

SEMEN AND HORMONAL ANALYSIS OF PATIENTS HA VING
AZOOSPERMIA AND OLIGOZOOSPERMIA Mubashir A. Shaikh, Muhammad
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ABSTRACT:

The possible changes were determined in semen quality of azoospermic and oligozoospermic Pakistani infertile men, over a period of 4 years (1998 to 2002), through Semen examination, which is one of the most valuable diagnostic methods in male infertility. Retrospective analysis of semen volume, liquefaction time, pH and sperm concentration were carried out for 150 men from infertile couples in which 50 cases (33.33%) showed azoospermia (A), 50 cases (33.33%) had oligozoospermia (B), 20 cases (13.33%) were asthenozoospermic (C) and 30 cases (20%) were found to be normozoospermic (D). The linear regression analysis shows a decrease in semen volume in groups A and B, mean semen volume (ml) for the four respective studied groups being 1.5: 0.4, 1.7: 2, 2.5: 1:0.1 and 2.4: 0. The mean liquefaction time (min) was 37.5: 0.7, 28.7: 3.7, 18.5: 0.7 and 18.6: 3.6 in groups A, B, C and D respectively, showing linear increase in groups A and B. pH did not vary much amongst groups and ranged from 7.0 - 8.5. Mean sperm concentration was 0.0, 6.7: 1.7, 45.3: 8.8 and 86.8: 7.5 million/ml in groups A, B, C and D. The hormonal profile showed normal or low levels of testosterone while FSH and LH levels indicated inverse/negative correlation to sperm concentration, whereas no significant relationship between serum prolactin and semen density was detectable between different groups.

KEY WORDS: Azoospermia, Oligozoospermia, Asthenozoospermia, LH, FSH, Prolactin, Testosterone, Infertile, Male, Pakistan.

INTRODUCTION

It was Loeuwen Hock who made the observation that a man in whom semen no spermatozoa can be detected is incapable of begetting children. In 1778 Glichen Russwarm, expressed a view to the same effect that "In barren marriages the microscope could settle the dispute between men and women".

Fertility is important in maintenance of successful marriages. It is a worldwide problem, which has received considerable attention in recent years. In oriental culture and social set up, men hardly agree for fertility evaluation, especially in countries where illiteracy and poverty are more prevalent. About 10-15% couples, globally, have difficulty in initial, as well as subsequent conception, with the major cause being associated with the male partner (Evers-Johannes, 2002; Sertic *et al.*, 2002).

Male infertility can be assessed through spermogram and hormonal profile (Guyton, 1981). Absence of spermatozoa in the semen ejaculate is called "azoospermia", count less than 20 million/ml "Oligospermia" and density of 20 million/ml but motility of less than 50% is called "asthenospermia" (Amelar, 1966). Male infertility is associated a

reduction in the quantity of sperms (McElreavey *et al.*, 2002). Decrease in sperm density, eventually leading to azoospermia, has been found to be associated with raised FSH, LH and normal or low testosterone level (Merino and Carranza-Lira, 1995).

MATERIALS AND METHODS

Subjects:

A total of 150 subjects were included, in the study. Subjects were categorized as normozoospermic, azoospermic, oligozoospermic and asthenozoospermic on the basis of their spermogram.

Semen Analysis:

Semen of the subjects were obtained and analyzed according to WHO recommended procedure (WHO, 1987). For each sample, the color, and consistency of semen was visually ascertained and liquefaction time was recorded. Semen volume was measured with a graduated glass pipette. The pH was checked with the help of strip (MN-Machenry Nagel, FRG). After liquefaction, the semen specimen was thoroughly mixed with the glass rod and thin drop spread on a glass slide by placing a cover slip on it. Sperm motility was assessed by microscopic appraisal of 100 spermatozoa from different fields. These were

Table 1
Semen examination of the studied subjects (Mean + SE)

Group (n)	Condition	Ejaculate volume (ml)	Liquefaction time (min)	pH	Sperm conc. (mil/ml)	Sperm motility (%)		
						Active	Sluggish	Immotile
A (50)	Azoospermic	1.5±0.4	37.5±0.70	7.8±0.1	Nil	Nil	Nil	Nil
B (50)	Oligozoospermic	1.7±0.2	28.7±3.70	7.3±0.1	6.7 ± 1.7	15.0± 6.0	30.0±4.5	55.0 ±6.5
C (20)	Asthenozoospermic	2.5±0.1	18.5±0.07	8.0±0.7	35.3 ±8.8	20.1±5.1	18.4±5.0	16.6± 8.2
D (30)	Normozoospermic	2.4±0.2	18.6±3.60	8.0±0.8	86.8 ±7.5	66.8±2.3	14.5±2.1	17.7 ±1.7

