# Pattern of Semen Analysis: An Insight into Male Infertility at a Tertiary Care Hospital.

## Kambala GM [1], * Kalakonda M [2], Undavalli VK [3].

*[1,2] Assistant Professor,  Department of Pathology, Siddhartha Medical college, Vijayawada. [3]Assistant Professor, Department of Community Medicine, Dr Pinnamaneni SIMS&RF, Chinna Avutapalli.*
*Corresponding Author: Dr. Madhavi Kalakonda*

**Abstract**
**Background**: *Infertility is defined as failure to conceive within one or more years of regular unprotected coitus. The male factor as a cause of infertility is present in 40-50% of cases.*
**Objectives**: *The present study aims to assess the seminal patterns of male partners of 118 infertile couples for various parameters and their possible contribution to infertility.*
**Material and Methods:** *The present study was conducted on male partners of 118 infertile couples who were referred to Department of Pathology, Siddhartha Medical College, Vijayawada for semen analysis. The semen was collected by masturbation in all cases in a sterile  container. After liquefaction, basic analysis was done which includes volume, viscosity, pH, sperm count, motility and morphology.*
**Results:** *Of 118 seminograms, 42.3% showed alterations in the seminal indices; with Oligospermia in 19.5%, asthenospermia in 9.3%, Oligoasthenospermia in 5.1%and Azoospermia in 2.5%.*
**Conclusion**: *Male factors were mostly responsible as a cause of infertility. Asthenospermia was the most common type of semen defect present in these infertile males. Most of the males with semen defect were of age group >30yrs. Incidence of semen defect among males increased with duration of infertility.*
**Keywords:** *Semen analysis, Male infertility.*

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## I.   Introduction

Infertility is a major problem throughout the world with psycho-social implications and male infertility contributing significantly towards this problem.  According to the international committee for monitoring assisted reproductive technology, WHO, infertility is a disease of reproductive system defined by failure to achieve the clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.[1] The prevalence of infertility in the general population is 15%-20%. Of this, the male factor is responsible for 20%-40%.[2]

Despite controversy regarding the clinical value of semen analysis, male fertility investigation still relies on a standardized analysis of the semen parameters. This is especially true for infertility clinics in both developing and developed countries. Semen analysis is the corner stone of infertility evaluation as it provides information on the functional status of the seminiferous tubules, epididymis and accessory sex glands.

The objective of this study was to evaluate contribution of the seminal patterns towards overall infertility due to male factors. And assess the different seminal patterns in male infertility.

## II.  Methods

It was a prospective study conducted in department of pathology, Siddhartha medical college, Vijayawada between January to December 2017. Semen collection was done at the hospital in sterile plastic containers by masturbation after 3 days of abstinence. Samples were delivered within one hour of collection and analyzed by manual method. Analyses were done for volume, viscosity, sperm concentration, motility and morphology, according to WHO guidelines on semen analysis. A total of 118 cases were studied for various abnormalities and their frequency of distribution.

**WHO Guidelines 2010 for Normal seminal fluid analysis.[3]**
Volume - > 1.5 ml
pH - 7.2 to 8.0
Liquefaction time - 20 to 30 min
Sperm concentration - >15 million/ml
Total motility - 40%

(Progressive motility + non progressive motility)
Progressive motility - 32%
Morphology - > 4% normal forms.

**Abnormal Seminal fluid analysis.[4]**
Oligozoospermia – reduced sperm numbers
Asthenozoospermia - reduced sperm motility
Teratozoospermia - increased abnormal forms of sperm
Oligoasthenoteratozoospermia - all sperm variables are subnormal.
Azoospermia - no sperm in semen
Necrospermia – all the spermatozoa present are dead.

## III. Results

Out of 118 samples, 50 (42.3%) were abnormal. The most common abnormality is oligospermia seen in 23(46%) cases, followed by asthenospermia in 11 (22%), oligoasthenospermia in 6(12%) cases, asthenozoospermia in 4(8%) cases, azoospermia in 3(6%) cases, oligoasthenoteratozoospermia in 3(6%) cases.

Out of total 118 cases 60 (58.8%) cases were between 25 to 30 years. The incidence of semen defect was highest among couples with duration of marriage >1-3 yrs (56%), followed by those with duration of marriage 4-6 yrs (20%). Leucocytospermia was detected in 14 (11.8%) cases. Inadequate quantity of semen i.e. less than 1.5 ml was observed in 16 (13.6%) cases.

