Original Research Article

Comparing of hypogonadism frequency between metabolic syndrome men with normal men

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Abstract: The main objective was metabolic syndrome is characterized by a cluster of cardiovascular risk factors including increased central abdominal obesity, elevated triglycerides, reduced high-density lipoprotein (HDL), high blood pressure, increased fasting blood sugar (FBS), and hyperinsulinemia. MetS has been associated with hypogonadism and erectile dysfunction (ED), and MetS may be considered a risk factor for ED.The aim of this study was finding association between metabolic syndrome and hypogonadism in Khouzestan, Iran. In this study, 60 patients divided to two groups consisted of 30 cases (with metabolic syndrome) and 30 controls. Total and free Serum Testosterone and FBS in all of them were measured. Data was analyzed with SPSS 20 software. There was significant difference between two groups about free Testosterone (P=0.01), FBS (P=0.002) and LH (P=0.03). In Conclusion according to this finding, it is thought the prevalence of hypogonadism in men with metabolic syndrome is more than the general population.
Keywords: Metabolic Syndrome, Fasting Blood Sugar, Hypogonadism, Testosterone.

INTRODUCTION

Metabolic or X syndrome implies simultaneous presence of cardiovascular risk factors or type 2 diabetes such as abdominal obesity, high blood pressure, glucose intolerance, impaired carbohydrate metabolism, and lipid disorders (increased triglycerides, high LDL levels and decrease in HDL). This disease is known with several names such as metabolic syndrome, insulin resistance syndrome, and dysfunction syndrome. Although several definitions exist for the diagnosis of metabolic syndrome, but Adult Treatment Panel criteria, according to which a person must be diagnosed with three cardiovascular risk factors at the same time, is the most practical method of clinical diagnosis [2]. Studies have shown a coincidence in the incidence of metabolic factors among people; this coincidence is more harmful than individual occurrence of these factors.

Though recent studies have shown deficiency in men with type 2 diabetes [4, 5], the relationship between testosterone deficiency and cardiovascular disease continues to be questioned [6, 7]. Findings of other studies suggest that there is an inverse relationship between testosterone level and insulin resistance [8], which can function as a risk factor for Micro and Macro scalar complications [9]. Studies have shown that sexual hormone is closely associated with fasting blood glucose, blood pressure, and lipid disorders in men [10]. Testosterone and sex hormone binding globin (SHBG) are directly related with metabolic syndrome among older men (10). Abdominal or central obesity, which is a symptom of metabolic syndrome, is also a characteristic associated with reduced level of testosterone [11]. Based on what has been mentioned so far, the purpose of this study is to find the relationship between metabolic syndrome and testosterone level in a group of men with metabolic syndrome in Ahvaz.

MATERIAL AND METHODS:

People with metabolic syndrome were selected randomly from patients who referred to diabetes center in Ahvaz's survey of metabolic syndrome in 88-89; then they were separated from control group of non-metabolic syndrome. The informed consent of all those who participated in the study, was obtained.

Questionnaires were presented to all subjects and necessary information, such as necessary information such as age, Medical history, drug history, subsidiary diseases, hypogonadism symptoms, sexual tendencies and number of intercourses per month. Patients with chronic diseases such as CRF, Hepatic Cirrhosis and Diabetes I and II were excluded from study. Height and weight of patients were measured. Body Mass Index (BMI) was measured through this formula: weigh (kg)/(height m)^2. Samples of fasting blood were collected at 8 in the morning and sent to laboratory to evaluate FBS, FAI, Total serum Testosterone, SHBG, TSH, PRL, LH and FSH serum albumin. FAI value was measured through evaluating SHBG and total Testosterone was measured with RIA method.

Quantitative data were shown as mean and standard deviation and qualitative data as frequency queries. The significance level was set at 0/05 in this study. The obtained data were analyzed using SPSS 20 statistical software. Chi-square test for qualitative data and T-test was used for quantitative data.

RESULTS:

This study included 30 patients with metabolic syndrome as patient group and 30 normal subjects as control group. FSH value was 14.1±19.04 in the patient group and 10.58 ± 7.8 in the control group. There was no significant difference between the two groups in terms of FSH. (P=0.345). Table 1 shows the results of comparative tests between two groups.

Table 1: Relation between variables in case and control groups

Variable	No.	Case Mean	SD	No.	Control Mean	SD	P value
FSH	30	14.1	19.04	30	7.8	10.58	0.345
Free Testosterone*	30	9.8	4.57	30	13.2	5.4	0.01
FBS*	30	124.73	46.53	30	95.2	14.17	0.002
*LH	30	4.69	4.4	30	1.4	2.83	0.03
TSH	30	1.81	3.04	30	1.14	0.8	0.25
Testosterone total	30	5.25	2.21	30	3.37	6.41	0.12
:Prolactin	30	1.81	3.04	30	0.8	1.14	0.25

DISCUSSION:

According to the finding of this study, the level of free testosterone of serum is significantly lower in patients with metabolic syndrome than healthy individual. In a study in Nigeria [12], Testosterone level was lower in diabetes and people with hypertension; such a finding is consistent with the results of our study

Based on a study that was conducted in by Kupelin and colleagues in 2006, reduced levels of total testosterone and SHBG are considered risk factors for metabolic syndrome [10]. Unlike this study, ours didn't mark total testosterone level as significantly different between two groups.

The results of another study which was conducted by Muller *et al.;* , showed that the high prevalence of low levels of androgens sex hormones is associated with metabolic syndrome [14]. Our study showed free testosterone to be significantly lower in control group in comparison with patient group.

Two other studies conducted by Kupelian in 2006 and Rodriguez and colleagues in 2007 proved that the prevalence of metabolic syndrome is associated with

aging process and Hypogonadism [7]. In our study, metabolic syndrome was significantly associated with old age.

Selvin and colleagues [15] found that not only low concentrations of free testosterone and bioavailable are associated with diabetes, but also this relationship is independent of adiposity. Our study, also, showed that reduce free testosterone is associated with disorders of glucose and diabetes.

CONCLUSION:

Based on the findings of this study, hypogonadism disorders is more prevalent in patients with metabolic syndrome.

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