Table 2
Hormonal Profile of the studied subjects (Mean + SE)

Groups (n)	Condition	FSH	LH	Prolactin	Testosterone
A(50)	Azoospermic	22.9±6.3	12.2±5.4	254±20	8.85±2.2
B(50)	Oligozoospermic	16.6±2.8	10.6±0.8	242±25	8.3±2.7
C(20)	Asthenozoospermic	3.19±0.9	4.2±0.9	239±19	11.05±3.0
D(30)	Normozoospermic	5.5±1.0	5.6±0.5	258±34	22.5±3.5

classified being actively motile, sluggishly motile and immotile. Total sperm count as million/ml was obtained by diluting 1:19 with formalin diluting fluid or simply with distilled water in improved Neubauer haemocytometer.

Hormonal Assessment:

The hormonal profile was analyzed using Abbott MEIA technique for peptides and Roche Cobos core system for Testosterone.

Statistical Analysis:

Data were analyzed statistically, by application of Student's 't' test, as described by Steel and Torrie (1960).

RESULTS

The serum FSH levels of subject's in-group C and D were 3.19 ±0.9 (Range 2.2-11) and 5.5±1.0 (Range 2.1-12.7). Serum LH concentrations (mIU/ml) in azoospermic subjects (Group A) were higher than the values observed in all other groups, that is 12.20 ± 5.4 (Range 0.1- 56.6) whereas the mean serum LH values varied between 4.2 to 10.6 mIU/ml in the other groups. There was no marked difference in the concentrations of serum prolactin levels among the different groups of men (table 1 and 2).

DISCUSSION

The present data 150 men who were the male partners of infertile couple, indicate that 66.6% of subjects had low sperm density and were either azoospermic or oligozoospermic, where as in 13.3% of men the sperm motility was low although the sperm concentration was within the normal range (20-120 million/ml). The ratio between the normal and abnormal subjects evaluated on the basis of spermiogram quality was 1:5.9. Present results show that in azoospermic and oligozoospermic men serum FSH levels were significantly elevated, which correlate with previous studies (Check et al., 1995; Subhan et al., 1995a, 1995b, 2000; Wong *et al.*, 2000). FSH profile in secretory azoospermic men has been found to be different from that found in men with excretory (obstructive) azoospermia (Garcia-Diez *et al.*, 1983). Of the 50 azoospermic men in our study, 18 subjects showed normal levels of serum FSH, indicating that they may be representing cases of excretory azoospermia. Increase in FSH levels, representing secretory azoospermia, may reflect decreased testicular activity resulting in an alteration of the normal feed back mechanism between the testes and the hypothalamic pituitary axis, though an impairment of the Sertoli cells, and decrease in inhibin secretion (Subhan *et al.*, 1995a, 1995b, 2000). Tubular damage

has shown that is accompanied with a rise in serum FSH (Mann and Lutwak-Mann, 1981).

In addition to FSH, LH has also been shown to be inversely correlated with sperm density (Garcia-Diez *et al.*, 1983; Stanwell-Smith *et al.*, 1985). Lack of relationship between serum prolactin and semen density has been indicated previously (Stanwell-Smith *et al.*, 1985). In the present study no significant differences were detectable in the mean prolactin levels between different groups.

On the basis of present data, it is concluded that azoospermic and oligozoospermic subjects are accompanied by a significant rise in FSH levels, and decrease in serum testosterone level. Measurement of FSH in serum may, therefore, be used with advantage in the diagnosis of spermatogenic dysfunction and also to differentiate between secretory and excretory azoospermia (Subhan *et al.*, 1995a, 1995b, 2000). Increased serum LH and decreased testosterone levels indicate an abnormality in the steroidogenic tissue of the testis may not necessarily accompany the rise in FSH in men with depressed spermatogenesis. The need of measuring prolactin levels in the evaluation of male infertility, at present, appears unnecessary. However, for the evaluation of pituitary tumors, it is quite significant.

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