

FACTORS ASSOCIATED WITH HYPERTENSION IN TYPE 1 DIABETES MELLITUS PATIENTS

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Introduction

Hypertension in the diabetic individual increases the risk and accelerates the course of cardiac disease, peripheral vascular disease, stroke, retinopathy, and nephropathy. It is important to understand the factors that increase the frequency of hypertension in diabetic patients. The aims of this study were to determine the prevalence of hypertension in type 1 diabetes patients and to analyze associated factors.

Methods

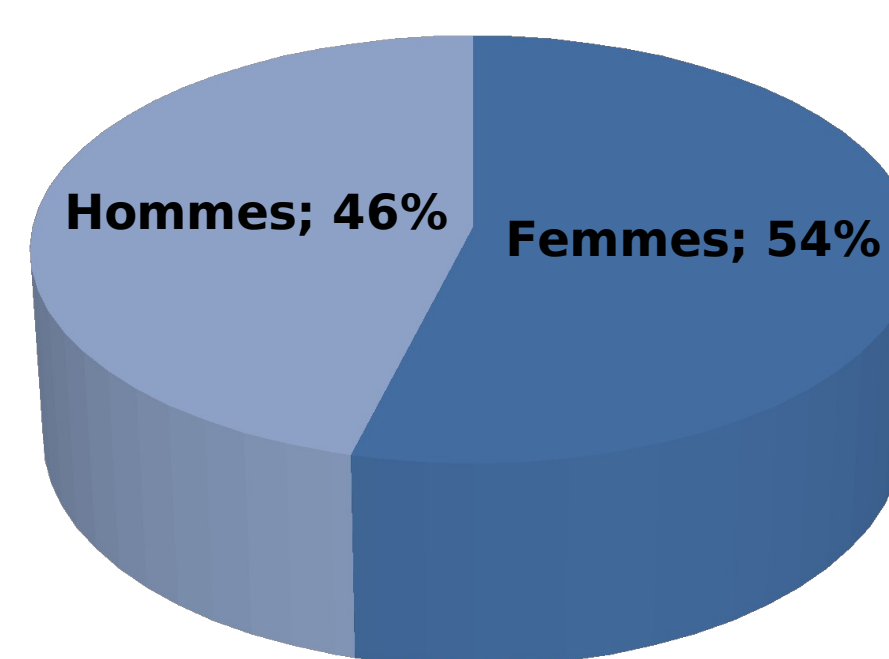
In 150 type 1 diabetes patients, over the age of 18 and with diabetes duration longer than 6 months; body weight, height and blood pressure were measured. Fasting blood samples were collected and analyzed for HbA1c, lipids, lipoproteins and serum creatinine. A microalbumin urine test was performed. Hypertension was defined as blood pressure greater than or equal to 130/80 mmHg or use of antihypertensive medication. Data were analyzed using SPSS software 11.5 version.

