

**Original Research Article****To Estimate Serum Testosterone in Patients of Diabetes Type 2 Having Metabolic Syndrome**

Authors

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Dr Sushmita**Abstract****Objective:** *To estimate serum testosterone level in male patients of diabetes type 2 having metabolic syndrome.***Background:** *Major public health issue faced by the world in present century is diabetic mellitus and the prevalence is also increasing explosively, low testosterone levels in men is one of the diabetic related complication.***Methods:** *This was a prospective population based study of sixty seven diabetic male patients aged 36 – 70 years (median 56.36± 10.26) reaching emergency and OPD having metabolic syndrome and were evaluated for serum testosterone levels.***Results:** *sixty Seven male patients with type 2 diabetes mellitus were enrolled during the study period. The mean age of study population was 56.36±10.26 years (range 36-70), while that of control group patients was found to be 39.80±7.92years. The total number of patients who had BMI of more than 25 kg/m², were 19 and all these have low levels of testosterone (<241 ng/dl) which is significant (p value <0.001). Total number of patient having triglyceride level > 150 mg/dl were 17 and all these have low levels of testosterone which is significant (p value <0.001) The mean HbA1c in study group was 8.83±1.95 %, which was significantly higher as compared to control group with HbA1c 4.82±0.40.***Conclusions:** *The present study highlighted that significant difference in serum total testosterone level has been observed in patients of metabolic syndrome (X² =55.7, P=0.0001).***Introduction**

Testosterone is a hormone having role in sexual function. It has been reported low in patients of type 2 diabetic mellitus (DM), and there is growing interest on linkage of some correlation between serum testosterone level in DM with co-occurrence of metabolic syndrome more on that, testosterone is also associated with risk for cardiovascular disease thus leading to

significantly higher prevalence of coronary heart disease (CHD) in men as compared to women.

Elderly men with DM often have low circulating serum testosterone level and clinical studies are being conducted to test whether normalization of circulating testosterone levels might leads to improvement of the metabolic control in men with diabetes type 2 and the wide array of its complications.

Material and Method

Source of Data

Patients reaching LLRH hospital with diagnosed case of type 2 diabetes mellitus for five years without any co morbidities and willing to take part in study were included in the study. This study was approved by the local ethical committee of GSVM medical college

Method of Collection Data

Study Design: Cross sectional study

Place of Study: This analysis was conducted at K.P.S postgraduate institute of general medicine at GSVM medical college Kanpur from December 2017 to March 2019.

Inclusion Criteria

- Type 2 diabetes mellitus male patients.
- Disease of at least 5 years duration.
- Consenting

Exclusion Criteria

- Very sick type-2 diabetes mellitus male patients
- Patients with other comorbidities not related to type-2 diabetes.

Statistical Analysis: The data was collected and entered in MS excels and master chart was made. The data was analysed using appropriate statically tools (SSPE) like percentage means using student t test and level of significance was set at p value

Observation

Table – 1 Mean Serum Testosterone Level in Type II Diabetes

Mean Testosterone	Type II Diabetes Patients
Mean	98.88
S.D.	68.07

The value of mean serum testosterone level in type II Diabetes mellitus patients is 98.88 ± 68.07 ng/dl

