

Profile of Metabolic Syndrome at CNHU HKM Cotonou

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Abstract

The metabolic syndrome combines morphological, physiological and biochemical abnormalities that evolve over time, predisposing the affected person to atherosclerosis and its complications. The purpose of our work was to determine the clinical and biological profile of metabolic syndrome in patients received for medical examination according to WHO criteria. This was a retrospective study over a 1-year period: from January 1st, 2018 to December 31st, 2018. The information collected was clinical (sociodemographic characteristics, anthropometric data, initial blood pressure, cardiovascular history) and biological data (fasting blood glucose level, lipid test). Two thousand six hundred and two patients visited during the study period, including 291 patients (11.18%) for a reason that may evoke the metabolic syndrome but 115 files were retained for this study. The age of the patients was 58.39 ± 10.02 years with extremes ranging from 32 to 81 years old. Metabolic syndrome was found in 77 patients, or 66.9% of patients who had consulted for a reason that might suggest this diagnosis. 44.3% had 3 criteria for definition; 19.1% had 4 criteria and 3.5% had 5 criteria. All patients have benefited a mono, bi or antihypertensive therapy associated with antidiabetic or hypolipemic treatment. Metabolic syndrome better predicts cardiovascular risk than analysis of individual risk factors. Its prevention involves diet which must be hyposodium, hypolipidic, without fast sugar and daily physical activities.

Keywords

High Blood Pressure, Diabetes, Obesity, Dyslipidemia, Benin Republic

1. Introduction

The unintended nature of the combination of obesity, diabetes, high blood pressure and hyperuricemia was highlighted by several authors during the first half

of the 20th century [1]. The term Metabolic Syndrome was created in 1975 by Hermann Haller and Markolf Hanefeld [2]. The “X-syndrome” formulated by Gerald M. Reaven around insulin resistance was the first well-structured version of the metabolic syndrome in 1988 [3]. Due to the increase in the prevalence of obesity over the last decade, five definitions have been proposed by several groups to characterize the metabolic syndrome. It was recognized by the World Health Organization (WHO) in 1998 [4]. Metabolic syndrome combines morphological, physiological and biochemical abnormalities that evolve with time predisposing the affected subject to atherosclerosis and its complications. The prevalence of metabolic syndrome among hypertensive patients in Parakou was 69.6% according to the criteria of the International Diabetes Federation (IDF) and 65.2% according to those of the National Cholesterol Education Program (NCEP) [5]. It was 79% among obese patients in Ouidah according to WHO criteria [6].

The purpose of our work was to determine the clinical and biological profile of metabolic syndrome in patients received for medical examination according to WHO criteria.

2. Methodology

This was a retrospective study over a 1-year period: from January 1st, 2018 to December 31st, 2018, involving patients who had consulted in endocrinology and cardiology units. A systematic review of medical records was completed. The information collected was clinical (sociodemographic characteristics, anthropometric data, initial blood pressure, cardiovascular history) and biological data (fasting blood glucose level, lipid test). Were considered diabetic patients already known and treated as such or whose fasting blood glucose level was greater than or equal to 1.26 g/l. The dyslipidemia was held in front of a total cholesterol level higher than 2.5 g/l or a LDL cholesterol level higher than 1.15 g/l. The LDL-cholesterol level was obtained from Friedwald’s formula by reporting the difference between total cholesterol and HDL-cholesterol at 1/5th of triglyceridemia (in grams per liter).

WHO’s criteria were used for the determination of the metabolic syndrome. These criteria include visceral or central obesity, waist/hip circumference > 0.9 (male) and 0.75 (female) and/or BMI > 30 kg/m². Records in which metabolic syndrome assessment parameters are completed, we chose BMI which was systematically estimated at our patients, associated with at least 2 of the following criteria:

- Blood glucose > 1 g/l;
- Blood pressure ≥ 140 mmHg;
- Triglyceride ≥ 1.50 g/l;
- HDL-Cholesterol (HDL-c) < 0.35 g/l in men and < 0.39 g/l in women.

The inclusion criteria were the records containing the above-mentioned parameters. We evaluated the effectiveness of treatment instituted with a follow-up

of 6 months. The collection of files was made by a systematic questionnaire. Data analysis was performed using the software Epi-Info in version 3.5.4.

3. Results

Two thousand six hundred and two patients consulted during the study period, including 291 patients (11.18%) for a reason that could evoke the metabolic syndrome. One hundred and fifteen records were usable in this study. Among the 115 cases there were 77 cases (2.9%) of metabolic syndrome.

The population consisted of 115 patients with as many men as women. The age of the patients was 58.39 ± 10.02 years with extremes ranging from 32 to 81 years (**Table 1**). All patients had high blood pressure, of which 95.6% were known and treated. Twenty four patients (21.2%) had type 2 diabetes and 18.6% had a history of dyslipidemia (**Table 1**). Seventy nine patients (77.4%) had obesity, including 59.1% Grade I obesity and 18.3% Grade II obesity. Forty four patients (39.1%) had hyperglycemia, 68 patients (59.1%) had low cholesterol, and 22 patients (19.1%) had high triglyceride levels.

