

Comparative Study of Non-Diabetic Hypertensives with Diabetic Hypertensives Patients Followed at Cardiology Clinic of National University Hospital of Fann

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Received Date: October 20, 2023; Accepted Date: November 20, 2023; Published Date: November 27, 2023

Citation: Momar Dioum, Mdidech N, Gaye C, Hanifa I.I.M, Kane Aw, et al. (2023), Comparative Study of Non-Diabetic Hypertensives with Diabetic Hypertensives Patients Followed at Cardiology Clinic of National University Hospital of Fann. *J. Clinical Cardiology and Cardiovascular Interventions*, 6(8); DOI:10.31579/2641-0419/342

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Abstract

Introduction

Hypertension and diabetes are two major cardiovascular risk factors. Their association is very common with the consequence of a potentiation of cardiovascular complications. The objective of this study was to compare the epidemiological, diagnostic and therapeutic aspects of non-diabetic hypertensive patients with diabetic hypertensive patients.

Patients and methods

We conducted a prospective, descriptive and analytical study on known non-diabetic hypertensive patients (NDHP) and diabetic hypertensive patients (DHP), who presented in consultation at the cardiology clinic of Fann hospital, during the period from April 29th to July 29th 2019. SPSS (Statistical Package for the Social Sciences) version 21 was used for data analysis.

Results

Our study included 50 patients in each group. We found a female predominance in both groups with a sex-ratio M/F of 0.61 in NDHP and 0.56 in DHP. The average age of NDHP was 08 years higher (65.46 years versus 58.5 years) than that of DHP (P=0.0014). Overweight was more common in DHP 44% versus 24% (P=0.0019). History of coronary artery disease and stroke were more frequent in DHP than in NDHP with (20% versus 14%) (P=0.002) and (16% versus 10%) respectively (P=0.0069). The mean pulsed blood pressure was higher in DHP (64 versus 60 mmHg) (P=0.046). The mean total cholesterol in NDHP was higher than that of DHP (2.24±0.53 versus 2.04±0.74 g/l) (p=0.045). Repolarization disorders were more frequent in DHP (22% versus 16%) (P=0.005). Monotherapy was more used in NDHP (30% versus 14%) (P=0.002). Blood pressure balance was more frequently achieved in DHP (56% versus 34%) (P=0.04).

Conclusion:

Our study shows that diabetic hypertensives are a particularly at-risk population compared to non-diabetic hypertensives. Cardiovascular risk is higher and blood pressure control is lower in diabetic hypertensives compared to non-diabetic hypertensives patients.

Keywords: hypertension; diabetes; senegal

Introduction

Hypertension with or without diabetes is a public health problem [1]. Epidemiological studies have shown that the prevalence of hypertension is higher in diabetics than in non-diabetic people of the same sex and comparable age [2–3]. Between 2009 and 2012, in a representative population of the United States, 71% of adults with diabetes had blood pressure > 140/90 mmHg or antihypertensive treatment [4]. Recent

multicentre data report a prevalence of hypertension of up to 77-81% during type 2 diabetes (T2D) in Africa [5-6].

Hypertension is strongly associated with microvascular and cerebrovascular complications. The presence and significance of hypertension during diabetes depends on the type of diabetes. In type 1 diabetic patients, the presence of hypertension is an indicator of renal involvement, while it is a component of metabolic syndrome and a marker of cardiovascular risk in

T2D [7]. The combination (hypertension and diabetes) leads to a cumulative effect of cardiovascular risk [8].

Given the lack of comparative data between these two populations, we undertook to carry out a prospective study over three months with the general objective of comparing the profile of hypertensive patients without diabetes to hypertensive diabetic patients followed up in outpatient consultation at the cardiology department of the National University Hospital of Fann. The specific objectives were also to compare epidemiological, clinical, paraclinical and therapeutic data.

Methodology

We carried out a prospective, descriptive and analytical study on non-diabetic and diabetic hypertensive patients, who presented themselves in an outpatient consultation at the cardiology clinic of the National University Hospital of Fann, over a three-month period from April 29 to July 29, 2019.

Was included any hypertensive patient without diabetes or hypertensive diabetic, adult under treatment (antihypertensive or antidiabetic), having consulted at least twice in the service whose survey sheet contains at least a minimum WHO assessment and having agreed to participate in the study.

The parameters studied were socio-demographic data (age, gender), personal cardiovascular history, associated cardiovascular risk factors, clinical and

paraclinical data (minimum WHO assessment). Therapeutic management (main and adjuvant treatment) was evaluated in both groups.

SPSS (Statistical Package for the Social Sciences) version 21 was used for data analysis. The khi Two test and the exact Fischer test were used according to their applicability condition. Any difference less than 0.05 was considered statistically significant.

Data confidentiality was respected according to the Helsinki Declaration.

Results

A sample of 100 individuals (meeting the inclusion criteria), composed of 50 non-diabetic hypertensive patients (NDHP) and 50 diabetic hypertensive patients (DHP) were selected for comparison. We found a female predominance in both groups with a sex-ratio M/ F of 0.61 in NDHP and 0.56 in DHP. The average age of non-diabetic hypertensives was 08 years higher (65.46 years against 58.5 years) than that of diabetic hypertensives (p=0.001).

