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Research Article

Prevalence of abnormal semen analysis in patients of infertility at a rural setup in Central India

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ABSTRACT

Background: Semen analysis is an indispensable diagnostic tool in the evaluation of the male partners of infertile couples.
Methods: Semen samples were analysed by manual method. Analyses were for volume, viscosity, sperm concentration, motility, and morphology, according to WHO guidelines on semen analysis
Results: This study, done at a rural setup, at Acharya Vinoba Bhave Rural Hospital has demonstrated that abnormal semen quality is a major factor in our rural setup with 52% of male partners of infertile couples having abnormal semen parameters.
Conclusion: Male contribution towards infertility is yet to be studied and requires more elaborate research.

Keywords: Male infertility, semen analysis

INTRODUCTION

A firm evidence of the contribution of the sperm to reproduction came when Leeuwenhoek in 1677, while examining his own ejaculate, under the microscope saw living human sperm cells in a drop of semen for the first time.

Some of the factors that determine the occurrence of a pregnancy are the genomic quality of the oocyte and sperm, implantation capability of the embryo and the endometrial receptivity.[1]

Infertility is defined as inability to achieve conception in a period of 1 year in a couple, despite regular and adequate unprotected sexual intercourse.

It is widely accepted that male factor alone accounts for infertility in about 40% cases, female factor alone in 40% of the cases of infertility, and in 20% cases, there is combined male and female factor.

In India, the prevalence of primary infertility is estimated to be 10-20%.

Semen analysis is an indispensable diagnostic tool in the evaluation of the male partners of infertile couples. Careful evaluation of the ejaculate parameters may suggest the possible causes of infertility and their identification could help to institute appropriate therapy, if available.

Recently worldwide reports have suggested a decline in the semen quality in a man. But there seems to be a geographical variation in the semen quality. A previous study by Marimuthu et al, failed to demonstrate any change in semen quality among infertile men in Northern India.[2] Another study by Adiga S K et al reported declining semen quality among South Indian infertile men.[3] This study aims to assess the semen quality in a rural set up in Central India, especially to evaluate the seminal pattern of the male partners of infertile couples, towards identifying the possible contribution of male factor to overall infertility.

Aim

To evaluate contribution of the seminal patterns towards overall infertility due to male factors. in our environment.

Objectives

1. To assess the socio-demographic factors for male infertility.

2. To assess different seminal patterns in male infertility.

METHODS

It was a prospective study wherein semen analyses of the male partners of infertile couples who presented at Acharya Vinoba Bhave Rural Hospital was done between January 2011 to January 2012. Semen collection was done in sterile plastic containers by masturbation after 3 days of abstinence.

Samples were delivered within one hour of collection and analysed by manual method. Analyses were for volume, viscosity, sperm concentration, motility, and morphology, according to WHO guidelines on semen analysis.

A total of 100 cases were studied and proportion of each abnormality and observed combined defects were subjected to frequency distribution.

RESULTS

Mean age of the men in this study was 30.3+ -5.7years. Majority i. e 62% had duration of infertility below 5 years, 32 % between 5-10 years and there were 6(6%) with more than 10 years of infertility.

Table 1: Baseline characteristics of study subjects.

Characteristics	Number	Percent
Age		
<30 yrs	56	56.00
>30	44	44.00
Duration of infertility		
<5	62	62.00
5-10 years	32	32.00
>10 years	6	6.00
Addictions		
Alcohol	33	33.00
Tobacco	42	48.00
Both	25	25.00

33% males under study were alcoholics, 42% were addicted to tobacco and 25% were addicted to both alcohol and tobacco.

Out of 100 men studied, 52 were found to have abnormal seminogram.

Table 2: Seminal patterns among the study subjects.

Volume	Number	Percent	Gerzia study
< 2 ml	22	22.00	89.7% normal
2-4 ml	77	77.00	
4-6 ml	1	01.00	
Sperm Count			
<20 Mil	25	25.00	37.1%
20-60 Mil	34	34.00	
>60 Mil	41	41.00	
Proportion of motile sperms			
<25	8	8.00	
25-50	27	27.00	
50-75	51	51.00	
75-100	14	14.00	
Morphology			
Normal	31	34.1	
Abnormal	69	65.9	
Pus cells			
Present	33	33.00	
Absent	67	67.00	
Multiple abnormal parameters	52	52.00	

As far as semen volume is concerned, 22% males had volume <2 ml, 77% had volume between 2-4 ml and only 1 (1%) had volume between 4-6 ml.

