

STUDY OF SEMEN ANALYSIS PATTERNS IN INFERTILE MALES

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Research Article

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ABSTRACT

This is a prospective study of the seminal fluid indices of all the patients who presented to the infertility clinic under the department of Obstetrics and Gynaecology of Shri Adichunchanagiri Institute of Medical Sciences, BG Nagara and Radhakrishna Multispeciality Hospital, Bangalore with male factor alone as cause for the infertility from 1 October 2009 to 31 August 2010. Semen samples were analysed by manual method. Analyses were for volume, viscosity, sperm concentration, motility, and morphology, according to WHO guidelines on semen analysis. To evaluate the seminal pattern in couples with male infertility. Out of 100 patients 72% were between 20-35 years, 24% between 36-50 and 4% were above 50 years. 66% consulted infertility clinic within 1-5 years of their marriage. 26% in 6-10 years, and 8% in 11-20 years. 44% were smokers, and 16% were alcoholic and 9% were addicted to tobacco chewing. Out of 100 patients 6% had volume <2ml, 9% had liquefaction >30 minutes. 3% had PH <7.2, 11% were Azoospermic, 36% were oligospermic. Abnormal motility (Asthenospermia) was seen in 26% and Altered morphology (Terato-zoospermia) was seen in 28%. Abnormal seminal pattern is common cause of infertility with the most common abnormality found being oligospermia. The other common abnormalities were abnormal motility and altered morphology which are also very good predictors of fertility potential.

KEYWORDS: Seminal pattern; Male infertility; Oligospermia, Azoospermia; Asthenospermia; Terato-zoospermia;

INTRODUCTION

Infertility is major problem throughout the world with psycho-social implications and male infertility contributing significantly towards this problem. Infertility is defined as the inability of a couple to conceive even after 12 months of regular unprotected intercourse and male factor is responsible for 30% of the cases¹. The semen analysis is one of the basic measures to assess the male role in normal fertility. The pathological causes for decreased sperm count

arise from abnormality in the control mechanism of sperm production at pre-testicular, testicular or post testicular level.

The commonest factor responsible for male infertility are smoking, alcohol, pollution, stress, diabetes, surgery, post pubertal mumps viral and venereal diseases^{1,2,3}.

The purpose of this study is to determine the pattern of semen abnormalities in couples with male factor infertility so that the most com-

mon abnormalities of the semen parameters is determined and the probable cause of infertility in male can be identified as it may also provides accurate information regarding prognosis and the guidance regarding the option for treatment.

MATERIAL AND METHODS

This is a prospective study of the seminal fluid indices of all the patients who presented to the infertility clinic under the department of Obstetrics and Gynaecology of Shri Adichunchunagiri Institute of Medical Sciences, BG Nagara and Radhakrishna Multispeciality Hospital, Bangalore with male factor alone as cause for the infertility from 1 October 2009 to 31 August 2010.

After Abstinence from coitus for 3-4 days; samples were collected aseptically by masturbation into sterile wide-mouthed bottles within hospital premises or at home and delivered to the hospital within 1 hour of collection. Analyses were done for volume, viscosity, sperm concentration, motility, and morphology, according to WHO guidelines 1999 on semen analysis.

Inclusion criteria:

1. Couples married for atleast 12 months having regular unprotected intercourse

Exclusion criteria:

1. Couples with female factor infertility

The following operational definitions were used: Normospermia: Sperm count 20 million/ml to 120 million/ml; Oligospermia: Sperm count below 20 million/ml; Azoospermia: Absence of spermatozoa in the ejaculation; Astheno-spermia: Reduced sperm motility; Terato-zoospermia: Abnormal sperm morphology (fewer than 14 % spermatozoa with normal morphology); Oligo-astheno-terato-spermia: All sperm variables abnormal; Hypospermia: Volume <2ml; and Hyperspermia: Volume >5ml.

Statistical analysis

Data was analyzed by using SPSS. Version -10 on computer. Descriptive statistics like frequency

Percentage, average etc were computed for data presentation

RESULTS

Out of 100 patients 72% were between 20-35 years, 24% between 36-50, 4% were above 50 years. 66% consulted infertility clinic within 1-5 years of their marriage. 26% in 6-10 years, and 8% in 11-20 years. 44% were smokers, and 16% were alcoholic and 9% were addicted to tobacco chewing.

Out of 100 patients 6% had volume <2ml, 9% had liquefaction >30minutes. 3% had PH <7.2, 11% were Azoospermic, 36% were Oligospermic. Altered morphology was seen in 28% and abnormal motility was seen in 26%.

