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Lipid Profile and Prevalence of Dyslipidemia in Hypertensive Patients at the Kara University Hospital Center (Togo)

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Abstract: Dyslipidemia, a primary or secondary pathological modification of serum lipids, is one of the major risk factors for cardiovascular disease. It is currently very common in the populations of the developing countries due to changing dietary and behavioral habits. The objective of this study was to determine the prevalence of dyslipidemia in hypertensive patients received in cardiology consultations at the Kara University Hospital Center. This is a descriptive and cross-sectional study. It included all hypertensive patients received during the study period (January to December 2019), who were able to perform a lipid assessment. The sample was taken on an empty stomach and assayed on a "SELECTRA ProS" automaton using "HELITech clinical system" reagents. The standards: Total cholesterol < 2g/l, HDL > 0.4 g/l (men and women), LDL < 1.3 g/l and triglycerides < 1.5 g/l. Dyslipidemia is defined by the disturbance of at least one of the lipid balance fractions (HDL, LDL and triglycerides). Data analysis was performed by Epi info 7. The prevalence of dyslipidemia was 55.2% with 28.4% of hypo HDL cholesterol, 29% of hyper LDL cholesterol and 21.9% of hypertriglyceridemia. This prevalence is higher in women (59%) than in men (48.5%). Advanced age, obesity and especially abdominal obesity are factors correlated with a high rate of dyslipidemia. Total hypercholesterolemia was found in 34.4% of cases. The prevalence of dyslipidemia is very high in hypertensive people in our environment. It is more frequent in women than in men.

Keywords: Hypertension, Dyslipidemia, Kara UHC

1. Introduction

Dyslipidemia, a primary or secondary pathological change in serum lipids, is one of the major risk factors for cardiovascular disease [1-2]. It is defined by a more or less variable of low rate of high-density lipoprotein (HDL) cholesterol and high rate of low-density lipoprotein (LDL) cholesterol and/or triglycerides [3]. Many epidemiological

studies [4-5] have confirmed the role of disturbed lipid balance (low HDL cholesterol, high LDL cholesterol and high triglyceridemia) in the occurrence of myocardial infarction alongside with other classic risk factors (hypertension, diabetes and smoking). Furthermore, HDL cholesterol has become an essential element in the management of cardiovascular risk and is an integral part of most risk formulas for predicting a cardiovascular event in a subject in the next 10 years [6].

With the epidemiological transition of cardiovascular diseases in sub-Saharan Africa, we are witnessing the outbreak of these diseases and especially ischemic heart diseases [7]. At the same time, dyslipidemia is more and more frequent among the populations of the developing countries due to changes in dietary (meals rich in seeds and low in fruits and vegetables) and behavioral (sedentary lifestyle, lack of physical exercise) habits [1]. It's in this context of emerging cardiovascular diseases that we are carrying out this study in order to assess the extent of dyslipidemia in patients with cardiovascular pathologies.

The objective of this work was to study the lipid profile and to determine the prevalence of dyslipidemia in hypertensive patients received in cardiology consultations at the Kara University Hospital Centre (UHC).

2. Patients and Method

2.1. Type, Setting and Period of Study

This is a cross-sectional descriptive study, conducted in the cardiology department of the Kara University Hospital Center, which is the reference center in the northern part of the country for the management of cardiovascular diseases, particularly hypertension (HBP). This study was conducted over a period of one year (January to December 2019).

2.2. Study Population

This study included all patients received in cardiology during the study period, who were diagnosed with high blood pressure and were able to complete a lipid profile. We included all patients of both sexes who were 18 years of age or older. Patients on statin therapy and cases of hypertension during pregnancy were excluded from this study. A total of 183 patients were recruited, including 117 women (63.9%).

2.3. Definition of Parameters and Lipid Assessment Dosage Technique

Blood pressure (BP) was taken with a properly calibrated Omron electronic blood pressure monitor in a patient at rest for at least 5 minutes. For new cases, hypertension is defined as blood pressure (BP) ≥ 140/90 mm Hg [8]. Old case is any known hypertensive patient who is already under treatment.

The anthropometric parameters studied are weight and height measured using a manually operated scale with a measuring rod. The calculation of the body mass index (BMI) enabled the subjects to be classified into three categories: obesity (BMI ≥ 30 kg/m²), overweight (BMI between 25 and 30 kg/m²) and normal weight (BMI < 25 kg/m²) [9]. Abdominal obesity is assessed by waist circumference (WC) which was measured midway between iliac crest and the lower-most margin of the ribs, with a bare belly and at the end of normal expiration. The WC is considered normal when it is less than or equal to 80 cm in women and 94 cm in men. Above these values, we concluded that the person has central obesity or abdominal obesity [10].

