

ABSTRACT

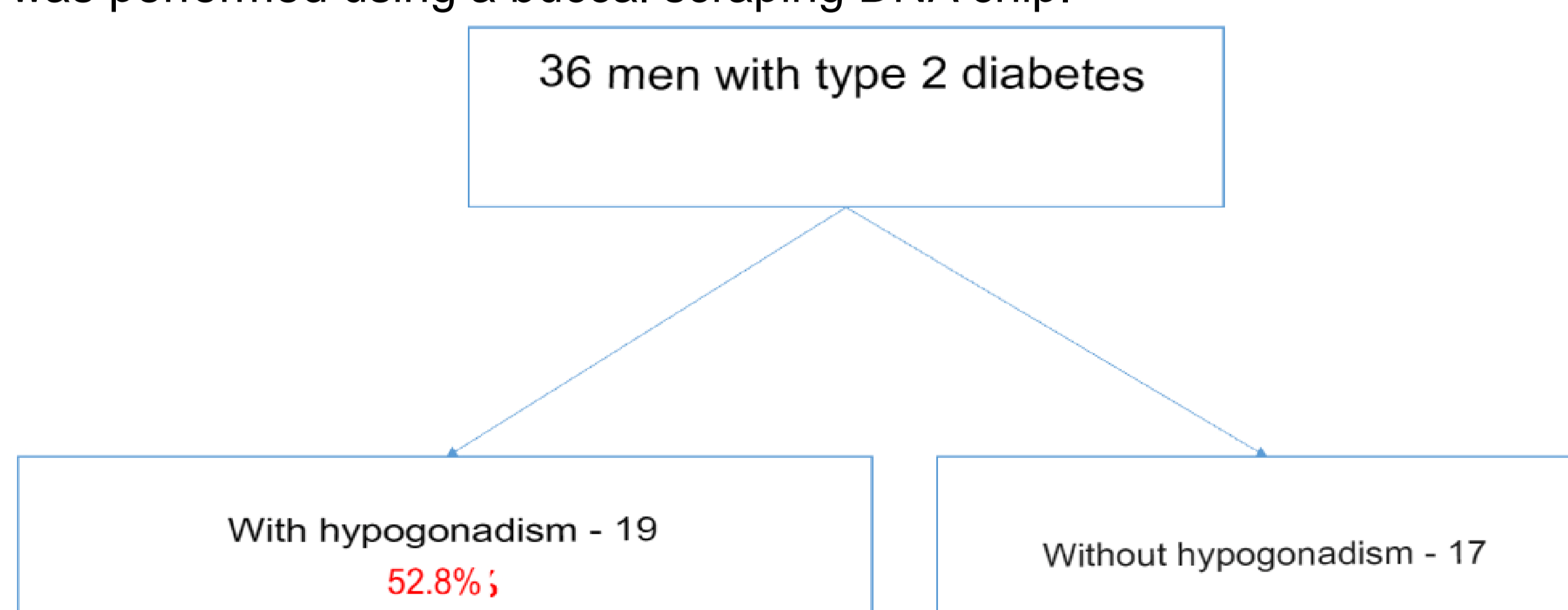
Introduction: Hypogonadism in type 2 diabetes mellitus (DM) may be an independent risk factor for the development of acute CV events. The cohort of men with type 2 diabetes and androgen deficiency is of particular interest for studying clinical features and genetic predictors.

Objective: to study the clinical, biochemical, hormonal and population genetic characteristics of men with type 2 diabetes mellitus and hypogonadism.

Objectives: 1) To assess the incidence of hypogonadism in men with type 2 diabetes mellitus for less than 1 year. 2) To compare anthropometric characteristics and indicators of carbohydrate metabolism in men with type 2 diabetes and hypogonadism and without hypogonadism. 3) Assess the parameters of CV risk - the incidence of arterial hypertension and lipid profile indicators. 4) Determine the population genetic characteristics of men in both groups.

MATERIALS AND METHODS

The study included 36 men with type 2 diabetes, 19 of whom were diagnosed with hypogonadism and 17 formed the control group. Inclusion criteria were: age under 60 years, type 2 diabetes for 3 to 12 months, HbA1% less than 7%, therapy with metformin + SGLT-2 inhibitors/DPP-4 inhibitors/GLP-1 receptor antagonists. Serum analysis for total testosterone was performed from 07.00 to 11.00 am. In both groups, BMI, WC, OB, T/B were assessed, a bioenergy analysis of body composition and blood pressure measurements were performed. Laboratory parameters included HbA1 level, fasting plasma glucose, HOMA-IR index, MAG glycemic variability index, lipid profile, postprandial changes in glucagon levels. Population assignment and genetic analysis of the REEP3 gene variant was performed using a buccal scraping DNA chip.



RESULTS

The incidence of hypogonadism was 52.8%*. Men with hypogonadism had a higher % fat mass (29% vs. 26%) and a trend towards a higher WC/HR index (1.01 vs. 0.96). Arterial hypertension in men with hypogonadism was 1.5 times more common, the lipid profile had more atherogenic characteristics (Δ HDL-C-0.19, Δ TG-0.73). The average HOMA-IR index in men with androgen deficiency was 2.7, and in the control group - 1.6. The glycemic variability index MAG was higher in the control group by 2.28. In the hypogonadism group, men from the mixed population group (Europe/Asia) were 5 times more likely to be found. Genotype variants associated with low testosterone levels occurred with equal frequency in both groups.

	Hypogonadism (19)	Without hypogonadism (17)	p
Total T, nmol/l	8,02[6,9;9,0]	13,7[11,8;17,26]	<0,05
T free	0,189[0,160;0,212]	0,261[0,226;0,290]	<0,05
WHR	1,01[0,96;1,04]	0,96[0,93;1,0]	0,053
Fat mass, kg	29,5[23,1;34,8]	23,9[18,9;27,7]	0,087
Fat mass, %	29,1[27,1;34,3]	26,05[21,9;28,3]	<0,05
HDL-C, mmol/l	1,15[0,93;1,27]	1,34[1,11;1,61]	0,05
TG, mmol/l	2,05[1,61;3,31]	1,32[1,05;2,2]	0,07
HOMA-IR	2,7[2,12;4,6]	1,6[1,3;2,4]	<0,05
Index MAG	3,02[2,7;4,2]	5,3[4,6;5,6]	<0,01
Arterial hypertension	63%(12)	41%(7)	<0,05
Europe	14	15	
Europe/Asia	5 (26,3%)	1 (5%)	
Азия	-	1(5%)	

CONCLUSIONS

In men with type 2 diabetes, even with compensation of carbohydrate metabolism, hypogonadism occurs in every second patient. Men with type 2 diabetes and hypogonadism have a higher cardiovascular risk, are characterized by a significantly higher degree of insulin resistance and a significantly slower rate of change in blood glucose during dual-component antidiabetic therapy. Men with hypogonadism and type 2 diabetes more often have a mixed population composition of genes. In individuals with a genetic predisposition to androgen deficiency, metabolic factors may play a determining role in the risk of developing hypogonadism.