

SPECTRUM OF PATIENTS PRESENTED IN MALE INFERTILITY CLINIC

Mohammad Ayaz Khan¹, Saadia Shah², Naeem Akhtar³, Muhammad Ali Sajid⁴, Muhammad Naeem⁵, Khursheed Anwar⁵

ABSTRACT

Objective: To study the spectrum of patients presented in male infertility clinic.

Methodology: This descriptive study was conducted on 416 patients attending Special Male Infertility Clinic at Pakistan Institute of Medical Sciences, Islamabad, from January 2000 to December 2002. Patients were recruited by convenient sampling method. Data was recorded on a structured questionnaire and was analyzed on SPSS version 14.

Results: Out of 416 patients, 346 (83.2%) patients had primary Infertility. One hundred forty four (34.6%) patients were smokers, 11 (2.64%) were alcohol users, 25(6.0%) patients had history of exposure to heat and 20 (4.8%) to chemicals. Twenty four (5.8%) cases had history of mumps-related orchitis and 8 (1.9%) had tuberculous orchitis. Nineteen (4.6%) patients had history of trauma to external genitalia and 17 (4.1%) patients had surgery on external genitalia. Atrophic testis were found in 48 (11.5%) cases and undescended testes in 12 (2.9%) cases. Significant pyuria was found in 33 (7.9%). Semen analysis showed more than 20 million/ml count in 207(49.8%), while 93(22.4%) patients were azoospermic. Medical treatment along with sex education was given to 163 (39.2%) patients. Epididymo-vasostomy was advised to 53 (12.7%), adoption of child to 7 (1.7%) and intra-cytoplasmic sperm injection (ICSS) to 4(1%) patients.

Conclusion: Majority of patients had primary infertility. History of testicular atrophy, infection, trauma, surgery, azospermia, smoking, alcohol use and exposure to heat or chemicals are the possible contributing factors for infertility in males. More studies are needed to understand the complex etiology of male factor infertility in our population.

Key Words: Infertility, Male Infertility, Infertility Spectrum, Pyospermia.

This article may be cited as: Khan MA, Shah S, Akhtar N, Sajid MA, Naeem M, Anwar K. Spectrum of patients presented in male infertility clinic. Khyber Med Univ J 2012; 4(1): 13-18

INTRODUCTION

Infertility is the inability of a couple in the reproductive ages to achieve pregnancy following twelve months of unprotected intercourse¹. It excludes the period during which contraception is used. The management of infertile couples is a major challenge for the attending physician. Male factor is an important contributory factor for infertility². For successful treatment of infertility, detailed methodological evaluation of male factor infertility including laboratory investigations of urine,

serum and semen, radiological and genetic studies are required³.

The common factors responsible for male infertility are smoking, pollution, fevers, diabetes, previous or current therapy, post-pubertal mumps, viral infections, surgery particularly involving uro-genital system and venereal diseases⁴. Other important risk factors are exposure to chemicals or radiation and thermal trauma. Certain drugs such as alcohol, marijuana, steroids and salazopyrin may have an adverse effect on sperm production⁵. Most lubricants used during sexual intercourse have a toxic effect on the sperm production⁶. Blockage of sperm delivery system, anti-sperm antibodies, injury to testicles, disorders of hormone production, poor descent of one of either testicles and the presence of varicoceles or hydroceles can affect the sperm production⁷⁻⁹.

In 1980s there was an increased awareness regarding male factor infertility emphasizing the evaluation of the male partner. Simultaneously, the development of the in vitro fertilization (IVF) led to an explosive rise in the use of this technology for the treatment of both male and female factor infertility. This resulted in a shift in emphasis from treatment designed to improve fertility toward treatment designed to achieve conception by bypassing fertility problems¹⁰.

1 Urology Department, Shifa International Hospital, Islamabad.

2 NDC Hospital Rawalpindi, Pakistan

3 Fauji Foundation Hospital, Rawalpindi, Pakistan

4 POF Hospital Wah Cantt., Pakistan

5 Urology department, Pakistan Institute of Medical Sciences, Islamabad, Pakistan

Address for Correspondence:

Dr. M. Ayaz Khan

Associate Consultant Urology Department, Shifa International Hospital, Pitras Road, H8/4, Islamabad, Pakistan

E-mail: uromak11@yahoo.com

Date Submitted: August 24, 2011

Date Revised: March 13, 2012

Date Accepted: March 22, 2012

However with the use of latest technology, high cost procedures, the evaluation of the male is often bypassed, ignoring the fact that many causes of male infertility like varicocele, ductal obstruction, and infections can be easily and effectively treated. In addition, without a full evaluation, significant diseases such as testicular cancer, pituitary tumors, and neurological diseases may be overlooked¹¹. This study was conducted to study the spectrum of patients presented in male infertility clinic at Urology Department, Pakistan Institute of Medical Sciences Islamabad.