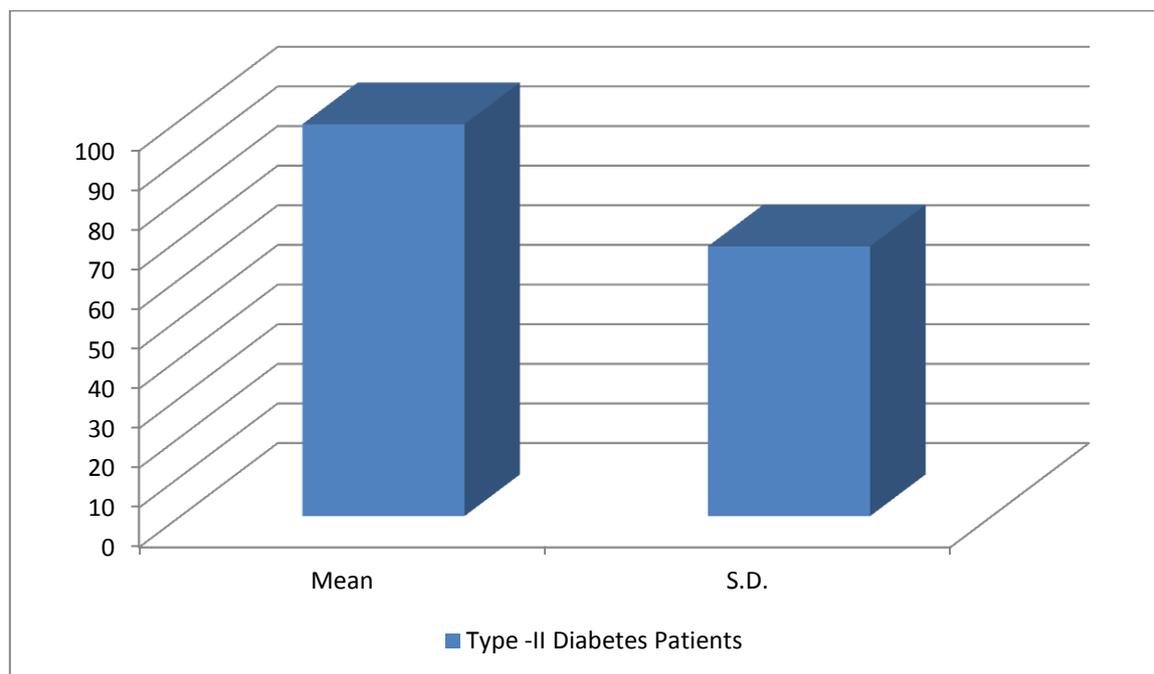


Table – 2 Age Distribution of Study Subjects

Age Yrs	Group Metabolic syndrome	
	No	%
40 - 50	6	8.9
51 – 59	16	23.8
60 – 70	45	67.2

This study consists of total 67 no of study subjects between the age of 40 to 70 years divided in 3 subgroups as 40 to 49 years, 50 to 59 years and 60 to 70 years having comorbidities of metabolic endocrine syndrome.

Table – 3 HbA1c among Study Groups

HbA ₁ C	Group Metabolic endocrine syndrome	
	No	%
>8	48	71.6
<8	19	28.4

On the basis of HbA₁C patient population was divided into 2 subgroups HbA₁c>8% and < 8% metabolic syndrome patient having HbA₁c>8% were 71.4% patients and HbA₁c <8% in 28.4% patients.

Discussion

The analysis of 67 patients were done in my study and in which people were suffering from type 2 diabetes mellitus and metabolic syndrome were included. The level of serum testosterone was estimated in all the patients and it was correlated with these diseases. As this type of study was also done in other parts of the world low serum testosterone level have been reported in men with type 2 diabetes mellitus (kitty kit ting cheung et al 2015) and (cheungkk et al 2017) inverse relationships between the serum testosterone level and cardiovascular risk factors, such as obesity, hypertension, dyslipidemia and insulin resistance, have been observed. The patients seen in cross sectional study constituted total 67 no of study subjects between the age of 40 to 70 years divided in 3 subgroups as 40 to 49 years, 50 to 59 years and 60 to 70 years. 8.9% patients were in 40 to 49 years 23.8% patients were in 50 to 59 years, 67.2% patients were 60 to 70 years group

On the basis of HbA₁c patient population was divided into 2 subgroups HbA₁c>8% and < 8%. *Metabolic syndrome* having hba1c>8% in 71.6% patients and hba1c <8% in 28.4 % patients according to the study done bydandona p et al (2011)¹⁷ the subnormal testosterone concentrations are not related to glycosylated hemoglobin or duration of diabetes, but are associated with obesity.

According to the study done by corona g et al (2007) 7 logistic multivariate regression analysis, incorporating the five components of metabolic syndrome identified a significant association of

elevated waist circumference and hypertriglyceridemia with hypogonadism both in patients, with or without t2dm.

Conclusion

Based on the data of 66 patients of diabetes mellitus seen in GSVM Medical College Kanpur, the conclusions are-

1. The most common age of occurrence of CHD, CKD, MES in patients of type 2 diabetes is 60-70 years.
2. The mean value of serum testosterone in male patients of diabetes mellitus type 2 is 92.79+- 68.07ng/dl.
3. The mean value of serum testosterone level in patients of diabetes mellitus type 2 having metabolic syndrome is 92.79+- 68.7ng/dl.
4. The patients having high values of HbA₁C ie> 8 are more prone to developed METABOLIC SYNDROME.

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