For the lipid assessment, the sample was taken on an empty stomach and the assay performed on a "SELECTRA ProS" automaton using "HELITech clinical system" reagents. The standards of this device with the reagents used are as follows: Total cholesterol < 2g/l, HDL > 0.4 g/l, LDL < 1.3 g/l and triglycerides < 1.5 g/l. Dyslipidemia was defined by the disturbance of at least one of the lipid balance parameters.

2.4. Data Processing and Analysis

Quantitative variables are presented as average±standard deviation and qualitative variables as number of patients followed by percentage. Chi-square tests were used to compare categorical variables and that of student test were used to compare quantitative variables. P values less than or equal to 0.05 were considered significant. Data processing was performed using Epi info 7 software.

3. Results

The average age of the patients was 57.4±12.8 years with extremes of 20 and 95 years. The average age for females was 58.3±15 years compared to 55.7±17 years for males; p=0.2. Figure 1 shows the distribution of patients by age group.

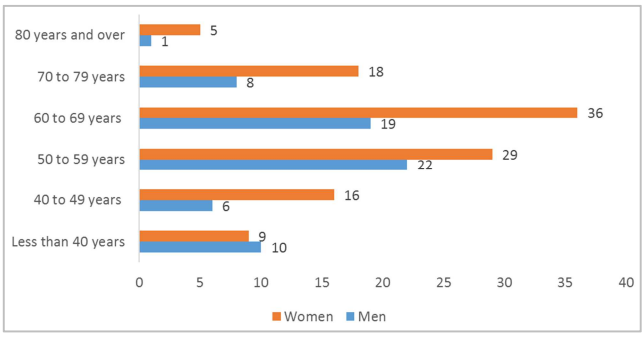

Figure 1. *Distribution of patients by age group.*

The average duration of progression of hypertension was 5 years. In 26.2% of patients, the duration of progression of hypertension was less than 1 year. The associated cardiovascular risk factors are: abdominal obesity (44.8%), obesity (36%), overweight (28%), diabetes (9.5%), and smoking (5.8%). Abdominal obesity was more represented in women (54.7%) than in men (27.3%), with a statistically significant difference; p=0.02. The lipid balance study summarized in Tables 1 and 2, found 55.2% of dyslipidemia. It is 59% in women versus 48.5% in men without a statistically significant difference p=0.1.

Table 1. *Lipid profile.*

	Minimum value	Maximum value	Average	Average in men	Average in women	p
LDL (g/l)	0,13	3,9	1,14	1,02	1,2	0,02
HDL (g/l)	0,52	2,8	0,52	0,53	0,51	0,54
TG (g/l)	0,27	4,6	1,17	1,08	1,21	0,22
TC (g/l)	0,72	5,12	1,92	1,82	1,97	0,09

LDL=low density lipoprotein; HDL=high density lipoprotein; TG=triglycerides; TC=total cholesterol.

Table 2. *Prevalence of dyslipidemia by sex.*

	Total population	Men (66)	Women (117)	*p*
LDL (%)	29	13,6	37,6	*0,001*
HDL (%)	28,4	28,8	28,2	*0,95*
TG (%)	21,9	19,7	23,1	*0,53*
TC (%)	34,4	25,8	39,3	*0,17*
Total dyslipidemia (%)	55,2	48,5	59	*0,1*

LDL=low density lipoprotein; HDL=high density lipoprotein; TG=triglycerides; TC=total cholesterol.

Over the whole sample, the rate of dyslipidemia increases with age. This is the same finding for females with a statistically significant difference (p=0.009) as shown in Figure 2. However, in males, the rate is higher at both extremes (under 50 and over 70 years of age). The rate of dyslipidemia is higher in patients with abdominal obesity: 57.3% compared to 29% in patients with normal waist circumference, p=0.01.