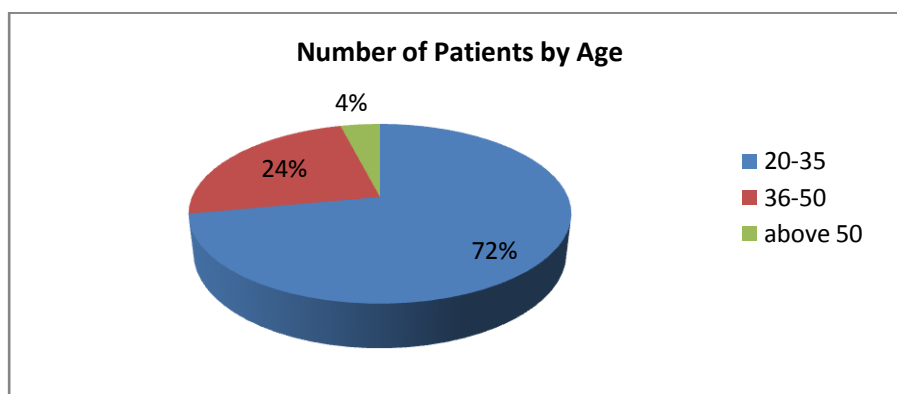
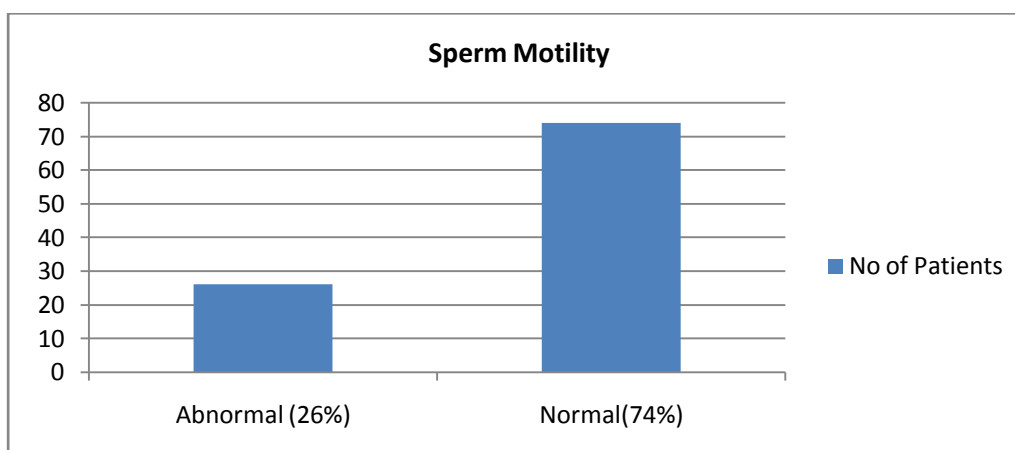
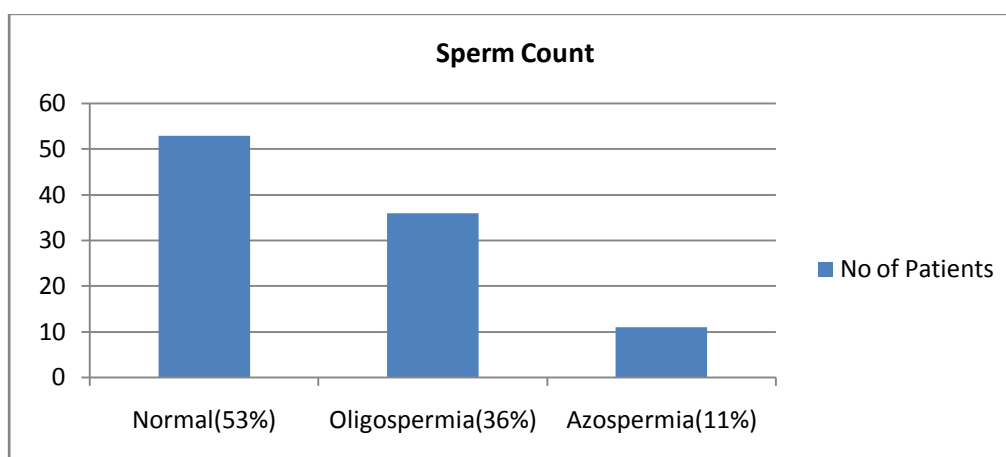
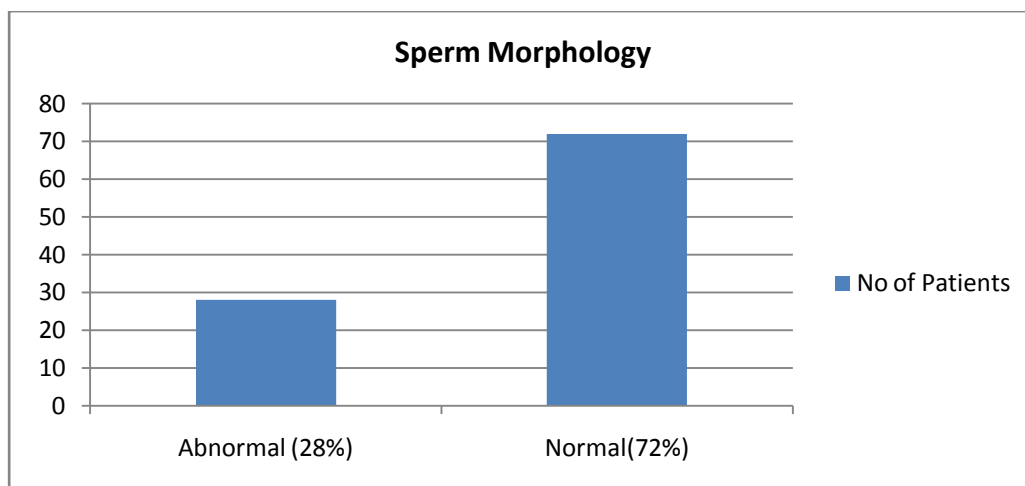


