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TESTOSTERONE LEVEL AND SEXUAL DYSFUNCTION IN DRUG NAIVE PATIENTS OF DEPRESSION

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ABSTRACT Hospital based cross sectional comparative type of observational study aimed to study serum total testosterone in drug naïve patients of moderate to severe depression with sexual dysfunction was performed in 80 such subjects. Diagnosis of Moderate to severe depression was made according to (ICD-10) criteria, reconfirmed by 2 senior Psychiatrists. Sexual dysfunction is evaluated by The Arizona Sexual Experiences Scale (ASEX).The subjects are divided into two groups, depression with sexual dysfunction (experimental group) and depression without sexual dysfunction (control group) respectively. Serum total testosterone is measured in both the groups. Sexual dysfunction was reported in 72.5% of the subjects. Low Testosterone had a statistically significant correlation with sexual dysfunction in drug naïve patients of depression.

KEYWORDS : depression, sexual dysfunction, testosterone

INTRODUCTION

Depression is the most common illness worldwide and the leading cause of disability [1]. NIMHANS mental health survey 2015-2016 indicates that 1 in 40 and 1 in 20 suffer from past and present depression respectively [2]. Sexual dysfunction (SD) is more common in patients of depression than general population [3]. Depression increases the risk of SD by 50- 70%, while SD also increases the risk of depression by 130–200 %. [4, 5] Antidepressants can enhance sexual function in depressed patients affected by the illness related SD [6]. Treatment-emergent sexual dysfunction (TESD), including both the worsening of pre-existing dysfunction and the development of new dysfunction in previously untroubled patients further increases the complication in diagnosis and treatment of SD in depressed patients and [7]. SD has multifactorial causation, one of them is endocrinal abnormalities. Reductions in testosterone level in men are associated with low sexual desire, reduced nocturnal erections and ejaculate volume, all of which improve with testosterone supplementation[8]In women, association of sexual dysfunction with serum testosterone is controversial .Testosterone supplementation after menopause does improve some aspects of sexual function in women, but long-term outcome data are needed[9] The current study attempts to determine the prevalence of sexual dysfunction and assessment of sexual domains affected in drug-naïve patients in the reproductive age group diagnosed with moderate to severe depression. This study also tries to find correlation of testosterone with severity of sexual dysfunction in males and females firstly in India.

METHODOLOGY

A cross sectional comparative observational study carried out in Department of Psychiatry, SMS Medical College, Jaipur. Informed consent was sought from all subjects participating in the study. Eighty outpatients, age 18–45 years, either sex, with diagnosis of moderate to Severe depression as made according to (ICD-10) [10] criteria, reconfirmed by 2 senior Psychiatrists were enrolled consecutively from 2017 to 2018. Exclusion criteria were pregnancy, nursing, or having given birth within the last 6 months, medical, surgical, psychiatric illness, current/previous cases of cancer, and intake of antidepressants or antipsychotic drugs and hormonal contraceptives during the last 3 months.

Demographic and clinical data were obtained from the patients through interview. Sexual dysfunction scores were determined by the investigator at the same time point using ASEX scale [11]. The subjects were divided into two groups Experimental and Control, according to the presence or absence of sexual dysfunction respectively. Serum total testosterone is measured in both the groups.

LABORATORY WORKUP

A blood sample was taken in morning after an overnight fast, and then centrifuged to separate the serum. To minimize variations in hormone levels because of diurnal and cyclical fluctuations, the data collection was carried in the hours between 9 and 11 am and planned according to the women's menstrual cycle: Women were examined on days 6–10 of their menstrual cycle.

Normal values of Serum Testosterone - (Female 0.21–2.98 nmol/L OR 6–86 ng/Dl, Male 9.36–37.10 nmol/L OR 270–1070 ng/Dl) [12]

Statistical analysis:

The qualitative data were expressed in proportion and percentages and the quantitative data expressed as mean and standard deviations. The difference in proportion was analysed by using chi square test and the difference between mean values of the two groups was analysed using students t test. Correlation analysis were performed using correlation coefficient .Significance level for tests were determined as 95% (P< 0.05).

The Arizona sexual experiences scale (ASEX) [17]

ASEX is a brief, five-item scale designed to evaluate the core elements of sexual functioning: drive, arousal, penile erection/vaginal lubrication, ability to reach orgasm, and satisfaction with orgasm. Each item is rated with a six-point Likert system. A total ASEX score of 19 or greater, any one item with a score of 5 or greater, or any three items with a score of 4 or greater have all been found to be correlated with impaired sexual function.