25% had sperm count <20 million (as compared to 44% in gerzia study.

In our study, 35 % patients had <50% motile sperms/hpf.

31% had normal morphology an 69% had abnormal morphology. Amongst the men who had abnormal semen analysis, 48% were below 30 years of age and 52% were above 30 yrs of age. Amongst the men with with abnormal seminogram, 44.2 % men had duration of married life <5 years, 44.2 % had duration of married life 5-10 years and 7.62 % men had >10 years of married life.

29.7 % men who had semen abnormality were addicted to alcohol. And 40.05 %men with semen abnormalities were addicted to tobacco. 29.7% men were addicted to both tobacco and alcohol amongst those with abnormal seminograms.

Table 3: Assessment of socio-demographic characteristics in abnormal seminal patterns.

Factor	Type of abnormality			
	Abnormal sperm count	Abnormal motility	Abnormal morphology	Total
Age				
<30 yrs	8	12	5	25
>30	7	16	4	27
Duration of married life				
<5 years	7	9	9	25
5-10 years	9	10	4	23
>10 years	3	1	0	4
Addictions				
Alcohol	6	2	3	11
Tobacco	10	4	1	15
Both	4	6	1	11

DISCUSSION

There are very few studies in rural areas as far as infertility is concerned. Semen motility, morphology and volume abnormality are the parameters discussed in this study. Most common abnormality encountered was abnormality in sperm motility. Mean age of the men in this study was 30.3+ -5.7years. Majority i. e 62% had duration of infertility below 5 years, 32 % between 5-10 years and there were 6 (6%) with more than 10 years of infertility.

33% males under study were alcoholics, 42% were addicted to tobacco and 25% were addicted to both alcohol and tobacco.

Out of 100 men studied, 52 were found to have abnormal seminogram.

As far as semen volume is concerned, 22% males had volume <2 ml, 77% had volume between 2-4 ml and only 1 (1%) had volume between 4-6 ml. According to a study my Mohammad et al on infertile Sudanese males in Gerzia state, 89.7% had normal semen volume.[4]

25% had sperm count <20 million (as compared to 44% in gerzia study.

In our study, 35 % patients had <50% motile sperms/hpf. Of the primary parameters of semen analysis, motility has a much stronger relationship to both percentage of pregnancy and conception rate when compared to sperm concentration.

31% had normal morphology an 69% had abnormal morphology. Our results agree with Atken et al (1982), Mcleod et al (1989) and Larry and Stunct (1991) that semen of infertile males carry a higher percentage of abnormal forms.

Semen abnormalities seem to be almost equally distributed in both age groups i.e <30 years and >30 years. Amongst the men who had abnormal semen analysis, 48% were below 30 years of age and 52% were above 30 yrs of age. Amongst the men with with abnormal seminogram, 44.2 % men had duration of married life <5 years, 44.2 % had duration of married life 5-10 years and 7.62 % men had >10 years of married life.

29.7 % men who had semen abnormality were addicted to alcohol. And 40.05 %men with semen abnormalities were addicted to tobacco. 29.7% men were addicted to both tobacco and alcohol amongst those with abnormal seminograms. This supports the fact that excessive alcohol consumption has been supported with poor reproduction. According to a study by Samal et al, the abnormality of the semen analysis report was found in 35.49%, 86.49% and 53.75% in smokers, alcoholics and in combinations of these addictions respectively.[5] This shows that cigarette smoking has detrimental effects on spermatogenesis and they thereby impairs fertility. Hence men should be encouraged to stop smoking especially while trying to conceive. Excessive alcohol consumption has been associated with poor reproductive function. Alcohol has profound effects on leydig cell function by reducing testosterone synthesis and its metabolite, acetaldehyde, causing membrane damage and the formation of leydig cell autoantibodies.

CONCLUSION

Abnormal semen analysis remains a significant contribution to overall infertility in our environment. This study has demonstrated that abnormal semen quality is a major factor in our rural setup with 52% of male partners of infertile couples having abnormal semen parameters. To what extent males contribute

towards infertility is yet to be studied and requires more elaborate research.

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