

## ANALYSIS OF SEMEN STUDIES OF 200 MEN ATTENDING AN INFERTILITY CLINIC IN A TERTIARY CARE CENTRE

Vinayachandran Sathyavathan<sup>1</sup>, Sajala Vimalraj<sup>2</sup>, Priya Narayanan<sup>3</sup>, Sarah Naushad<sup>4</sup>

<sup>1</sup>Professor, Department of Obstetrics and Gynaecology, GMC, Kozhikode.

<sup>2</sup>Additional Professor, Department of Obstetrics and Gynaecology, GMC, Kozhikode.

<sup>3</sup>Associate Professor, Department of Obstetrics and Gynaecology, GMC, Kozhikode.

<sup>4</sup>Senior Resident, Department of Obstetrics and Gynaecology, GMC, Kozhikode.

### ABSTRACT

#### BACKGROUND

Various characteristics of the male population reporting for infertility evaluation were seen in their semen studies.

Aim- To study the various variables of the semen analysis data.

#### MATERIALS AND METHODS

Prospective observational study (May–September 2016).

Analysis- SPSS v16.

#### RESULTS

200 semen analyses were done in the study period; <30 years- 8.5%, 30-35 years- 40%, 36-40 years- 25%, 40-45 years- 19.5%, >45 years -7%. The various semen analysis results were as follows: Mild asthenozoospermia- 65%, mild asthenoteratozoospermia- 3%, mild oligoasthenozoospermia- 13%, severe oligoasthenozoospermia- 16%, azoospermia- 0.001%, normozoospermia- 3%. The severe oligoasthenozoospermic patients were more in the 30-35 age groups (14 patients). The mean and standard deviation for the analysed patients in the following parameters is as mentioned, total count- 57.87 million  $\pm$  11 million, total motility- 55%  $\pm$  17%. Progressive motility- 14%  $\pm$  6%, Morphology normal forms- 1.8%  $\pm$  0.8%, Abnormal morphology distribution were mainly contributed by head defects- 89%, followed by mid pieces (6%), tail (4%) and cytoplasmic droplets (1%). Abstinence >4 days was noted to be associated with progressive motility <25 (<0.05).

#### CONCLUSION

Male factor contributes to almost 30% - 40% of reproductive failure, with teratozoospermia being very commonly seen. A detailed risk factor analysis will help in identifying any modifiable factors.

#### KEYWORDS

Semen Analysis Parameters, Male, Infertility.

**HOW TO CITE THIS ARTICLE:** Sathyavathan V, Vimalraj S, Narayanan P, et al. Analysis of semen studies of 200 men attending an infertility clinic in a tertiary care centre. J. Evolution Med. Dent. Sci. 2017;6(93):6680-6682, DOI: 10.14260/jemds/2017/1447

#### BACKGROUND

According to International Committee for Monitoring Assisted Reproductive Technology and World Health Organization, 'Infertility' is a disease of reproductive system defined by failure to achieve clinical pregnancy after 12 months or more of regular unprotected sexual intercourse with same partner.<sup>(1)</sup>

Even though the recent growth of the Indian population has been unprecedented, there are substantial numbers of infertile couples in India that have an equally great concern.<sup>(2)</sup> Male reproductive function in the general population has gained more attention due to the occurrence of several biological problems affecting the male genital tract and has increased during the last 50 years. Abnormalities in the male partners are the sole cause of infertility in almost 20% of

infertile couples and are important contributing factors in another 20% (40%) of couples with reproductive failure. In around 1 – 10% of cases, the cause is often treatable.<sup>(3)</sup> Hence, while investigating infertile couples, it is advisable that evaluation of male and female partners occur in parallel.<sup>(4,5)</sup>

Infertility is an equally important national problem concerning reproductive health and the infertile couples should be treated by assisted reproductive technology (ART) for procreation.<sup>(2)</sup> According to a study by WHO, the incidence of infertility in India is not yet clear. It is estimated that approximately 13 to 19 million couples are infertile.<sup>(6)</sup> The overall prevalence of primary infertility ranges between 3.9% and 16.8%. Also the estimates of infertility vary widely among Indian states from 3.7% in Uttar Pradesh, Himachal Pradesh and Maharashtra, to 5% in Andhra Pradesh, and 15% in Kashmir.<sup>(7)</sup>

Although not a true measure of fertility, semen analysis is the cornerstone of evaluation of the male partner and should be one of the first investigations in any couple under evaluation for infertility. If abnormal, it suggests that the probability of achieving fertility is lower than normal.<sup>(8)</sup> Semen analysis remains the single most useful and fundamental investigation with a sensitivity of 89.6%.<sup>(9)</sup>

'Financial or Other Competing Interest': None.