METHODOLOGY

This descriptive study was conducted on all male patients attending special male infertility clinic at Urology department, Pakistan Institute of Medical Sciences (P.I.M.S.) Islamabad during January 2000 to December 2002. Sample Size was 416 and technique was convenient sampling. Data was recorded on a structured questionnaire to facilitate the history, examination, relevant investigations and follow-up. The data was then analyzed on SPSS version 14.

RESULTS

During the study period, 416 patients were recruited in the study. Out of these 416 patients who attended infertility clinic 346 (83.2%) patients had primary infertility and 66 (15.9%) were suffering from secondary infertility (Table I). The age of the patients ranged from 15 years to >55 years with mean age of 32.23 years. The maximum number of patients presented in the age group of 25 to 34 years (Table II). The mean age of wife was 26.32 with standard deviation of 6.22.

FREQUENCY OF THE TYPES OF INFERTILITY

Total Male Urology OPD	37290
Total infertility cases	416 (1.11%)
Primary infertility	346 (83.2%)
Secondary infertility	66 (15.9%)
Unmarried	2 (0.5%)
Infertility status Unknown	2 (0.5%)

Table I

AGE RANGES

15-24 years	38 (9.1%)
25-34 years	234 (56.3%)
35-44 years	121 (29.1%)
45-54 years	16 (3.8%)
> 55 years	02 (0.5%)
Missing Record	05 (1.2%)

Table II

The duration of unprotected intercourse at presentation ranged from 3 months to 36 years, and a maximum number (250 patients, 60.09%) presented between 4-36 years. Fifty-seven patients (13.70%) gave history of previous evaluation for infertility in different places, while 43 (10.33%) were visiting for infertility problem for the first time.

Table III is showing the main contributing factors of infertility in our patients. Previous history of infection and inflammation of the urogenital organs was present in majority of patients with infertility. Out of 416 cases, 171 (41.1%) cases had pyospermia while 17 (4.08%) yielded positive culture on semen culture and sensitivity. One to three pus cells were seen in 38 (9.13%) patients and more than three pus cells were detected in 133 (31.97%) patients. Urinary infection was seen in 33 (7.9%) patients on the basis of more than three pus cell per high power field of urine slide but only one patient showed positive culture. Twenty four (5.8%) patients gave history of mumps orchitis and 8 (1.9%) had tuberculous orchitis.

One hundred and forty four (34.61%) patients gave history of smoking. Twenty five (6%) patient gave history of thermal exposure and 20 (4.8%) patients had previous history of exposure to chemicals while regarding previous use of medicines, 11% patients used herbal medicines and 9.1% of patients used allopathic drugs.

Nineteen (4.56%) patients had history of inguinoscrotal region trauma. Seventeen (4.1%) patients had history of surgery of inguinoscrotal region. On examination 77% of the patients were found normal. Atrophic and undescended testes were observed in 48 (11.5%) and 12 (2.9%) respectively.

Semen analysis was done in all 416 patients. Out of 416 patients 207 (49.8%) were having normal count, 93 (22.4%) had azoospermia and 77 (18.50%) had oligospermia while in 37 (8.9%) cases, data were missing (table 4). Examination of sperm morphology revealed that 329 (79%) patients had normal morphology and 86 (21.4%) had asthenospermia.

The hormonal profile of the selected cases was obtained initially and 40 results of follicle stimulating hormone (FSH) showed that 23 (57.5%) of them were within normal range and 17 (42.5%) were elevated. Luteinizing hormone (LH) analysis was performed in 38 cases and was found normal in 31 (81.6%) and was high in 7 (18.4%) cases. Serum testosterone was tested in 36 patients and was normal in 17 (47.2%) cases, high in 13 (36.1%) and low in 6 (16.7%) cases.

Serum Prolactin was tested in 28 patients and was normal in 13 (46.43 %) cases, high in 13 (46.43 %) cases and low in 2 (7.14%) cases.