Results

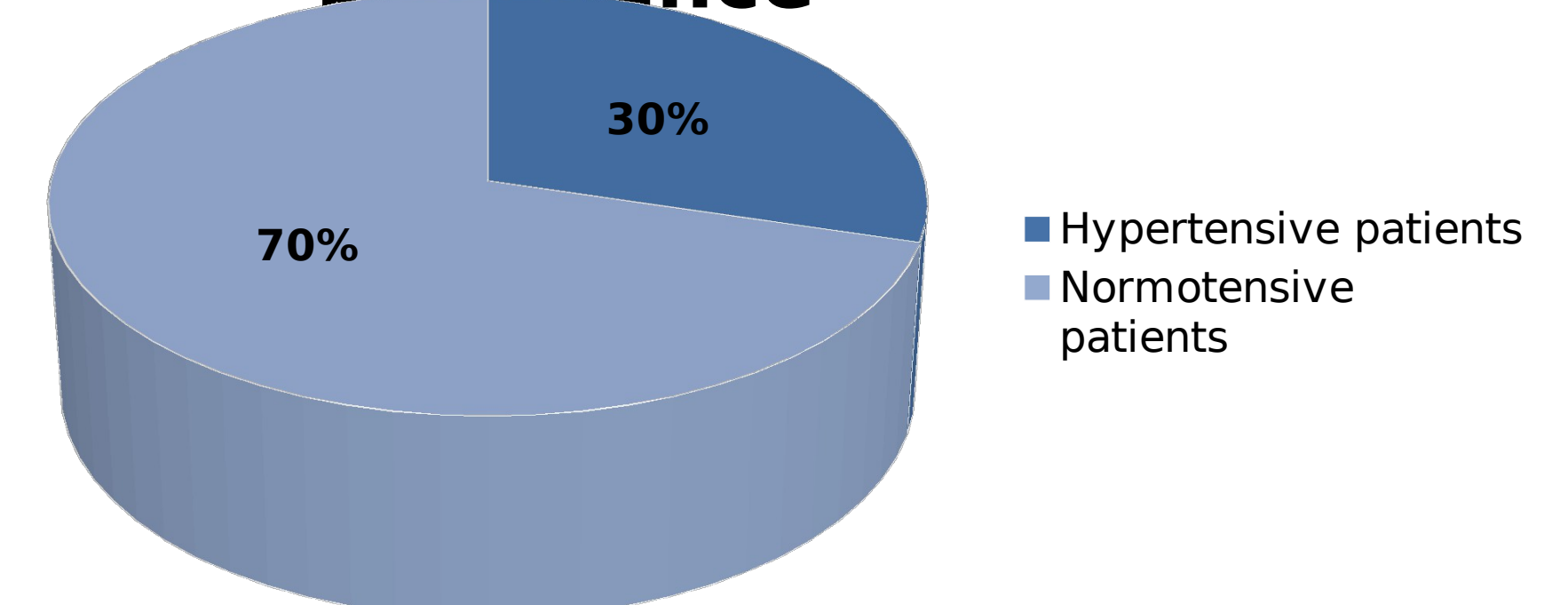
Baseline features of the patients

	Means	
Age (years)	31.25 ± 10.3	18-62
Diabetes duration (years)	12.7 ± 9.2	7 months- 41 years
A1c (%)	10.1 ± 2.3	6 - 17.9