Metabolic syndrome was found in 77 patients (66.9%) who are distributed according to WHO criteria in **Figure 1** and 44.3% had 3 criteria for definition; 19.1% had 4 criteria and 3.5% had 5 criteria. All patients have benefited a mono, bi- or antihypertensive therapy associated with antidiabetic or hypolipemic treatment. Evaluation of the patients at 6 months allowed to evaluate the prescribed treatment (**Table 2** and **Table 3**). Hypertensive patients were controlled by their treatment in 78.7%; 44.4% of diabetic patients were balanced and 55.8% had their lipid balance normalized. Weight results were relatively less noticeable with weight loss in only 35.9%.

Table 1. Description of the population.

description parameter	
Age (mean-age)	58.39 ± 10.02
Sex-ratio	1.01
Medical history	
High blood pressure (history)	95.6%
Type 2 Diabetes	21.2%
Dyslipidemia	18.6%
Métabolic syndrome (WHO criteria)	
BMI (mean)	31.15 ± 4.68
Systolic blood pressure	142.81 ± 19.10
Distolic blood pressure	84.86 ± 12.60
Glycemia	1.07 ± 0.34
Cholestérolema HDL	0.47 ± 0.14
Cholestérolema LDL	1.306 ± 0.46
Triglyceridemia	1.02 ± 0.49

Table 2. Prescribed treatment.

	Number	Percentage
Antihypertensive drugs		
Calcium inhibitor	95	83.3
Conversion enzyme inhibitor	63	55.3
Diuretic	39	34.2
Beta blocker	27	23.7
Oral anti-diabetic drugs		
Biguanides	11	9.6
Sulfonamides	6	5.3
Lipid-lowering agent		
Statin	23	20.2

Table 3. Evolution.

	Number	Percentage
High BP controlled		
Yes	74	78.7
No	20	21.3
Total	94	100.0
Balance Diabetes		
Yes	8	44.4
No	10	55.6
Total	18	100.0
Lipid balance normalized		
Yes	29	55.8
No	23	44.2
Total	52	100.0
Abdominal obesity		
Yes	4	19.0
No	17	81.0
Total	21	100.0
Weigh loss		
Yes	14	35.9
No	25	64.1
Total	39	100.0

4. Discussion

We conducted a retrospective hospital-based study, which constitutes a recruitment bias in the assessment of prevalence. The retrospective nature of the study did not systematically provide all the information needed to make a diagnosis of

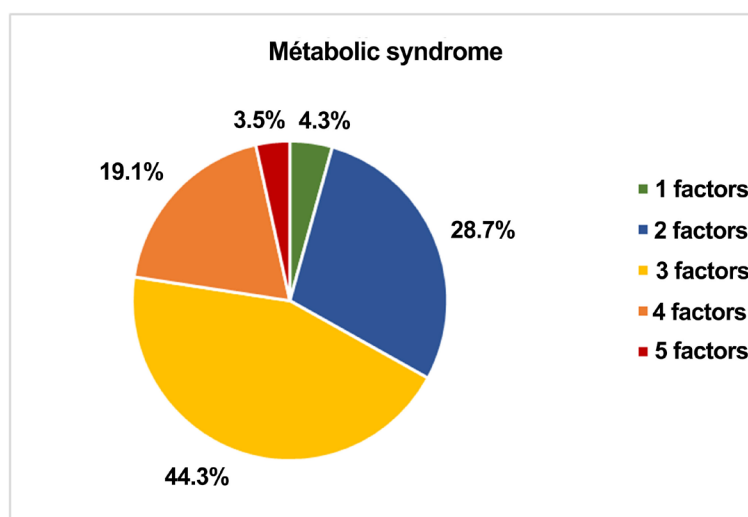


Figure 1. Classification of patients according to number of risk factors.

metabolic syndrome. Prevalence 2.9% is lower than the hospital prevalence of 4.94% observed in Cote d'Ivoire [7]. And 17.5% in Burkina faso in patients hospitalized for high blood pressure [8]. Prevalence is 8.9% in the general population in Senegal [9] and ranges from 6.1% in women to 10.2% in men in France [10]. This variation may be a reflection of the different socio-economic conditions in the countries, or related to the diet and the change of lifestyle of the different populations but also the difficulty of harmonizing the definition criteria. The mean age of the patients was 58.39 ± 10.02 years, similar to the mean age of 56.1 ± 10.7 years reported by Millogo in Burkina Faso [8]. Prevalence of metabolic syndrome increases with age thus, it is 5% in men vs. 2% in women under 40 and 14.1% vs. 12% after 70 years [10]. Mean systolic and diastolic BP were statistically higher as was mean BMI in the population of patients with metabolic syndrome. Millogo made the same observation in Burkina Faso [8], as well as Kant in India [11]. Similarly, blood glucose and triglycerides were on average higher and HDL cholesterol was on average lower than in the general population [11]. The most common risk factors were high blood pressure followed by obesity 77.4%, low HDL cholesterol 59.1% and diabetes 39.1%. In most studies, low HDL cholesterol was more common [7] [11] [12], which may reflect a lack of physical activity. The prevention of this factor is then important in the management of the metabolic syndrome.

5. Conclusion

Metabolic syndrome is a pathology that poses the problem on the one hand of its non-consensual definition and on the other hand that of the control of its constituent elements, especially high blood pressure. Metabolic syndrome better predicts cardiovascular risk than analysis of individual risk factors. Its prevention involves diet which must be hyposodium, hypolipidic, without fast sugar and daily physical activities.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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