Neuroendocrinology Letters No.5, October Vol.24, 2003
 ISSN 0172–780X **www.nel.edu**

ORIGINAL ARTICLE

Serum testosterone levels and coital activity in men with somatosexual disorders

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Submitted: *September 23, 2003*
Accepted: *September 29, 2003*

Key words: **serum testosterone; coital activity; Klinefelter's syndrome; varicocele; ageing**

*Neuroendocrinol Lett 2003; **24**(5):321–324 pii: NEL240503A04* *Copyright © Neuroendocrinology Letters* ***www.nel.edu***

Abstract

OBJECTIVES: The aim of our study is to assess the relationship between serum testosterone levels and the coital activity in groups of married men with Klinefelter's syndrome and in men with a varicocele investigated for marital infertility. These are compared with a group of somatosexually well developed men with a normozoospermia and adequate sexual life.

SUBJECT AND METHODS: The serum testosterone levels were assessed in 77 patients with Klinefelter's syndrome (mean age 31 years, SD 5.78), 58 men with a varicocele (mean age 30.5 years, SD 5.80) and 85 healthy men with normal spermiological values (mean age 32.7 years, SD 6.31). The frequency of sexual intercourse in their marriage was assessed by interview.

RESULTS: We found that, although their serum testosterone levels were significantly lower ($p < 0.01$), the coital activity in both groups with somatosexual disorders did not significantly differ from the group of men with normal semen parameters. The coital activity in the group of men with Klinefelter's syndrome decreased after 35 years of age, before any decrease in serum male sex hormone levels occurred.

CONCLUSION: Statistical analysis revealed that coital activity did not correlate with testosterone levels, but correlated significantly with age. A possible interpretation of the data is that Mother Nature ensues the survival of species by the production of not only a redundant amount of spermatozoids, but also of male sex hormones.

Abbreviations & units
ANOVA – Analysis of variance
chi² – Chi square dependency test
HTDM – Heterosexual Development of the Male Questionaire
nmol.l^{-1} – Nanomol / litre
PADAM – Partial Androgen Deficiency of the Ageing Male
SAM – Sexual Activity of Men Questionaire
SD – Standard deviation

Introduction

Present literature often uses the term PADAM - Partial Androgen Deficiency of the Ageing Male [1]. It is based on a finding, that the production of the male sex hormone in the testicles shows a gradual physiological decrease with increasing age. As part of the prevention and the therapy of various disorders and difficulties in ageing men it is recommended to carry out substitution therapy with androgens.

The relationship between serum testosterone levels and sexual activity in various age groups of healthy men and also of patients with various disorders of somatosexual development has been studied repeatedly [2, 3, 4, 5; 6]. The usage of androgens in patients with various sexual disturbances has been and still is a common practice.

The aim of our study is to assess the coital activity in groups of married chromatinpositive patients (Klinefelter's syndrome), in men with a varicocele investigated for marital infertility and to compare the findings with a group of somatosexually well developed men with a normozoospermia and adequate course of their sexual life.

Subjects and methods

The first group, selected from 114 men with Klinefelter syndrome [4], consisted of those, who had azoospermia, 47, XXY karyotype, who were married and between 21 and 45 years of age /mean age 31 years, SD 5.78/ . In all 77 patients, a diagnostic programme, including clinical and spermiological examinations, complete karyotyping and assessment of serum levels of male sex hormone was performed.

The second group included 58 probands (9% azoospermia, 40% oligozoospermia), selected from a group of 109 patients with a varicocele. Only married men between 21 and 45 years of age were eligible /mean age 30.5 years, SD 5.80 / [4]. Because of the infertility of their marriage, their ejaculate and also the serum levels of male sex hormone had been assessed repeatedly. Marital status was the only inclusion criterion, as there are no significant differences between levels of plasma testosterone between different spermiologic subgroups [4].

The control group was selected from 108 men with normal semen parameter, and consisted of 85 married men between 21 and 45 years of age /mean age 32.7 years, SD 6.31/, living in an infertile marriage. They were found to have properly developed genitals and normal spermiological values [7].

The serum level of testosterone was assessed in the Endocrinological Institute in Prague using a method by Horton *et al.* [8]. The blood samples were taken between 8 and 10 a.m.

Information about the frequency of sexual intercourse in all three groups was obtained through an interview, always lead by one person, and using the SAM (Sexual Activity of Men) [5] and HTDM (Heterosexual Development of the Male) Questionaire [6].