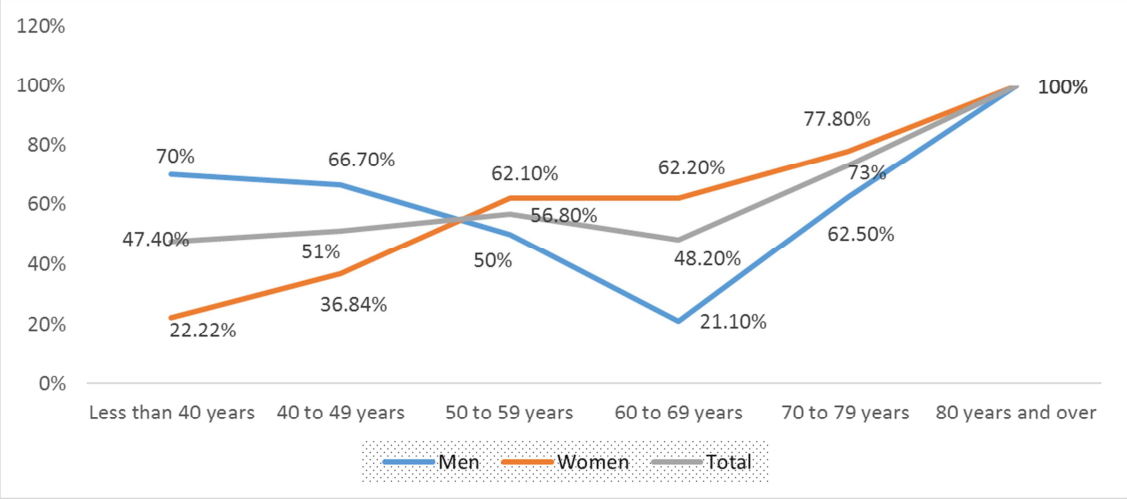

Figure 2. *Prevalence of dyslipidemia according to age and sex.*

4. Discussion

Dyslipidemia is one of the major risk factors for the development of cardiovascular disease. It is often found in diabetic, obese and sedentary patients [11, 12]; because of the chronic hyperglycemia and insulin resistance observed in these patients. For our study, it is part of the logic of analyzing the lipid profile and determining the prevalence of dyslipidemia in patients suffering from arterial hypertension.

The rate of dyslipidemia in our study (55.2%), as in most studies in sub-Saharan Africa, exceeds 50% both in the general population and in hypertensive patients. In the general population in Senegal, Doupa et al [13] along with Thiombiano et al [1] found 66.2% and 61.3% respectively. In hypertensive patients Damorou et al [14] in Togo found 54.4%. In diabetic patients, Jisieike-Onuigbo et al [2] in Nigeria and Lokrou [15] in Côte d'Ivoire found slightly lower rates respectively 56.5% and 47.4%. In contrast to sub-Saharan Africa, studies conducted in the Maghreb and in some Asian and European countries the prevalence rates of dyslipidemia are lower. Sixteen point one percent of dyslipidemia was found in a series of 3268 hypertensive patients in Algeria [16]. In China and Italy, Zhang [17] and Pedrinellia [18] found 16.9% and 19.1% of dyslipidemia in their respective studies. Finally, Hana T. et al [19] in Kuwait recorded 10.5% dyslipidemia in a population of 484 pupils aged between 17 and 24 years. In view of these results, can we think of a predisposition to dyslipidemia in black subjects in the sub-Saharan region? It is also important to note the trend towards a sedentary lifestyle and the poor eating habits of these sub-Saharan populations caused by urbanization.

In our study the rate of dyslipidemia was slightly higher in women without a statistically significant difference (p=0.1). Our results are similar to those of Bashir Cherif in Algeria

[16] who found no difference in the prevalence rate of dyslipidemia in men and women. On the other hand, many other studies show a female predominance with a statistically significant difference. This is the case of Thiombiano [1] and Pessinaba [20] in Senegal and Elasmi [21] in Tunisia which all found a statistically significant predominance in favor of women. Obesity and especially abdominal obesity are also factors correlated with the high rate of dyslipidemia. This is the same finding in our study: Fifty-seven point three percent of dyslipidemia in patients with abdominal obesity versus 29% in patients with normal waist circumference (p=0.01). This is probably related to the different metabolic disorders found in obese subjects and also in women, especially those who are menopausal.

Dyslipidemia is also correlated with advanced age. In our study the prevalence of dyslipidemia was higher in older patients. In the literature, studies in younger subjects have lower rates of dyslipidemia [19]. Altered lipid metabolism in the elderly would explain the high rate of dyslipidemia. Hygienic-dietary measures or, in the worst case, statin therapy should be increased to lower the rate of dyslipidemia in the elderly to avoid atheromatous disease that has multiple complications on the cardiovascular system.

5. Conclusion

The prevalence of dyslipidemia is very high in hypertensive patients in our environment. It is more frequent in women than in men without statistically significant difference with a higher tendency in older subjects. This high prevalence must necessarily play a role in the emergence of cardiovascular diseases. Hence the importance of their management in order to slow down their evolution.

References

[1] Thiombiano LP, Mbaye A, Sarr SA, Ngaide AA, Kane Ab, Diao M, Kane Ad et al. Prévalence de la dyslipidémie dans la population rurale de Guéoul (Sénégal). Annales de cardiologie et d'angéiologie 2016 (65); 77-80.

[2] Jisieike-Onuigbo NN, Unuigbe EI, Kalu OA, Oguejiofor CO, Onuigbo PC. Prevalence of dyslipidemia among adult diabetic patients with overt diabetic nephropathy in Anambra state South-East Nigeria. Nigerian Journal of Clinical Practice 2011; 14 (2): 171-175.