Submission 25-10-2017, Peer Review 22-11-2017,

Acceptance 27-11-2017, Published 11-12-2017.

Corresponding Author:

Dr. Sajala Vimalraj,

#29/2298 Swapna,

P.O Kuthiravattam,

Calicut -16.

E-mail: sajalavimalraj@gmail.com

DOI: 10.14260/jemds/2017/1447



The aetiology of the male infertility is multifactorial and little is known about the causative factors leading to decrease in spermatogenesis. In men, the main causes of infertility are oligozoospermia, asthenozoospermia, teratozoospermia and azoospermia, which account for 20–25% of cases.<sup>(10,11)</sup> It is therefore important to understand the various abnormalities that occur in the semen parameters. Hence, this study was conducted to analyse the various characteristics of the male population reporting for infertility evaluation with respect to their semen parameters.

**Aim**

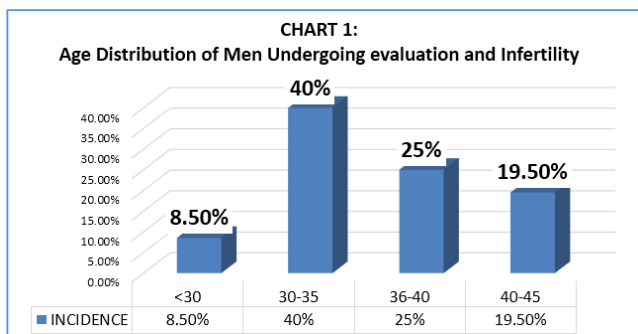
To study the various variables of the semen analysis data.

**MATERIALS AND METHODS**

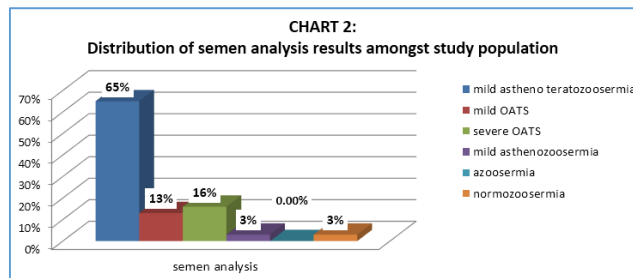
This study was conducted as a prospective observational study from May to September 2016, at the Fertility Centre in IMCH, Govt. Medical College, Kozhikode, a tertiary care hospital in northern Kerala. All couples registering at the centre were subjected to a Semen analysis, from the department. 180 semen analyses were done in the period from May to September 2016, using the WHO 2010 reference ranges.<sup>(4)</sup> Data was analysed using the SPSS v 16 software.

**RESULTS**

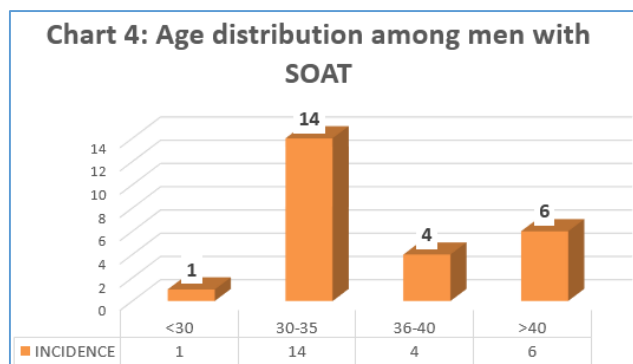
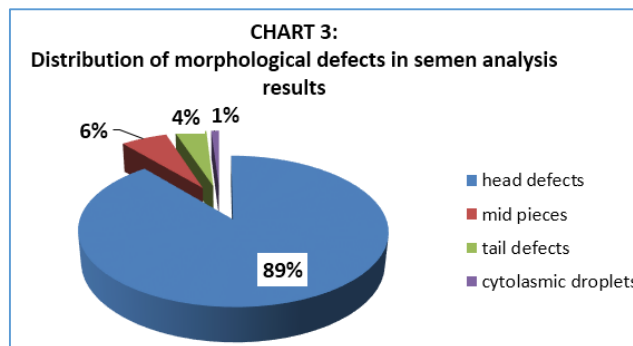
180 men who had attended our infertility clinic were subjected to semen analysis. The age distribution of the study group included 8.5% in <30, 40% in 30-35, 25% in 36-40 years, 19.5% in 40-45 years and 7% in >45 years. Almost 65% men are in the 30 – 40 years age group, showing the average age at marriage and accessing treatment for infertility.



