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RESEARCH ARTICLE

PATTERNS OF SEMEN ANALYSIS IN INFERTILE COUPLES AT TERTIARY CARE CENTER

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ABSTRACT

It is widely accepted that male factor alone accounts for 40% cases of infertility. Careful examination of seminal parameters is an important diagnostic tool to know the possible causes of infertility in males. The present study was aimed at accessing seminal parameters according to WHO Guidelines 2010 to evaluate the seminal patterns in male partner of infertile couples. Total 40 consecutive semen samples from male partners of the infertile couple attending the Outpatient Department over a period of ten months were studied. Semen was collected by conventional method and analysis was done manually for volume, viscosity, sperm concentration, motility, vitality and sperm morphology as per WHO Guidelines 2010. Maximum number of infertile males were found in the age group of 30-39 years (55%). Mean age was found to be 31.1 years. Semen analysis was normal in 55% of cases. The dominant abnormality found was oligozoospermia (30%) followed by asthenozoospermia (27.5%). Azoospermia was found in 10% of cases. Abnormal results of semen analysis serve as significant contributory factor in male infertility. It still stands as the most fundamental test which is non-invasive, cost effective and fairly reliable. However more tests, follow up and elaborate studies are required to establish the diagnosis of infertility.

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INTRODUCTION

Exact global prevalence of infertility is not known. However WHO claims 60 to 80 million couples are facing infertility worldwide. Naina Kumar 2015 quoted that according to WHO the prevalence of infertility in India ranges from 3.7 % to 15% in various states .Estimates in Maharashtra are 3.7%. WHO states that in 40% of infertility cases, the male partner is either the sole or contributing cause of infertility .But paradoxically female partner is usually blamed for infertility. It is highly unacceptable to investigate female partner without knowing the fertility status of male partner (WHO 2010). According to WHO male infertility is inability of a male to result pregnancy in a presumably fertile female. Published data from many countries in the world suggest the declining semen quality (Adiga *et al*., 2008, Jajoo *et al*., 2013; Emmanuel *et al.,* 2015) may be implicated as the cause of infertility. No single factor is responsible, but studies hypothesize that it may be due to environmental, socioeconomic, nutritional and many other unknown factors (Adiga *et al.,* 2008). India is a country of diversity with differences in climatic conditions, dietary habits, socioeconomic condition and many other factors.

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The present study aims at evaluating the seminal patterns in infertile couples at tertiary care centre and identifying possible contributory or sole cause of infertility.

METHODS

It was a prospective observational study over a period of 10 months comprising of 40 cases. Study comprised of semen analysis of male partners of infertile couple coming to tertiary care centre. Semen samples were collected in laboratory in sterile plastic container with three to five days abstinence as per standard protocol. All the samples were analysed manually for volume, viscosity, pH, total sperm number per ejaculate, sperm concentration, motility, vitality and morphology. Volume was measured in a graduated glass measuring cylinder. The pH was determined with pH paper strip after liquifaction of semen. Sperm concentration (sperm count) was done on improved Neubauer chamber. Vitality test using Eosin Nigrosin stain was done for membrane intact spermatozoa. Number of stained (dead) and unstained (live) spermatozoa was counted and results were expressed in percentage. Motility was observed in wet preparation and graded as progressive motility, non-progressive motility and immotility as per WHO Guidelines 2010.

RESULTS

Using WHO Guidelines 2010 for semen normality, 40 samples were analysed for various parameters. Age wise distribution of cases. Maximum no. of cases reported to OPD was between 31 to 40years. The mean age of male partner who registered for infertility was 31.5 years.

For morphological analysis 4 cases of Azoospermia were excluded. Semen volume less than 1.5ml was observed in 7.5 % of cases. Sperm count below the reference level was noted in 40% of men, where as 60% of males had sperm count within the normal range. Total sperm number per ejaculate was normal in 60% of cases. Total motility less than 40% was observed in 40% of cases.

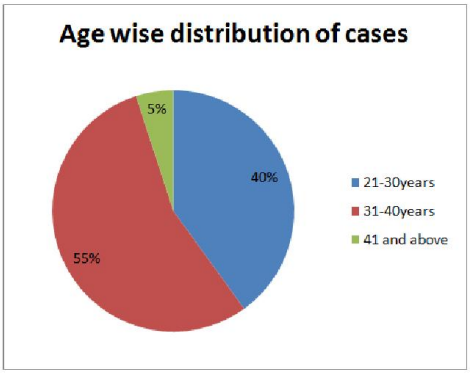

Table 1. Seminal parameter

Volume(ml)(n=40)	No. of cases	% of cases
<1.5	3	7.5
1.5-3	34	85
3.5-5	3	7.5
Sperm count	No. of cases	% of cases
<15million/ml	16	40
>/=15 million/ml	24	60
Total sperm no. per ejaculate	No. of cases	% of cases
<39 million/ml	16	40
>/=39 million/ml	24	60
Total motility	No. of cases	% of cases
<40%	16	40
>/=40%	24	60
Progressive motility	No. of cases	% of cases
<32%	15	37.5
>/=32%	25	62.5
Vitality	No. of cases	% of cases
<58%	13	32.5
>/=58%	27	67.5
Sperm morphology-normal forms	No. of cases	% of cases
<4%	0	0
>/=4%	36	100