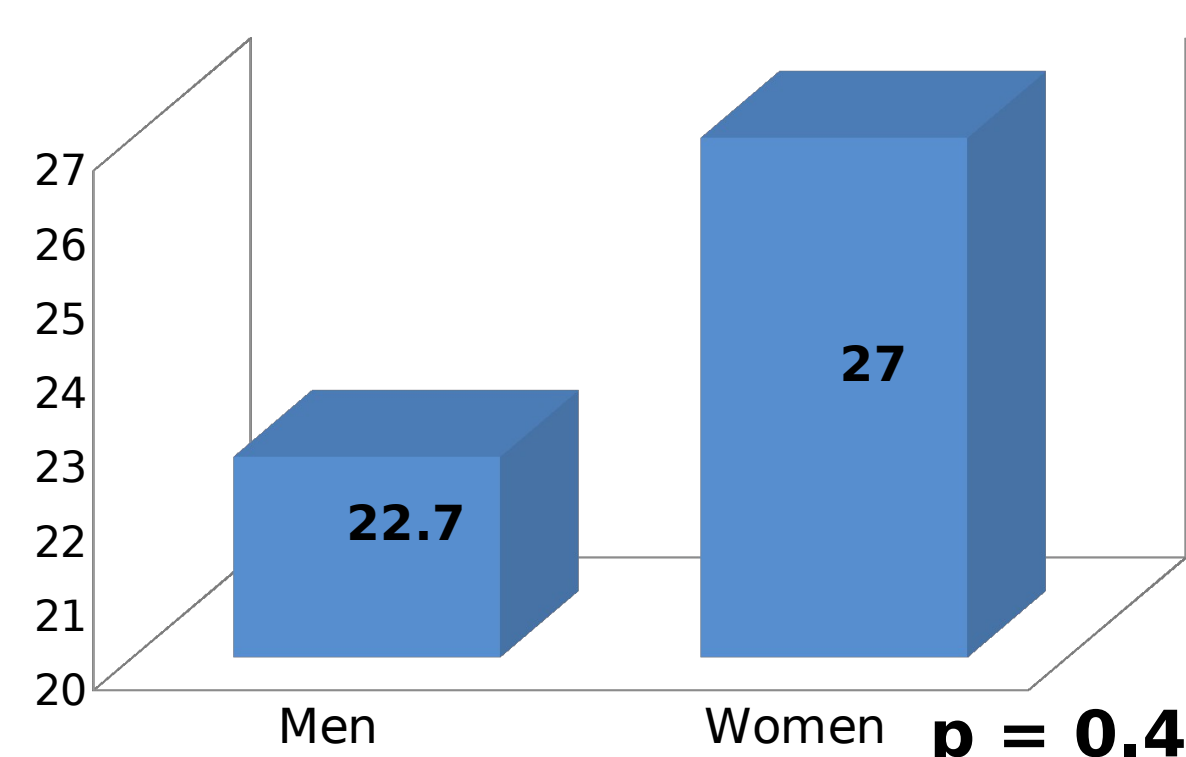
Sex



Hypertension prevalence



Hypertension and sex



Hypertension and renal function

	Hypertension	No hypertension	p
Creatinine (µmol/l)	80 ± 51	64 ± 15	0.01
Creatinine clearance (ml/min)	127 ± 49	125 ± 33	0.7
Kidney failure (%)	11.7	8.8	0.4
Microalbuminuria (mg/24h)	339 ± 723	61 ± 256	0.01
Nephropathy (%)	20	11.6	0.07

Hypertension and lipidic profile

	Hypertension	No hypertension	p
Total cholesterol (mmo/l)	4.46 ± 1.1	4.35 ± 0.8	0.5
Triglycerides (mmo/l)	1.1 ± 0.8	1.05 ± 0.7	0.2
HDL-C (mmo/l)	1.23 ± 0.3	1.17 ± 0.4	0.3
LDL-C (g/l)	1.04 ± 0.3	1.05 ± 0.3	0.8
A1C (%)	9.5 ± 2	10.5 ± 2.4	0.01

Hypertension and clinical features

	Hypertension	Without hypertension	P
Age (years)	39.2 ± 11	29.4 ± 9	0.04
Diabetes duration (years)	14.1 ± 10	11.5 ± 8	0.1
Current smoking (%)	14.2	14.2	1
Insulin doses (UI/Kg/d)	0.82 ± 0.3	0.84 ± 0.2	0.8
BMI (Kg/m ²)	25.9 ± 4.6	23.2 ± 3	< 0.001

Hypertension and nutritional status

Daily intake	Hypertension	Without hypertension	p
Kcal/d	2072 ± 551	2498 ± 972	0.01
Cholesterol (mg/d)	112 ± 149	182 ± 196	0.06
Saturated fatty acids (%)	26 ± 7	27 ± 8	0.4
Monounsaturated fatty acids (%)	50 ± 14	45 ± 16	0.1
Polyunsaturated fatty acids (%)	23 ± 11	26 ± 16	0.3

Discussion

In the current study, 30 % of diabetic patients had hypertension. Overweight and obese patients had higher blood pressure values as proved in the literature. Hypertension was significantly higher in patients with older age, higher microalbuminuria, poor glycemic control, and higher levels of serum creatinine. The fat tissue may influence by its pressor mechanisms such as hemodynamic disturbances, insulin resistance, activation of sympathetic system, sodium retention and biologically active adiposities products.

Conclusion

Hypertension was present in approximately one third of patients with type 1 diabetes, especially in those with older age, higher BMI, higher microalbuminuria, poor glycemic control, and higher levels of serum creatinine. A better control of these factors may improve blood pressure and decrease cardiovascular complications.