The semen analysis reports were as per WHO 2010 guidelines. Our institutional incidence of mild asthenoteratozoospermia was 65%, mild oligoasthenozoospermia was 13%, severe oligoasthenozoospermia was 16%, mild asthenozoospermia was 3% and azoospermia was 0.001% and normozoospermia was 3%. Thus, a normal semen analysis was seen in only 3% of men attending the clinic, while 16% showed severe anomalies of count, motility and morphology. The rest of the 84% men had mild abnormalities of count, motility and/or morphology.



The morphological defects were as follows: Head defects were the commonest at 89%, mid piece defects were seen in 6%, tail defects were seen in 4% and cytoplasmic defects in 1%.



Of the 25 men who had severe oligoasthenoteratozoospermia, 14 (56%) were in the 30 – 35 years age group and 10 (40%) were above 35 years of age.

**DISCUSSION**

180 semen analyses were done in the study period. Almost 65% men were in the 30 – 40 years age group, showing the average age at marriage and accessing treatment for infertility. The results did not show that increasing age was a significant factor in abnormal semen parameters. In the study by Nadia AS et al, they however, noted a direct correlation between increasing age and abnormal semen analysis/infertility.<sup>(12)</sup> Hossain M et al & Silvia et al stated that with an increasing trend of elderly men seeking fertility treatment, semen analysis parameters were found to be significantly abnormal.<sup>(13, 14)</sup>

A normal semen analysis was seen in only 3% of men attending the clinic, while 16% showed severe anomalies of count, motility and morphology. The rest of the 84% men had mild abnormalities of count, motility and/or morphology. Male factor is thought to cause about 40% of infertility and also present in about 20% of cases with a combined factor. But probably, there were more cases of male factor in our study due to the higher costs involved in treating male factor in the private setup. The severe oligoasthenozoospermic patients were more in the 30-35 age groups (14 patients).<sup>(15)</sup>

In the study by Kumar et al on the evaluation of infertile men in rural India, their trend of semen analysis was as follows: 35.80% had normozoospermia, 34.14% had oligozoospermia, 19.35% had asthenoatozoospermia and 10.70% had azoospermia.<sup>(16)</sup> This could point to stark difference in the lifestyle in Rural vs. urban setup affecting an individual's reproductive capabilities.<sup>(16)</sup>

The mean and standard deviation for the analysed patients in the following parameters is as mentioned-

- Total count -57.87 million  $\pm$  11 million.
- Total motility- 55%  $\pm$  17%.
- Progressive motility -14%  $\pm$  6%.
- Morphology normal forms- 1.8%  $\pm$  0.8%.

Abnormal morphology distribution was mainly contributed by head defects 89%, followed by mid pieces (6%), tail (4%) and cytoplasmic droplets (1%).

Abstinence >4 days was noted to be associated with progressive motility of <25 (<0.05). This was also echoed in studies by Al-Turki et al.<sup>(17)</sup>

Standard semen analysis has long been the primary laboratory test to find out male fecundity. Male sterility still poses a diagnostic problem and remains difficult to treat. Subfertility is the another condition which is characterised by sperm concentration less than  $15 \times 10^6$ /mL, less than 32% showing forward progression motility, and normal morphology in less than 4%.<sup>(8)</sup>

## CONCLUSION

Male factor contributes to almost 30 - 40% of reproductive failure, with teratozoospermia being very commonly seen. A detailed risk factor analysis will help in identifying any modifiable factors.

## ACKNOWLEDGEMENT

Professor Dr Sumangala Devi, Head of Department, OB-GYN; Dr. Ajitha B. K., Assistant Professor, Statistics Department, OB-GYN; Ms Sudha, Embryologist.

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