Research Article

Study on causes of infertility among males attending infertility clinic at a rural teaching hospital in Andhra Pradesh

K. Pushpalatha[1], R Sudhakar [2], G Raja Pramila [3]

[1]Dr. K. Pushpalatha, Associate Professor, Maheshwara Medical College, Chitkul (V), Near Isnapur X Roads, Patancheru, Medak District, Telangana 502307, [2]Dr R Sudhakar, Associate Professor Gitam Institute of Medical Sciences and Research, Vizag, [3]Dr G Raja Pramila, Professor, Gitam Medical College Rd, Rushikonda, Visakhapatnam, Andhra Pradesh, India

Address for Correspondence: Dr. K. Pushpalatha, Associate Professor, Maheshwara Medical College, Sangareddy. Email id: resdoc555@gmail.com

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Abstract

Introduction: The incidence of infertility is increasing in developed and developing counties due to various causes, out of these many are preventable. The paper outlines study conducted to find the impact of various causes in male. **Methods**: All patients who attended the infertility clinics of GEMS Medical College, Srikakulam, between March 2014 to February 2015 were included in the study. **Results**: Infertility was high among men aged 20-25 and 30-40 years with 62.07% and 62.96%. Most common abnormality of infertility by microscopic study was found to be Pyospermia (38.46%), followed by Oligozoospermia (16.92%) and lowest abnormality is Hematospermia (3.08%). **Conclusion**: Infertility is high in 20-25 and 30-40 age group. Pyospermia was the most common microscopic abnormality; Preventable causes (87%) are commonest cause for infertility. Abnormality is found to be more than 50% among the patients.

Key words: Male, Infertility, Pyospermia, Microscopic study

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Introduction

72.4 million couples globally experience fertility problems [1]. As per the WHO estimates 60–80 million couples worldwide currently suffer from infertility [2]. As per the WHO, the overall prevalence of primary infertility ranges between 3.9% and 16.8% [2]. 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 [3-5].

In the developed countries and communities the birth rate is rapidly decreasing over years [6]. The incidence of infertility is increasing in developed and developing counties due to various causes, out of these many are preventable [7-9]. Now this phenomena has become quite common in India also. India's economic boom has started in 90s and resulted in change in lifestyle and behavioral aspects. More than 90% of male infertility cases are due to low sperm counts, poor sperm quality, or both. Male infertility refers to a male's inability to result pregnancy in a fertile female. "Male factor" infertility is seen as an alteration in sperm concentration and/or motility and/or morphology in at least one sample of two sperm analyzes collected 1 and 4 weeks apart [10].

Infertility and sub-fertility can be caused by various factors such as chromosomal and genetic disorders, physical and mental stress, obesity, malnutrition, smoking, drug abuse, cryptorchidism, Sexually Transmitted Diseases (STDs), contraceptive procedures, accessory gland infections, germ cell malignancies, and testicular cell calcification, disorders of ejaculation, varicocele, endocrine disruption and autoimmunity [11-13]. Sperm abnormalities can be caused by wide range of factors like congenital birth defects, disease, chemical exposure and life style habits. These abnormalities either affect sperm count, movement or shape.

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Categorization of Causes of infertility: The causes of the infertility are grouped as follows for the study.
Physical Aspects: Lack of active exercises, Behavioral Patterns
Unhealthy Habits: Smoking and usage of recreational drugs. Over exercising

Food habits: Eating junk food frequently, excessive or frequent consumption of alcohol, which lead to obesity, as they impair hormonal levels adversely and affect the fertility.

Working Environment: Exposure to hazardous conditions such as working in pesticide factories, exposure to microwaves and noisy factors [14-16] also affect fertility.

Infections: prostatitis (inflammation in the prostate gland), orchitis (in the testicle), semino-vesculitis (in the glands that produce semen), or urethritis (in the urethra),
Unknown reasons: Genetic disorders, Cystic fibrosis, polycystic kidney disease.

Microscopic abnormalities- The abnormalities of infertility that are found in microscopic study can be grouped as follows.
Pyospermia: Pus cells in semen
Oligozoosmermia: Reduced sperm count
Hematosmermia: RBCs in semen
Oligoasthenozoosmermia: Reduced count and motility
Asthenozoosmermia: Reduced motility
Necrosmermia: Dead sperms in semen
Azoospermia: Absence of spermatozoa
Teratospermia: Abnormal forms

Methods

All patients who attended the infertility clinics of GEMS Medical College, Srikakulam, between March 2014 to February 2015 were included in the study. Approval for the study was obtained from the research and ethical committee of the Institute. An informed consent was obtained from the patients willing to participate in the study. Patients data included history, age, number of years of marriage, occupation, personal lifestyle, any known diseases, previous surgery, and primary or secondary infertility were available and recorded. Laboratory tests performed included complete blood picture, follicle-stimulation hormone (FSH), leutinizing hormone (LH), and prolactin level. The details of the husband's semen analysis, volume, count, motility, and morphology, were entered. The semen parameters were compared to the normal reference values as described by the World Health Organization. The data were entered into a database and analyzed using a t-test to compare means between the different levels of number and morphology of the semen samples. The data were analyzed using SPSS version 14.

Such information is matched with types of infertility mentioned above for finding the common pattern. A sterilized container for sample collection of semen, clean glass slide, Papanicolaou stain and microscope are used for the study.