The results were statistically processed using dispersion analysis (ANOVA), Pearson's correlation coefficient, *T-test*, Dunnett's test and Chi square dependency test.

Results

The average levels of serum testosterone (nmol.l^{-1} of plasma) in the groups of 77 married Klinefelter's, 58 patients with a varicocele and 108 normozoospermic men, divided into subgroups according to the age between 21 and 55 years, are presented in **Fig.1**:

The results show that the average level of serum testosterone in men with Klinefelter syndrome of all age subgroups under 45 years and the patients with a varicocele under 40 years was statistically significantly lower than in the control group ($p < 0,01$).

In the control group, the serum testosterone level gradually decreases with age. On the contrary, the average serum levels of male sex hormone fluctuated between 12,8 and 15,9 nmol.l^{-1} in the patients with Klinefelter's syndrome and between 18,7 and 22,2 nmol.l^{-1} in the patients with a varicocele and remained on the same level across all age groups (*see* **Fig. 1**).

Based on the assessment of coital activity, the patients were divided into three categories:
1. sexual intercourse less than 1x a week
2. 1x or 2x a week
3. 3x per week or more

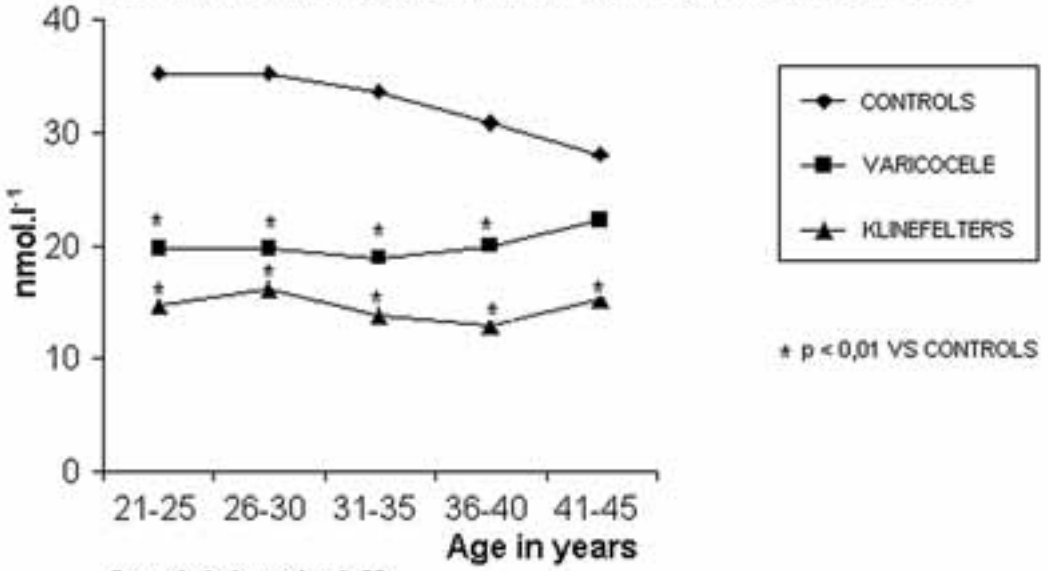
Fig.2 shows the proportional representation of these three categories in all the 5-years subgroups of the three followed groups of assessed patients:
– in the control group of 85 normozoospermic men
– in 77 Klinefelter's
– in 58 patients with a varicocele.

In the control group, the correlation between coital activity and age was highly significant ($p < 0,01$; $k = -0,417$).

In the group of men with Klinefelter syndrome, the frequency of sexual intercourse (subgroups 36–40 and 41–45 years of age) decreased to less than once per week, although the serum level of testosterone remained unchanged.

The statistical analysis of the data (Person's correlation coefficient) has not detected any significant correlation between coital activity and testosterone levels in cases of Klinefelter's syndrome. However, a significant negative correlation of coital activity with age was found ($p < 0,05$; $k = -0,232$).