Table 2. Seminal patterns -Distribution of cases

Seminal patterns	No. of cases	% of cases
Normozoospermia	22	55
Oligozoospermia	12	30
Azoospermia	4	10
Asthenozoospermia	10	25
Teratozoospermia	0	0
Oligoasthenozoospermia	7	19.4

Table 3. Comparison of seminal parameters

Author	Jajoo *et al*	Emmaneul *et al*	Present study
Year	2013	2015	2016
n= No. of cases	n=100	n=308	n=40
Volume			
<1.5	22%	17.6%	7.5%
1.5-3	77%	50.9%	85%
3.5-5	1%	31.5%	7.5%
Sperm count			
<15million/ml	25%	47.6%	33.3%
>/=15 million/ml	75%	52.4%	66.7%
Progressive motility			
<32%	-	60.3%	30.6%
>/=32%	-	39.7%	69.4%
Sperm morphology normal forms			
<4%	69%	33.3%	0%
>/=4%	31%	66.7%	100%

Table 4. Comparison of Seminal Patterns

Author	Anwary *et al*	Samal *et al*	Emmanuel *et al*	Bhaduri *et al*	Chukwunyere *et al*	Present study
Year	2011	2012	2015	2015	2015	2016
n= No. of cases	n=50	n=3000	n=308	n=161	n=214	n=40
Normozoospermia	4%	61.98%	52.38%	-	30%	55%
Oligozoospermia	18%	29.13%	20.64%	19.87%	28%	30%
Azoospermia	42%	6.75%	26.98%	12.42%	8%	10%
Asthenozoospermia	10%	1.45%	60.3%	4.35%	25%	25%
Teratozoospermia	-	-	33.3%	-	9%	0
Oligoasthenozoospermia	12%	-	12.7%	-	23.8%	19.4%

Progressive motility below the lower reference range was found in 37.5% of males. Normal vitality was seen in 67.5% of men. None of the males showed morphologically abnormal sperms below the reference range. Total do not match as few samples had more than one finding. Semen analysis was normal in 55% of cases, whereas 10% of males were azoospermic. Oligozoospermia and asthenozoospermia was found in 30% and 25% of cases respectively. The combined finding of oligoasthenozoospermia was noted in 19% of cases.None of the cases had teratozoospermia.

DISCUSSION

Willem Ombelet *et al*. 1997quoted that biologic evidence of sterility is only present in cases of azoospermia or globozospermia or in the presence of a complete lack of sperm motility with underlying genetic deficiencies. Male infertility is a social and psychological issue with stigma due to religion and cultural misbelief. Hence in a country like India patients do not open up and share the issues. In the present study the mean age of males was 31.5 years. Similar observations were noted by Jajoo *et al* 2013, Emmanuel *et al* 2015. In the present study, seminal volume within normal range was seen in majority of cases (85%). Jajoo *et al* 2013 noted similar findings In present study sperm count and progressive motility below the reference range was observed in 33% and 30% cases respectively Emmanuel *et al* 2015 found higher percentage of both (47% & 60% respectively) in his study in Nigeria. This may be attributed to differences in climatic conditions, nutrition and dietary habits.

In the present study majority of the cases showed normal seminal pattern which is in accordance with Samal *et al.* 2012 and Emmanuel *et al* 2015. Oligozoospermia was found in 30% of cases in the present study. Similar observations were made by other workers. Azoospermia was to the tune of 10%in the present study. These findings are in accordance with Chukwunyere *et al*. 2015 and Bhaduri *et al.* 2015. Asthenozoospermia in present study was seen in 25% of males which correlates with observation made by Chukwunyere *et al*. 2015. None of the cases in the present study showed teratozoospermia. Ogwa *et al* found a higher percentage of azoospermia, asthenozoospermia, teratozoospermia compared to the present study. This may be due to difference in sample size and epidemiological factors like environment, dietary habits, nutrition, socio economic status and lifestyle.

Conclusion

Abnormality in semen analysis still stands as a dominant factor responsible for infertility either as a sole or contributory factor. Semen analysis remains mainstay in the investigations of infertility.

The present study did not investigate the etiological factors. Hence more elaborate studies and research are needed to establish exact relationship of poor semen quality and infertility.

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