Results

113 male patients aged 18 -55 have visited the lab for infertility test. The patients were requested to submit the semen in a clean container. After the collection, a slide was prepared for the microscopic examination of the semen. Out of 113, 65 (57.2%) men had infertility. Infertility was high among men aged 20-25 and 30-40 years with 62.07% and 62.96%. Lowest is observed in men below 20 years. (Table1)

Most common abnormality of infertility by microscopic study was found to be Pyospermia with 38.46%, followed by Oligozoosmermia (16.92%) and lowest abnormality is Hematospermia with 3.08%. (Table 3) Later either telephonic or face to face interviews were conducted to find the reasons behind the abnormality. Abnormality was high among the people, who had Infections (17.58%), unknown reasons (13.94%), lack of physical activity 12.73% and unhealthy habits 12.73%. The table 4, shows controllable reasons amount to > 80%, a primary cause of infertility.

Table-1: Normal and Abnormal cases

Number of patients	Normal	abnormal
113	48	65
% of cases	42.48%	57.52%

Table-2: Age-wise distribution of cases

Age wise distributions	No of patients	Abnormal Cases	Abnormal Percentage
Below 20	3	1	33.33%
20 to 25	29	18	62.07%
25 to 30	51	28	54.90%
30 to 40	27	17	62.96%
Above 40	3	1	33.33%

Table-3: Age-wise Microscopic abnormalities

Age wise distributions	Pyospermia	Oligozoosmermia	Hematosmermia	Oligoasthenozoosmermia	Asthenozoosmermia	Necrosmermia	Azoospermia	Teratospermia
Below 20	1	0	0	0	0	0	0	0
20 to 25	9	2	1	4	0	0	1	1
25 to 30	9	6	1	2	4	1	2	3
30 to 40	6	3	0	3	1	1	2	1
Above 40	0	0	0	0	0	0	1	0
total	25	11	2	9	5	2	6	5
%	38.46%	16.92%	3.08%	13.85%	7.69%	3.08%	9.23%	7.69%

Table-4: Frequency of causes of infertility

Reasons	Pyospermia	Oligozoosmermia	Hematosmermia	Oligoasthenozoosmermia	Asthenozoosmermia	Necrosmermia	Azoospermia	Teratospermia	Total Patterns	Percentage of patterns
No of patients	25	11	2	9	5	2	6	5	65	
Physical Aspects	5	6	0	4	3	1	2	0	21	12.73%
Behavioral Pattern	5	6	0	0	2	1	2	2	18	10.91%
Unhealthy Hobbits	10	5	0	0	2	0	3	1	21	12.73%
Over exercising	2	4	1	3	1	0		2	13	7.88%
Food habits	5	6	0	3	2	0	1	1	18	10.91%
Working Environment	2	1	1	3	1	0	1	0	9	5.45%
Multiple Sexual Partners	5	3	0	3	2	0	0	0	13	7.88%
Infections	20	5	1	2	1	0	0	0	29	17.58%
Unknown reasons	10	3	1	2	1	2	2	2	23	13.94%

Discussion

Reproduction is essential for the continuation of the genome of individuals and species including human. The desire of survival and continuation of the genome is strong enough that the human individuals fail to reproduce have poor social, mental and physical health. For the remedies of the condition, estimation of prevalence and factors are pre-requisite. The overall incidence of infertility over the last two decades varied between 8.97% to 14.63%. Incidence of primary infertility had a higher incidence as compared to secondary infertility. Over the years it was proved that the incidence of infertility varied between 10-20% [17-20]. In a Cohort study conducted in Iraq, Razzak and Wall reported incidence of primary infertility as 77.20%

and secondary infertility as 22.80% and Sinha et al of 65.83% and 34.17% respectively [21]. Our observations were compared to them of 57.2% primary infertility and 22% secondary infertility. When semen analysis reports of 113 cases were analysed it was evident that the most affected age group was 25-40 years. This was similar to study conducted by H.A. A.L Turki et al 2015 [22].

Most common abnormality of infertility by microscopic study was found to be Pyospermia with 38.46%, followed by Oligozoosmermia with 16.92%. The prevalence of pyospermia was more among men in the age group 25- 30 years was 36% and 24% among 35-40yrs age group.

Abnormality was high among the people who have Infections with 17.58%, unknown reasons with 13.94%, lack of physical activity 12.73% and unhealthy habits 12.73%. Durphy et al, (1991) suggested that chronic alcoholism can cause testicular atrophy leading to oligospermia or azoospermia and also cause ejaculatory dysfunction. In the present study the relationship between alcohol consumption and abnormalities of semen was evident and supports the findings of the above authors [23-26].

In the present study the significant relationship of alcoholism and cigarette smoking to abnormalities of semen was appreciated, but still this can be under reporting of the smoking habits because as this can be other way round as the patients are generally not comfortable about giving history of any addiction even though present.
With the advancing age a decline in testosterone and increase in gonadotrophins are associated with a decrease in sperm production and number of normal sperm [26].

Conclusions

- Infertility is high in 20-25 and 30-40 age groups. Pyospermia is found be higher in percentage. Preventable causes (87%) are commonest cause for infertility. Abnormality is found to be more than 50% among the patients.
- Optimal of age of marriage, refraining from addictions, timely medical assistance can help the couples to have successful pregnancy.
- Due to diverse environmental, nutritional and socioeconomic factors and climate conditions, it is important to assess the semen quality in different parts of the country.

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