RESULTS AND OBSERVATION

Table 1: Sociodemographic data

Variable	Experimental group	Control group	P Value
Age	Mean ±SD	Mean ±SD	
	30.36±6.60	27.84±7.56	> 0.05(NS)
Gender female male	 31(53.45) 27(45.45)	 10(45.45) 12(54.55)	 > 0.05(NS))
Domicile Rural Suburban	 30 (51.72) 0(0)	 9(40.91) 2(9.09)	

Urban	30(46.55)	12(54.55)	> 0.05(NS)
Education			
UG	0(0.00)	1(4.55)	
UM	21 (36.21)	3(13.64)	
MS	13(22.41)	4(13.64)	
G	19(32.76)	9 (40.91)	
PG	5(32.76)	5(22.73)	> 0.05(NS)
Marital status			
Married	45(77.59)	7(31.82)	
Unmarried	13 (22.41)	15(68.18)	> 0.05(NS)
Religion			
Hindu	50(86.21)	20(90.91)	
Muslim	8(13.79)	2(9.09)	> 0.05(NS)
Family history			
No	42(72.41)	11(50.00)	
Yes	16(27.59)	11(50.00)	> 0.05(NS)

Sexual dysfunction was reported in 72.5% (N=58) of the subjects, 69.23% in males and 75.60 % in females. Males and females were almost equally distributed in both the groups and equally represented in both rural and urban communities. Most of the subjects were Hindu. Marital status, family history for psychiatric Illness and education had no statistical significant difference in both group**.**

Table - 2: Distribution of cases according to Serum testosterone level

		N	Mean	Std. Deviation	P value	Correlation Coefficient (r)	Inference
F	Experimental group	31	22.616	35.7084	P<0.05 **Sig.**	-0.13	**Negative correlation**
	Control group	10	48.858	13.0532			
M	Experimental group	27	343.056	168.9403	P<0.05 **Sig.**	-0.6	**Negative correlation**
	Control group	12	490.578	118.1383			
Total	Experimental group	58	182.364	190.3494	P<0.05 **Sig.**	-0.42	**Negative correlation**
	Control group	22	277.868	253.5031			

Serum testosterone level was significantly lower in experimental group in males, females and in total subjects Testosterone has stronger negative correlation with severity of sexual dysfunction in males (-0.6) than females (-0.16).

DISCUSSION

Our study shows high prevalence rate (72.5%) of Sexual dysfunction in MDD subject, while SD in male and female were 69.23% and 75.60% respectively. Our findings are comparable to the results of Casper et al who found sexual dysfunction in 72% of subjects of unipolar depression [13]. Also Indian study done by Kendurkar and Kaur [14] reported SD in 76% of cases in drug naïve depressed subjects including 66.7% males and 75% females.

In this study mean testosterone score is significantly lower in male experimental group compared with controls. There is much document evidence that testosterone is the fuel of male sexual desire [15, 16]. . Mean Testosterone score shows significant and good negative correlation with severity of sexual dysfunction in experimental group. This finding is consistent with other studies [17, 18]. Functional brain imaging showed decreased activation in regions of the brain in androgen deficient men exposed to sexual stimuli that are typically activated in healthy controls and in androgen-deficient men after testosterone replacement [19] Testosterone also regulates nitric oxide synthase and exerts trophic effects on ischiocavernosus, bulbospongiosus muscles and cavernosal smooth muscle which is necessary for the veno-occlusive response that lead to erection.[20]

In our study mean testosterone score was significantly lower in female subjects of experimental group compared with controls. Randolph et al prospective study demonstrated an association between total testosterone and masturbation frequency, sexual desire, and arousal in menopausal women [21] Mean Testosterone score showed significant and good negative correlation with severity of sexual dysfunction in females. Similar to our results Wåhlin-Jacobsen S et al reported, positive correlations between sexual function and age-adjusted levels of total testosterone in premenopausal and postmenopausal women [22]. In contrast to these findings, some studies failed to find any association between total Testosterone and female sexual dysfunction. [23-24]. testosterone supplementation increases desire and sexual response which provide indirect evidence that testosterone deficiency causes sexual dysfunction [40]. . Multiple mechanisms for sexual dysfunction have been explained which may either involve deregulation of HPA axis caused by low testosterone level or variability in androgen receptor sensitivity but no single consensus was established. All the above findings suggest that role of testosterone in sexual dysfunction not only in male but also in females.

CONCLUSION

This cross-sectional study showed that sexual dysfunction is statistically significantly correlated with the low level of total testosterone in depressive males and females. The relation between sexual consequences and endocrine disease is complex, but understanding of the hormone-related sexual dysfunction in incidence and pathophysiology of it, will enable improved management. Treatment of sexual dysfunction with testosterone may be considered, but Testosterone supplementation in both men and women needs closer scrutiny as testosterone may act as a two edged sword leading to complications associated with its supplementation.

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