**Table 1:** Incidence of abnormal seminogram

| Patients | Total number | Percentage |
|---|---|---|
| Males with normal seminogram | 68 | 57.6% |
| Males with abnormal seminogram | 50 | 42.3% |
| Total No. of Infertile male partners | 118 | 100% |

**Table 2:** Age wise distribution of cases

| S.No | Age in years | No. of cases | Percentage |
|---|---|---|---|
| 1 | <25 | 17 | 14.4% |
| 2 | 25-30 | 60 | 50.8% |
| 3 | 31-35 | 31 | 26.2% |
| 4 | 36-40 | 8 | 6.7% |
| 5 | >40 | 2 | 1.6% |
| | Total | 118 | 100% |

**Table 3:** Duration of marital life

| S.No | Duration of Marital life(in years) | No. of cases | Percentage |
|---|---|---|---|
| 1 | 1-3 | 28 | 56% |
| 2 | 4-6 | 10 | 20% |
| 3 | 7-9 | 9 | 18% |
| 4 | 10-12 | 2 | 4% |
| 5 | >12 | 1 | 2% |
| | Total | 118 | 100% |

**Table 4:** Distribution of cases on basis of semen parameters.

| S.No | Semen Pattern | No. of cases | Percentage |
|------|---------------|--------------|------------|
| 1 | Normozoospermia | 68 | 57.7% |
| 2 | Oligospermia | 23 | 19.5% |
| 3 | Asthenospermia | 11 | 9.3% |
| 4 | Oligoasthenospermia | 6 | 5.1% |
| 5 | Asthenozoospermia | 4 | 3.4% |
| 6 | Azoospermia | 3 | 2.5% |
| 7 | Oligoasthenoteratozoospermia | 3 | 2.5% |
| | Total | 118 | 100% |

## IV. Discussion

In the present study it was found that the male factor was responsible in 42.3% cases as a cause of infertility. The present study asesses various abnormal semen parameters.

Out of 118 males studied 77% belonged to an age group of 25 to 35 years which is comparable with the study conducted by kulkarni et al.[5] and Joshi et al.[6]

In present study the incidence of semen defect was highest among 76% of couples with 1-6 years of marital life.

Semen volume less than 1.5ml was observed in 16% of cases. Kulkarni et al[5] found 13.6% cases and Bhaduri et al. found 7.45% of cases with less than 1.5 ml.[7] Where as Jajoo and Kalyani reported 22% of cases with less than 2ml.[8]

Leucocytospermia was detected in 14 (11.8%) cases comparable to the study by kulkarni et al.[5] PH>8 was found in 4.2% of cases associated with Leucocytospermia.

Oligospermia was found in 19.5% of cases. Similar findings were reported by Bhaduri et al[7] and Kulkarni et al.[5] Asthenospermia was found in 9.3% of cases. while Bodal et al found in 17% cases.[9] Oligoasthenospermia was detected in 5.1% of cases. Similar findings were reported by Kulkarni et al[5](6.8%). However Bodal et al found in 13% cases.[9]

Asthenozoospermia was found in 3.4% of cases correlating with Kulkarni et al[5] who reported in 3.6% of cases. While Butt and Akram found Asthenozoospermia in 25.8% cases.[10]

Azoospermia was reported in 2.5% of cases. However studies conducted by Joshi et al.[6], Bhaduri et al.[7] and Agu et al.[11] reported 11.0%, 12.42% and 14.2% respectively.

We found Oligoasthenoteratozoospermia (OAT syndrome) in 2.5% of cases. Butt and Akram reported it in 9.09%[10], Agu et al.[11] reported it in 11.6% cases and Kulkarni et al[5] in 7.3% of cases.

Male factor contributing to infertility was seen in 42.3% of cases which was similar to Bodal et al[9] who reported 43%. Jajoo et al[8] reported 52% contribution of male factor.

## V.  Conclusions :

Male factor contributes significantly to infertility. In the present study oligospermia is the most common abnormality followed by asthenospermia. Semen analysis remains as an indispensible diagnostic tool, however various genetic studies may highlight causes of infertility in future.

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