PLASMA GONADOTROPIN, SEX HORMONES AND PROLACTIN LEVELS IN DIABETIC PATIENTS

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SUMMARY : Sexual dysfunction is an important problem in diabetic patients. Frequency of dysfunction in diabetic men ranges from 27.5 to 75 % in various studies.

Normal sexual function is dependent on harmonious integration of endocrine, neurologic and vascular systems.

We evaluated sexual endocrine function in diabetic patients. Plasma follicle stimulating hormone (FSH), luteinizing (LH), prolactin (PRL), free testosterone (T), estradiol (E) levels were measured in diabetic male and female patients and healthy controls. In our study, 75 diabetic patients (53 female, 22 male) aged 22-78 years and 35 nondiabetic controls (25 female, 10 male) aged 20-57 years were investigated. Plasma hormone levels were determined by radioimmunoassay. In male diabetic group, mean plasma FSH, LH, T and PRL levels were 8, 12 IU / L, 13, 36 pg / ml and 147, 51 IU / L respectively. Mean hormone values of the male patients were not significantly different from the values of control group ($p > 0.05$). In premenopausal female diabetic group, mean plasma FSH, LH, E and PRL levels were 11, 04 IU / L, 7, 36 IU / L, 73, 52 pg / ml and 188, 73 IU / ml respectively. Mean plasma FSH value was significantly higher in premenopausal diabetic female patients than the value of premenopausal controls ($p < 0.01$). Mean plasma LH, E, T and PRL values in premenopausal female diabetics and in postmenopausal female diabetics were not significantly different than the levels of their control groups ($p > 0.05$ and $p > 0.05$).

Our results suggested that, sexual dysfunction in diabetic patients is not related to hormonal insufficiency but may be the result of psychological, neurological and vascular involvement of disorder.

Key Words : *Diabetes Mellitus, Gonodotropins, Sex Hormones, Prolactin.*

INTRODUCTION

Sexual dysfunction is common in diabetic patients. Neuropathy, vascular disease and psychological problems may be important factors contributing the sexual dysfunction in diabetes. Hormonal alterations probably less important than gonadal androgenic functions (3). In this study, the pituitary-gonadal functions were studied in female and male diabetic patients.

MATERIAL AND METHODS

Hormonal changes were investigated in 75 (53 female, 22 male) diabetic patients aged 22-78 years and 35 healthy controls (25 female, 10 male) aged 20-57 years. The patients who admitted to Endocri-

nology and Metabolism Clinic of Medical Faculty of Gazi University for treatment of diabetes mellitus, were included in the study. 22 male diabetic patients ages were between 40-78 (mean : 59.6), 10 control male ages were between 40-75 (mean : 55.2), 31 premenopausal diabetic female patients ages were between 22-50 (mean : 37.3), 15 premenopausal controls ages were between 19-50 (mean : 33.4). 22 postmenopausal diabetic female patients ages were between 52-70 (mean 60.3), 10 postmenopausal controls ages were between 47-70 (mean : 58). The patients with previous history of other endocrine disorders were excluded from the study. Venous samples were collected between 7.00 and 8.00 a.m. and in the follicular phase of menstrual cycle in premenopausal women. Plasma follicle stimulating hormone, luteinizing hormone, prolactin, free testosterone and estradiol levels were measured by commercially available radioimmunoassay kits. t-test (two sample assuming unequal variances) was used for statistical analysis.

RESULTS

The mean age of diabetic patients was not significantly different from the control group ($p>0.05$).

The mean values for all the hormones, studied in patients and control groups, are shown in Table 1.

There were statistically significant differences between FSH levels in nonmenopausal patients and control group ($p<0.01$). Mean plasma FSH value was significantly higher in patient group.

There was no significant differences between mean plasma LH, E, T and PRL levels in nonmenopausal patients and control group ($p>0.05$).

Mean plasma FSH, LH, E and PRL levels in diabetic menopausal females and diabetic males were not different from the values of their control groups ($p>0.05$).

DISCUSSION

Sexual dysfunction is common in male and female diabetic patients. Reports about the frequency of sexual dysfunction in diabetic men ranges from 27.5 to 75 % in various studies (9). Several investigations had been made concerning sexual function in diabetic men and women but only a little part of

	FSH (IU/L)	LH (IU/L)	E_2 (pg/ml)	T (pg/ml)	PRL (IU/L)
Diabetic females premenopausal (n : 31) mean age : 37.3	11.04	7.36	73.52	2.02	188.73
Controls premenopausal (n : 15) mean age : 33.4	4.65	4.87	91.98	1.53	96.4
p values	< 0.01	> 0.05	> 0.05	> 0.05	> 0.05
Diabetic females postmenopausal (n : 22) mean age : 60.3	36.07	12.47	26.03	1.34	176.66
Control postmenopausal (n : 10) mean age : 58	69.18	22.93	45.5	1.31	215.06
p values	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
Diabetic males (n : 22) mean age : 59.6	8.12	4.88	45.48	13.36	147.51
Control males (n : 10) mean age : 55.2	3.52	3.2	118.79	16.49	115.34
p values	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05

Table 1 : The mean values of hormones studied in patients and control groups.

them reported that diabetic women have sexual dysfunction when compared with diabetic men (1, 6, 7, 9).

Previous studies on the relationship between the gonadal function and impotence in diabetic men have yielded conflicting results (2, 4, 5, 8). Experimentally induced diabetes in animals has been shown to cause marked alterations in gonadal androgenic function (3). Low plasma testosterone and testicular testosterone levels were found in streptozotocin diabetic rats (3).

Although the prevalance of impotence was more than three times higher among men with diabetes than among men without diabetes, previous studies on the relationship between the gonadal function and impotence in diabetic men have yielded conflicting results (2, 4, 5, 8).

We found no significant difference in the plasma concentrations of FSH, LH, PRL, T and E between male diabetic patients and male healthy control group. Frederich et al. reported that diabetic men with primary organic impotence had increased urinary LH and diminished serum free testosteronee levels (2). Jensen et al. found that sexual disfunction was not accompanied with altered serum concentrations of FSH, LH, PRL, T and E but with peripheral neuropathy (5).

A similar prevalance of primary and secondary hypogonadism was seen in men with diabetes and in nondiabetic impotent men at the same age and in healthy controls when serum testosterone level was measured (4).

Several investigations of women with diabetes reports fewer sexual dysfunction than have been reported by diabetic men. The effects of diabetes on female sexuality are not so clear. In this study, we investigated the plasma levels of FSH, LH, PRL, T and E in premenopausal and postmenopausal diabetic women and age related control groups. Only mean plasma FSH level was to be higher significantly in premenopausal diabetic females than premenopausal controls.

Jensen evaluated the natural history of sexual dysfunction in diabetic women. In this study, diabetic women did not differ in sexual dysfunction from their healthy controls (6). In diabetic women one or more sexual dysfunctions are reported : decreased libido, slow arousal, inadequate lubrication, anorgasmia or dyspareunia (7).

The effect of diabetes on female sexual response is conflicting. Further research is needed.

Our results suggested that, sexual dysfunction in diabetic patients is not related to hormonal insufficiency but may be the result of psychological, neurological and vascular involvement of disorder.

Although endocrine-related disorders don't play a major role in the pathogenesis of diabetic sexual dysfunction, a recognized hormonal abnormality may be emenable to medical treatment, thus, endocrine screening is recommended for particularly impotent diabetic men.

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