Sex education was given in 183 (44%) and sex education plus medical treatment was advised in 166 (39.9%) patients. Epididymo-vasostomy was recommended in 51

FREQUENCY OF CONTRIBUTING FACTORS OF MALE INFERTILITY IN 416 CASES

Contributing Factors		Frequency (n = 416)	%age
Infection/Inflammation	Pyospermia	171	41.1
	UTI	33	7.9
	Mumps related Orchitis	24	5.8
	Tuberculous Orchitis	8	1.9
	Smoking	144	34.61
	Alcohol	11	2.64
History of Exposure	Thermal Exposure	25	6
	Chemicals	20	4.8
Drugs Use	Herbal Medicines	46	11.1
	Allopathic Drugs	38	9.1
	Both Allopathic and Herbal Medicines	17	4.1
History of Trauma/Surgery	History of Inguinoscrotal Region Trauma	19	4.56
	History of Surgery of Inguinoscrotal Region,	17	4.1
	Abdominal Surgical Procedure	5	1.2
Testicular/Genitalia Problems	Atrophic Testes	48	11.5
	Undescended Testes	12	2.9
	Varicocele	11	2.64
	Single Testes	4	0.96
	Underdeveloped External Genitalia,	4	0.96
	Underdeveloped Secondary Sexual Characteristics along with Underdeveloped External Genitalia	3	0.72
	Hydrocele	2	0.48
	Retractile Testes	2	0.48

Table III

SEMEN ANALYSIS

Sperm Count	Frequency (%ge)
>20 mil/ml	207 (49.8%)
10-19.99 mil/m	31 (7.5%)
<10 mil/ml	46 (11.1%)
Azoospermia	93 (22.4%)
Missing data	37 (8.9%)
Sperm Morphology	
Normal morphology	329 (79.1%)
Necropermia	5 (6.4%)
Teratospermia	63 (15.6%)
Asthenospermia	86 (21.4%)
Pus cells	171 (41.1%)
C/S +ve	17 (4.1%)

Table IV

(12.7%) patients and 4 patients (1%) were sent for ICSI. Option of adopting a child was given to 7 (1.2%) patients.

DISCUSSION

In 20% cases of infertile couples, a male factor is solely responsible and in further 30-40 % cases male factor is partly contributory¹². In majority of cases, the cause of male infertility is either unknown or not completely understood. For investigation of an infertile couple, the objective is to reach a specific diagnosis in the shortest time with minimum laboratory tests for the couple¹³. Different studies have defined infertility but there is lack of uniformity in the definition of infertility¹⁴.

The analysis of results of our study showed that there were 83.2% patients of primary and 15.9% patients of secondary infertility. The frequency of male infertility was 1.1% of urology OPD in our study which is lower from 5-6% reported elsewhere in general population¹⁵. This could be due to the fact that our study was a hospital based study and not truly representing the general population.

The minimum age of patients was 15 years which shows a trend of early marriages in our society, which can be attributed to the low literacy rate in Pakistan. The minimum duration of 3 months can be related to the increased concern of the people towards the problem of infertility although two unmarried males also consulted for this concern. The maximum duration of infertility observed was 36 years and 37% of the previously evaluated patients showed the desire of the infertile couples to have a child, regardless of the cost and time.

The adverse effect of smoking on sperm production, sperm motility and fertilizing capacity has been studied¹⁶. In this study, there were 144 smokers, and 38.46% of them were having asthenospermia. Three patients gave history of alcohol abuse and their semen parameters were within normal range. Martin and his colleagues¹⁷ noted that 12% of the etiologies are due to alcohol and drugs use, but as our social and religious setup do not allow alcohol use so the results are not comparable. Occupational exposure to chemicals is a known cause of male infertility¹⁸. In our study, 4.8% of the patients had history of exposure to the chemicals and 6% to thermal trauma.

Surgery on the inguino-scrotal region is a major cause of infertility due to obstructive azoospermia¹⁹ and in this study there was history of inguino-scrotal surgery in 17 (4.1%) patients and out of them 66.66% had azoospermia, while 33.33% showed normal sperm counts. Lubricants used for coitus are considered to be spermicidal and is considered to be a cause of infertility²⁰. In this study, there was no history of use of lubricants by the infertile patients.

Varicocele is considered to be a surgically correctable cause of subfertility²¹. The management of patients with varicocele has been the subject of continuous change since surgical therapy for this pathology was first proposed by Tulloch in 1952²². The incidence of varicocele is stated to be about 15% in general population and the incidence of infertility about 5%²¹. Hence it is clear that all of the patients with varicocele are not infertile. Role of varicocele repair as treatment for male infertility is controversial and a systematic review showed no significant improvement in the chance of conception after treatment of the varicocele²³. In our study the incidence of varicocele is only 2.64% as compared to 5% in the infertile patients reported by Saypol²¹.