[3] Ducobu J. Recommandations Européennes et Belges pour le diagnostic et le traitement des dyslipidémies. 4ème Edition 2004.

[4] Bongard V, Ruidavets JB, Arveiler D et al. Three quarters of coronary heart disease is attributable to conventional modifiable cardiovascular risk factors in a French Cohort of 7161 men. Eur Heart J 2007; 28 (suppl. 1): 147.

[5] Yusuf S, Hawken S, Ounpuu S et al. INTERHEART Study Investigators. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet 2004; 364: 937-52.

[6] Bruckert E, Farnier M, Ferrières J. HDL-cholestérol et risque cardiovasculaire: au-delà du LDL. Médecine des maladies Métaboliques - Septembre 2010 - Vol. 4 - N°4.

[7] R. N'Guetta, H. Yao, A. Ekou, M. P. N'Cho-Mottoh, I. Angoran, M. Tano, C. Konin, I. Coulibaly, J. B. Anzouan-Kacou, R. Seka, A. M. Adoh. Prévalence et caractéristiques des syndromes coronariens aigus dans une population d'Afrique subsaharienne. Annales de Cardiologie et d'Angéiologie 65 (2016); 59-63.

[8] ESC/ESH Guidelines for the management of arterial hypertension. European Heart Journal (2018) 39, 3021–3104.

[9] WHO. Obesity: preventing and managing the global epidemic. WHO Technical Report Series number 894. World Health Organ Tech Rep Ser 2000; 894: i–xii [1–253].

[10] Alberti K, George MM, Zimmet P, Shaw J. The metabolic syndrome - a new Worldwide definition. Lancet 2005; 366: 1059–62.

[11] Ferns G, Keti V, Griffin B. Investigation and management of hypertriglyceridaemia. J Clin Pathol 2008; 61: 1174-83.

[12] Mbaye A, Yaméogo NV, Kane Ad, Diack A, Ndiaye MB, Diack B, Pessinba S, Thiam A, Dioum M, Hakim R, Diagne D, Kane M, Ndour M, Diao M, Diallo A, Diop SN, Kane A. Profil lipidique et risque cardio-vasculaire du diabétique de type 2 au Sénégal. ANGÉIOLOGIE, 2010, VOL. 62, N° 1; 25-29.

[13] Dominique Doupa, Abdou Salam Mbengue, Fatou Agne Diallo, Modou Jobe, Arame Ndiaye, Adama Kane, Meissa Touré. Lipid profile frequency and the prevalence of dyslipidaemia from biochemical tests at Saint Louis University Hospital in Senegal. Pan African Medical Journal. 2014; 17: 75 doi: 10.11604/pamj.2014.17.75.3577.

[14] Damorou F, Yayhed K, Tcherou T, Pessinaba S, Kanda A, Soussou B. Epidémiologie et prise en charge de l'hypertension artérielle au CHU de Kara (Centre de référence de la région septentrionale du Togo). Etude prospective longitudinale de 409 patients. Afrique biomédicale 2009, volume 14 N°4: 95-102.

[15] Lokrou A. Hyperlipidémie et diabète en Côte d'Ivoire, étude transversale de 132 cas. Médecine d'Afrique Noire 1998; 10: 555-7.

[16] A. Bachir Cherif, S. Bennouar, A. Bouamra, A. Taleb, F. Hamida, M. Temmar, M. T. Bouafia. Prevalence of diabetes and dyslipidemia in hypertensive patients in the area of Blida (Algeria). Annales de cardiologie et d'angéiologie 2018 (67) 198-203.

[17] Zhang X, et al. Prevalence of dyslipidemia and associated factors among the hypertensive rural Chinese population. Arch Med Res 2007; 38: 432-439.

[18] Pedrinellia R, et al. LDL cholesterol and global risk stratification in referred hypertensive patients. Atherosclerosis 2005; 180: 137–43.

[19] Hana T. AlMajed, Abdulnabi T. AlAttar, Ali A. Sadek, Thaier A. AlMuaili, Obeid A. AlMutairi, Amna S. Shaghouli, Wehad A. AlTorah. Prevalence of dyslipidemia and obesity among college students in Kuwait. Alexandria journal of medecine (2011) 47, 67-71.

[20] Pessinaba S, Mbaye A, Yabeta GAD et al. Enquête de prévalence des facteurs de risque cardio-vasculaire en population générale à Saint Louis (Sénégal), Ann Cardiol Angeiol (Paris) 2013; 62: 253-8.

[21] Elasmi M, Fek L, Sanhaj I. Prévalence des facteurs de risque cardio-vasculaires conventionnels dans la population de Grand Tunis. Rev Epidemiol Santé Publique 2009; 2: 87-92.