Table 1: Volume pH, liquefaction abnormalities in semen analysis (N=100)

Parameters	No of patients	Percentages
Normospermia(2-5ml)	94	94
Hypospermia(>2ml)	6	6
pH Normal	97	97
Ph value<7	3	3
Liquefication normal	91	91
Liquefication>30 min	9	9

Sperm Count, Motility and Morphology (N=100)





DISCUSSION

Infertility is a very sensitive issue and often leads to stress in the couple. Male factor contributes to around 30% of the cases and therefore semen analysis is an indispensable investigation in a couple with infertility. The present study was done to assess the quality of semen in infertile men. Semen specimen were obtained by masturbation into a sterile wide-mouth container after 3 days of abstinence.

Normal values of semen parameters have been issued by WHO in 1999 that are generally used as reference. Ideally each laboratory should set its own normal values reflecting the specific population analyzed, but this is practically limited by the availability of semen from proven fertile men who have recently achieved a pregnancy.

In the present study, 72% of the patients were the age group of 20-35 years. The effect of women's age on fertility is well recognized. Men's age effect on fertility, on the other hand, remains uncertain. Kidd et al in their review found decreases in semen volume of 3%–22%, decreases in sperm motility of 3%–37%, and decreases in normal sperm morphology of 4%–18% were likely when comparing 30-year-old men to 50-year-old men.²

Though 66% men consulted infertility clinic within 1-5 years of their marriage. 26% consulted in 6-10 years, and 8% in 11-20 years. This was because in rural settings, the belief is that woman is solely responsible for infertility and men are not easily ready to come for semen analysis test and it hurts their ego.

In the present study, 44% were smokers, and 16% were alcoholic and 9% were addicted to tobacco chewing. Trawadous et al have reported that Infertile men, particularly smokers, have significantly lower semen variables and significantly higher sperm apoptic markers. The mean number of cigarettes smoked daily and smoking duration significantly correlated negatively with semen parameters. Alcohol on the other hand by causing reduction in levels of testosterone, LH and FSH hampers normal morphological development, maturation of spermatozoa and also slows sperm production by testicular germ cells leading to oligozoospermia.³

Negative lifestyle has a significant and cumulative impact on semen parameters. Dose-dependent effects occur with smoking, alcohol, and stress. Appropriate counseling could result in substantial reductions in the referrals for fertility investigations and treatments⁴.

Majority of the males had normal sperm volume which also depends on the period of abstinence.

The prevalence of azoospermia is 11% and oligospermia is 36% in this study which is consistent with other studies⁵.

Azoospermia may be classified as obstructive (because of reproductive tract obstruction) and non obstructive (defective production) depending on the cause.

Azoospermia is diagnosed when there is absence of spermatozoa on centrifugation of complete semen specimens by using microscopic analysis. Detailed history, physical examination and hormonal analysis (FSH, testosterone) are necessary to define the cause of azoospermia. Together, these factors provide a >90% prediction of the type of azoospermia (obstructive v. non-obstructive). Full definition of the type of azoospermia is provided based on diagnostic testicular biopsy⁶.

Abnormal sperm motility (asthenospermia) was seen in 26% cases as opposed to 60% and 54% reported by other workers^{7, 8}. Asthenozoospermia is quite common. It may either contribute to or be the primary cause of infertility in $\leq 30\%$ of infertile men. Mutations in mtDNA could be either the primary cause of or a secondary contributing factor to asthenozoospermia in a significant portion of these men.⁹

Regarding Abnormal morphology of the sperm cells, our results agree with Larry and Stunct (1991)¹⁰. Sperm morphology is recognized as a semen parameter that mostly correlates with the *in vivo*¹¹ and *in vitro* fertilizing ability¹². Nevertheless, there is an ongoing debate regarding the reliability of the results of semen morphology assessment by WHO¹³ and strict criteria¹⁴ as to which is the best to be adopted for prediction of fertility.

In conclusion, our results suggest that seminal fluid volume plays little or no role and mainly the count, motility and morphology are important factors in the etiology of male infertility. The role of sexual abstinence and proper seminal fluid sample collection for accurate semen analysis is important. Males should be encouraged to come early for semen investigations

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