomatic and causes benign liver disease. The main risk factors are the components of the metabolic syndrome. Weight loss and combat against sedentary lifestyle represent most of its management. It is therefore urgent to develop prevention policies to raise awareness of the harms of obesity and sedentary lifestyle in order to reduce the incidence of metabolic syndrome.

References

1. Sakran N, Graham Y, Leal A, Pintar T, Yang W, Kassir R, et al. Non-alcoholic fatty liver disease (NAFLD): a review of pathophysiology, clinical management and effects of weight loss. BMC Endocr Disord. 2022; 22(1): 63.
2. Sobngwi E, Mbanya JC, Unwin NC. Exposure over the life course to an urban environment and its relation with obesity, diabetes, and hypertension in rural and urban Cameroon. International Journal of Epidemiology. 2004; 33: 769–776.
3. Popkin BM, Adair LS, Shu Wen Ng. Now and then: The Global Nutrition Transition:The Pandemic of Obesity in Develo- ping Countries, Nutr Rev. 2012; 70: 3–21.
4. Paruk IM, Pirie FJ, Motala AA. Non-alcoholic fatty liver disease in Africa: a hidden danger. Glob Health Epidemiol Genom. 2019; 4: 3.
5. Francque SM, Marchesini G, Kautz A, Walmsley M, Dorner R, Lazarus JV, et al. Non-alcoholic fatty liver disease: A patient guideline. JHEP Rep. 2021; 3(5): 100322.
6. Nabi O, Lacombe K, Boursier J, Mathurin P, Zins M, Serfaty L. Preva- lence and Risk Factors of Nonalcoholic Fatty Liver Disease and Advanced Fibrosis in General Population: the French Nationwide NASH-CO Study. Gastroenterology. août. 2020; 159(2): 791-793.e2.
7. Sarr A, Lopez-Sall P, Ndour-Mbaye NM. Frequency of plurimetabolic syndrome and associated anomalies in a black population in Senegal. Metabolic Disease Medicine. 2012; 6(3): 238 -243.
8. Ntagirabiri R, Cikomola J, Baransaka E, Ndirahisha E, Ndabaneze E, Niyongabo T, et al. Hepatic steatosis during metabolic syndrome in black African adults: case of Burundi. J Afr Hepato-Gastroenterology. 2014; 8(4): 195-199.
9. Ahmed MH, Noor SK, Bushara SO, Husain NE, Elmadhoun WM, Ginawi IA, et al. Non-Alcoholic Fatty Liver Disease in Africa and Middle East: An Attempt to Predict the Present and Future Implications on the Healthcare System. Gastroenterol Res. 2017; 10(5): 271-279.
10. Ofosu A, Ramai D, Reddy M. Non-alcoholic fatty liver disease: controlling an emerging epidemic, challenges, and future directions. Ann Gastroenterol. 2018; 31(3): 288-295.
11. Younossi Z, Anstee QM, Marietti M, Hardy T, Henry L, Eslam M et al. Global burden of NAFLD and NASH: trends, predictions, risk factors and prevention. Nat Rev Gastroenterol Hepatol. 2018; 15(1): 11-20.
12. Lanthier N. Non-alcoholic steatohepatitis in 2018. Louvain Med 2018. 2018; 137(5): 308-313.
13. Iqbal U, Perumpail B, Akhtar D, Kim D, Ahmed A. The Epidemiology, Risk Profiling and Diagnostic Challenges of Nonalcoholic Fatty Liver Disease. Medicines. 2019; 6(1): 41.
14. Wagner RG, Crowther NJ, Gómez-Olivé FX, Kabudula C, Kahn K, Mhembere M, et al. Sociodemographic, socioeconomic, clinical and behavioural predictors of body mass index vary by sex in rural South African adults-findings from the AWI-Gen study. Glob Health Action. 2018; 11(2): 1549436.
15. Pouwels S, Sakran N, Graham Y, Leal A, Pintar T, Yang W, et al. Non-alcoholic fatty liver disease (NAFLD): a review of pathophysiology, clinical management and effects of weight loss. BMC Endocr Disord. 2022; 22(1): 63.
16. Kaduka LU, Kombe Y, Kenya E, Kuria E, Bore JK, Bukania ZN, et al. Prevalence of metabolic syndrome among an urban population in Kenya. Diabetes Care. 2012; 35(4): 887-93.
17. Shiferaw WS, Akalu TY, Gedefaw M, Anthony D, Kassie AM, Misganaw Kebede W, et al. Metabolic syndrome among type 2 diabetic patients in Sub-Saharan African countries: A systematic review and meta-analysis. Diabetes Metab Syndr. 2020; 14(5): 1403-1411.
18. Liver EA for TS of T, Diabetes (EASD EA for the S of. EA-SL-EASD-EASO Clinical Practice Guidelines for the management of non-alcoholic fatty liver disease. Obesity facts. 2016; 9(2): 65-90.
19. Pariente A. Metabolic steatopathy?: management. Gastroenterology Clin Biol. 2009; 33(5): 413-424.
20. World Health Organization. World Health Organization. Global Hepatitis Programme. Global hepatitis report, 2017.
21. Vernon G, Baranova A, Younossi ZM. Systematic review: the epidemiology and natural history of non-alcoholic fatty liver disease and non-alcoholic steatohepatitis in adults. Aliment Pharmacol Ther. 2011; 24: 274–85.