On physical examination, there were 4 (0.96%) patients of under-developed external genitalia and 50% of them had azoospermia and 50% showed oligospermia on semen analysis. They also had elevated levels of serum FSH. There are studies which report the direct relationship between the size of the testes and the serum FSH levels in the infertile patients and recommend that the state of the germinal epithelium can be evaluated from these two criteria alone²⁴. The causes of small and flabby testes are linked to many childhood illnesses e.g. orchitis, cryptorchidism, scrotal trauma, testicular

torsion and post-pubertal mumps¹⁷. In our study there was history of cryptorchidism in 12 (2.9%), varicocele in 11(2.64%) and trauma in 19 (4.56%) patients. Carizza and his co-workers²⁵ estimated the cryptorchidism as a cause of male infertility in about 9% of the patients in Germany but in our study the incidence was only 2.9%. Unilateral cryptorchidism is not significantly affecting the paternal fertility but bilateral cryptorchidism significantly reduces the chances of paternity²³.

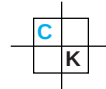
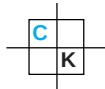
Semen analysis is indispensable and most widely used test in the evaluation of male infertility²⁶. However semen analysis must be carried out according to WHO guidelines for laboratory examination and processing for human semen²⁷. Azoospermia is the severest form of male infertility and Khan and his colleagues in their study stated its incidence to be 12.32% in the Pakistani population in 1992²⁸ while in our study it was 22.4% in the infertile male patients matching figures of 24.3% from a study from Zimbabwe²⁹.

Infections of the male genitourinary tract are important curable causes of infertility²³. Pyospermia is a known cause of infertility and it affects the motility and morphology of the sperms³⁰. In our study, there were 171 (41.1%) cases of pyospermia and out of these 96(56%) had oligospermia and 30(17.5%) had teratospermia while 32(18%) had azoospermia. Martin and his colleagues reported 40% causes of male infertility due to prostatitis and infections of the genital tract resulting in pyospermia¹⁷.

Decrease in spermatogenesis is associated with fall in Inhibin levels, produced by Sertoli cells and involved in the feedback control of FSH; leading to rise in FSH levels. Isolated elevated levels of FSH constitute an important, sensitive marker of the state of the germinal epithelium³¹. In our study the FSH levels of 40 patients showed that it was raised in 42.5% of cases, and its association with sperm count showed that FSH was raised in 33.3% of the azoospermic patients. In the past, male factor infertility has been empirically managed but now assisted reproductive techniques (ARTs) are being increasingly practiced in the management of the male-factor infertility³². However ARTs are very expensive and limited number of patients can afford it in Pakistan. In our study ICSI was advised to only 1% of the patients who could afford it and were likely to be benefited from it.

In our study 12.5% (52) patients were lost to follow-up. This is the problem with many infertile males,³³ and it seems that they seek short-cuts for their problem and visit different clinics in hope of better results in shorter time. It can also be attributed to the fact that Pakistan Institute of Medical Sciences Islamabad provides health facilities to the residents of almost all of the Khyber Pukhtunkhwa, Kashmir and a large part of the Punjab and our patients can not visit this clinic for regular follow-up due to financial and communication problems.

There are few causes of male infertility, which can be corrected surgically. These include varicocele,



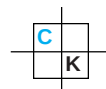
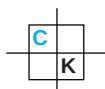
cryptorchidism and obstructive azoospermia. In our study, there were 51 (12.7%) patients who were advised epididymovasostomy, 4 (1%) ICSI and adoption was recommended in 7 (1.7%). These procedures range from varicocele to ICSI. One hundred and sixty three (39.2%) patients were advised medical education and medical treatment. One hundred and eighty three (44%) patients needed education regarding fertility and female reproductive cycles. Lack of sex education plays a major role in the misconceptions resulting in psychosexual problems of our patients. A study by Qidwai³⁴ showed that many young Pakistani men had different misconceptions regarding nocturnal emissions and masturbation, and 10.6 % of the respondents linked these to the infertility.

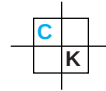
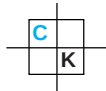
CONCLUSION

Majority of patients had primary infertility. History of testicular atrophy, infection, trauma and surgery; azospermia, smoking, alcohol use and exposure to heat or chemicals are the possible contributing factors for infertility in males. More studies are needed to understand the complex etiology of male factor infertility in our population. Moreover special infertility clinics with well equipped laboratory and surgical facilities are needed across the country. Proper evaluation of the infertile couples will help in identifying the treatable causes of infertility.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

MAK: Conception and design, acquisition of data, drafting the manuscript

SS: Acquisition of data, analysis and interpretation of data

NA: Acquisition of data

MAS: Conception and design, Acquisition of data, analysis and interpretation of data

MN: Acquisition of data,

KA: Final approval of the version to be published

CONFLICT OF INTEREST

Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE
NONE DECLARED

KMUJ web address: www.kmu.j.kmu.edu.pk

Email address: kmu.j@kmu.edu.pk