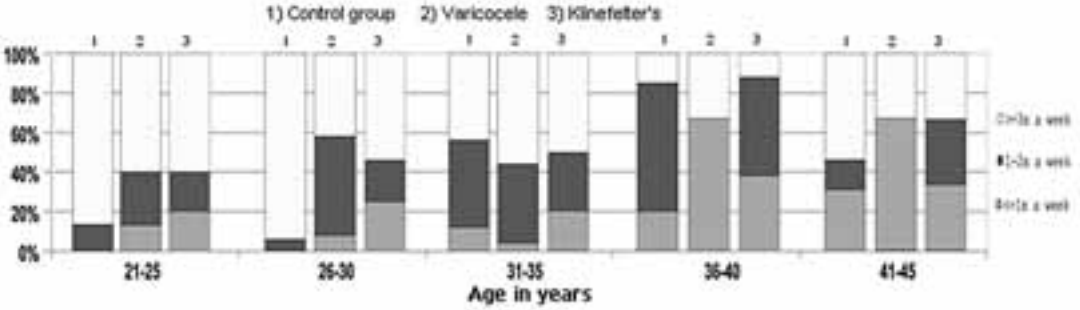
Fig.1: Average values of plasmatic testosterone (nmol.l^{-1}) in 85 normozoospermic men, in 77 patients with Klinefelter´s syndrome and in 55 patients with a varicocele



Serum testosterone levels SD

Age in years	21-25	26-30	31-35	36 -40	41-45
SD Control group	4,13	2,83	2,28	2,08	2,16
SD Klinefelter's syndrome	1,84	2,09	1,91	2,06	1,8
SD Varicocele	1,35	1,54	1,59	1,87	2,28

Fig.2: Coital activity in three goups of men according to their age.



The data in **Fig. 2** shows that coital activity in the group of patients with Klinefelter's syndrome between 21 and 45 years of age was lower than in the group of healthy men. However the difference was not found to be significant ($chi^2 = 1.84$, $p < 0.398$). At the same time the serum testosterone levels were significantly lower in patients with Klinefelter's syndrome in comparison with the group of fertile and potent men ($p < 0.01$).

There was no significant difference in coital activity between the men with a varicocele and the control group ($chi^2 = 5.04$, $p < 0.08$), although the average serum level of male sex hormone was significantly decreased in the varicocele group ($p < 0.01$).

The coital activity in the group of patients with varicocele did not correlate with age.

Discussion

The examination of two groups of married men with a somatosexual disorder (patients with Klinefelter's syndrome and with a varicocele) revealed, that although their average serum testosterone level was significantly lower, their coital activity between 21 and 45 years of age did not show any significant difference, when compared with the group of well-fertile men examined for marital infertility,.

A speculative explanation for our findings could be the fact that Mother Nature ensures the survival of species through the production of excessive amount of male sex hormone and spermatozoids. We propose, that as soon as testosterone binds to the intracelullar receptors in the target organs, the rest of testosterone in the circulation is redundant. However, in cases of eunuchoid patients with serum testosterone levels

under 12 nmol.l^{-1}, we revealed insufficiencies in the course of their sexual life [3].

On the basis of these findings, we conclude, that the safety factor is double or triple; 12 nmol.l^{-1} in comparison with the usual serum levels of about 30 nmol.l^{-1}.

Also the spermiologic and genetic examination performed during a paternity suit proved that conception after sexual intercourse occurred despite a repeated finding of oligozoospermia with less than 5 million sperm per ml [9]. It is important to note that there is tens of millions (and often more than one hundred million) male germinal cells in one normal ejaculate.

We found that a decrease in coital activity in the Klinefelter's syndrome group occurred after 35 years of age, thus before any decrease of serum levels of male sex hormone took place. The statistical analysis revealed that coital activity did not depend on serum testosterone level. However, its levels were above the lower limit of the norm. The frequency of sexual intercourse of the men with Klinefelter's syndrome correlated significantly with age. In our opinion, the serum levels of testosterone are an important factor effecting coital activity, but other changes accompanying ageing also play a role [10]. The efficiency of the effector cardiovascular and nervous system, and the tissue sensitivity to testosterone are particularly important from the somatic point of view [11, 12].

The use of androgenic preparations in the treatment of some sexual disorders in men is now common. However this therapy has its own adverse effects and contraindications [13, 14]. While before administration of Sildenafil (Viagra), the condition of cardiovascular system has to be taken into account [15], the administration of male sex hormone is contraindicated in cases of prostatic cancer [14, 16]. So far, the question whether substitutive therapy with androgens could support the transformation of a latent prostatic carcinoma into a clinically significant tumor has not been fully answered. Based on the present findings, we propose that restraint should be exercised in androgen prescription unless their indications are better defined [17].

Acknowledgments

We would like to acknowledge the helpful contribution of ing. Alena Dohnalová to the statistical analysis of the presented data.

Supported by research project 111100001 1.LF UK.

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