Personal history of coronary artery disease and stroke were more frequent in DHP than in NDHP with (20% versus 14%) (p=0.002) and (16% versus 10%) respectively (p=0.006). Overweight was more common in diabetic hypertensives 44% versus 24% (p=0.001). The prevalence of physical inactivity was 63% in diabetic hypertensives, and 53% in non-diabetic hypertensives (p=0.87). Patient characteristics are summarized in Table I.

	HYPERTENSION WITHOUT DIABETES		HYPERTENSION WITH DIABETES	
	Percentage	P (Statistical significance)	Percentage	
Female	62%	-	64%	
Male	38%	-	36%	
Mean age	65,46±10,10	P=0,0014	58,5±10,21	
BMI	Normal	P=0,0028	38%	
	Overweight	P=0,0019	44%	
	Moderate obesity	P=0,297	10%	
Average abdominal circumference (in cm)	95,1±12,5	P=0,0058	101,2±13,86	
Medical history	Stroke	P=0,0069	16%	
	Coronary artery disease	P=0,002	20%	
WHO classification of hypertension	Grade 1	P=0,281	42%	
	Grade 2	P=0,500	14%	
	Grade 3	P=0,198	10%	
Average pulse blood pressure (BP)	60,6±15,41	P=0,0046	64±17,31	
Average Total cholesterol (g/l)	2,24± 0,53	P=0,045	2,04± 0,74	
	Average LDL-cholesterol (g/l)	P=0,048	1,12±0,68	
	Average creatinine in (mg/l)	P=0,228	13,63±3,59	
ECG	Epicardial ischemia	P=0,005	14%	
	Necrosis	P=0,001	8,0%	
	LVH	P=0,001	14,0%	
Antihypertensive treatment	Monotherapy	P=0,002	14%	
	Dual therapy	P=0,198	54%	
	Triple therapy	P=0,22	32%	
Treatment of other risk factors	Aspirin	P=0,0016	50%	
	Statins	P=0,065	46%	

BMI : Body mass index LVH : Left ventricular hypertrophy

Table I: General characteristics of the study population.

In diabetic hypertensives as in non-diabetic, there was a predominance of grade I hypertension (42%, n=21) against 32% (n=16) (p=0.281). The mean pulsed blood pressure was higher in diabetic hypertensives (64 versus 60 mmHg) (P=0.046).

The mean creatinine in diabetic hypertensive patients was 13.63 mg/l, while in non-diabetic patients it was 11.45 mg/l. The average LDL level was 1.44 ± 0.47 g/l in non-diabetic hypertensives compared to 1.12 ± 0.68 g/l in diabetic hypertensives (p = 0.048).

Abnormalities of electrocardiogram with repolarization disorders were present in 20% of diabetic hypertensives, compared to 16% in non-diabetic hypertensives (p=0.003).

The use of monotherapy remained predominant in hypertensive patients with 30%, compared to diabetic hypertensive patients 14% (p=0.002). Antiplatelet therapy was more prescribed in hypertensive diabetics 52% vs 30% (p=0.001), for statins 46% vs 30% (p=0.065). Blood pressure balance

was more frequently achieved in diabetic hypertensives (56% versus 34%) (p=0.04). The monthly cost of treatment of diabetic hypertensives on average was 33 euros, while in hypertensives it was 18 euros.

Discussion

The average age of non-diabetic hypertensives was 08 years higher (65.46 years against 58.5 years), than that of diabetic hypertensives. On the other hand, more advanced ages have been noted in other studies concerning the diabetic hypertensive population as in Morocco [9] and Nigeria [10] . This age difference between the two groups could be due to complications (more frequent and earlier) in diabetics, which push them to consult at a younger age. We noted a female predominance in both groups. These data are found in the Mbaye series in 2013 with 69% [11] and Gueye in 2014 with (67.6%) [12] . This female predominance could be explained by the accumulation of certain cardiovascular risk factors in women (physical inactivity, obesity, etc.). These factors are generally related to cultural or genetic data [13, 14].

The most common personal history was coronary artery disease followed by stroke especially in diabetic hypertensives. These results are consistent with Western [15, 16], and African [17] data that show that diabetes increases the risk of coronary artery disease and stroke in hypertensive patients [17, 18]. Average pulsed blood pressure (BP), which was higher in diabetics than in non-diabetics (64 versus 60.6 mmHg). This is due to the stiffness of larger arterial trunks in diabetic subjects [8]. The average total cholesterol in non-diabetic patients was higher than that of diabetics. This could be explained by the fact that diabetics were more often under lipid-lowering treatment compared to non-diabetic. Repolarization disorders were more frequent in diabetic hypertensives than in non-diabetic patients. This is probably related to the presence of coronary artery disease in diabetics. Dual therapy was used more in diabetics than non-diabetic patients. Dual therapy gives better blood pressure control in hypertensive subjects with or without diabetes. The average monthly cost of treatment for diabetic hypertensives was higher compared to non-diabetic patients. Similar figures were noted in Cameroon and Côte d'Ivoire [19]. This difference is explained by the use in diabetic hypertensive patients of a combination therapy (antihypertensive drugs, lipid-lowering antidiabetics and platelet blockers).

Conclusion

Our study shows that diabetic hypertensives are a particularly at-risk population compared to non-diabetic hypertensives. Cardiovascular risk is higher and blood pressure control is lower in diabetic hypertensives compared to hypertensive patients alone.

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DOI:10.31579/2641-0419/342

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