

Factors Affective Fertility and Rational Behind Them

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ABSTRACT

Object: To find out the etiology of infertility and rational behind these factors.

Patients and methods: This was a prospective study. Out of 116 patients presenting with primary and secondary infertility 101 patients completed their investigations. These couples were interviewed based on using structured questionnaire, and tests were carried.

Results: 82.2% of couples investigated suffered from primary infertility while 17.8% had secondary infertility. Among couples 63.4% of females were affected while 39.3% of males suffered various problems of pathospermia or endocrinal problems. Ovulatory dysfunction emerged has most frequent cause in 46.4% in females, PCOS contributed in 33.7% as anovulatory while 36.6% had unexplained infertility followed by tubal factor in 13.13%.

Conclusion: Infertile patients with ovulatory dysfunction have higher BMI, they most frequently present with primary infertility, hirsutism and abnormal hormonal and menstrual pattern. Adopting lifestyle modification helps to alter endocrinal profile and prevention of long term health risk.

Keywords: Infertility, ovulatory,

INTRODUCTION

Infertility is defined as one year of unprotected intercourse without pregnancy. It greatly affects couple's quality of life¹. There are two types of infertility, primary and secondary. Primary is defined as who have never achieved a pregnancy. Secondary infertility refers to couple who have previously succeeded in achieving at least one pregnancy, even if it ended in abortion². Infertility affects more their 80 million people worldwide³. It is a threat to human continued survival on earth⁴. According to WHO data infertility becomes a public health problem when its frequency exceeds 15%⁵. The prevalence and etiology of infertility varies from place to place. It may depend upon the influence of religion and region and also depend upon type of studies and place where they were conducted⁶.

In recent years prevalence of infertility has increased significantly in some countries⁷. In general etiology of infertility involves ovulation disorders, tubal occlusion, adhesion, endometriosis, uterine or peritoneal factors and abnormality in cervical mucus sperm interaction⁸. Over 22% consultations in Pakistan are involved for treatment of infertility⁹. The experience of infertility is a stressful condition itself. This becomes particularly traumatic with previous pregnancies ending up in abortions, still births and neonatal infant death or the live birth being the daughters only. This results in severe psychological upset of women. In our society only women is being

considered responsible for child bearing and bears the brunt of being infertile. This is irrespective of with whom the cause of infertility lies. Moreover due to problem of infertility, the women become the victims of verbal and physical abuse both by husbands and inlaws¹⁰.

The present study was aimed to indentify the etiological factors of infertility in infertile couples attending the outpatient department and to determine percentage distribution of various factors and to try to determine the rationale behind them.

PATIENTS & METHODS

This is a prospective study carried out at Gynae Unit II of Shalamar Hospital. Patients who attended outpatient clinic at Shalamar Hospital were recruited by convenient sampling technique. The data of each patient was recorded in identical predesigned proforma after informed consent. Initial assessment was carried out by taking a detailed history and clinical examination with particular attention to duration and type of infertility, age of patient, menstrual and coital history, relevant past, systemic and surgical history, abnormal pelvic findings, goiter, hirsutism galactorrhoea and body mass index (BMI). A regular menstrual cycle between 21 to 35 days is called normal. A prolonged cycle of more than 6 months is called oligomenorrhoea, while a cycle longer their 6 months is called amenorrhoea. A cycle shorter their 21 days is called polymenorrhoea. Initial investigation comprised of baseline CBC, BSL, Blood group and day 10 ultrasound. The patient was asked to maintain a menstrual calendar. In case of history of

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vaginal discharge high vaginal swab was sent for culture and sensitivity and treatment given.

Two of given three criteria were required to diagnose PCOS according to Rotterdam workshop 2003. After exclusion of other causes of androgen excess, patient with history of oligo/amenorrhea, clinical or biochemical evidence of androgens excess, wt gain, acne, hirsutism were advised to have hormonal profile that included FSH, LH, prolactin and TSH level, as well as free testosterone. Ovulatory dysfunction was labeled in case of PCOS, thyroid disease, hyperprolactinemia and premature ovarian failure. Hormonal profile was carried by chemiluminescent method. FSH level on day 3 less than 7 mIU/ml were considered normal, between 7-20 high and more their 20mIU/ml very high, day 3 prolactin of more there 17ng/ml on two occasions was termed as hyperprolactinemia. This was followed by CT skull and neurological opinion, if level was very high.

For tubal patency hysterosalpingogram was offered in proliferative phase after excluding the active pelvic infection. Laparoscopy was offered to those who had co-morbidity such as features of PCO, infertility of more their 3 years, severe dysmenorrhoea or ovarian cyst on ultrasound. In PCO patients ovarian drilling was performed. Hysteroscopy was advised where suspicion of intra uterine pathology such as polyp, submucous fibroid or synechi were suspected and managed accordingly.

Husband was advised to have semen analysis after two days abstinence. In case of abnormality oligo/azo or astheno teratozoospermia urologist opinion and further evaluation by testicular U.S.G and hormonal evaluation were carried out.

Since this was a descriptive study no inferential tests or P-value was required. Descriptive statistics were applied by SPSS version 11.0 mean value of age, and duration of sub fertility with their standard deviation was determined. The percentage of clinical variables was calculated, out of total sample size of 101 Subjects.

RESULTS

During period of 1st October, 2012 till 31st May, 2013 8 months period, 116 patients with complain of either primary of secondary infertility were included, out of which 101 completed their work up but 15 patients did not turned up for complete investigations.

A total of 82.2% of couples investigated suffered from primary infertility while 17.8% of all couples had

secondary infertility. The duration of infertility was from 1 year to 15 years 5.4 ± 0.3 . Average age of females was 29.39 years while in men it was 33.5 years. 18 (17.8%) patients had amenorrhea, while 9(8.9%) presented with oligomenorrhoea. On the other hand 78.7% had regular menstruation. 2 patients with hypothyroidism suffered from menorrhagia.

The most frequent cause for female infertility was anovulation in 46(46.4%) (Table I). Polycystic ovarian disease contributed in 34 (33.7%), hyperprolactinemia in 7(6.9%) while premature ovarian failure and hypothyroidism was detected in 3 (3.03%) and 2 (2.02%) patients respectively. Tubal blockage was detected in 13 (13.13%) patients. Bilateral tubal blockage was present in 7(6.7%) and tubal blockage due to tubo ovarian masses, hydrosalpinx and dermoid cyst was present in 3 (3.03%). Grade IV endometriosis contributed to tubal blockage because of extensive adhesions and chocolate cyst in 3(3.03%).

Large fibroid because of obstruction to uterine acuity or submucous fibroid each contributed to 3 cases (3.03%). Congenital uterine abnormality (Septa) uterus was present in 2 (2.02%) of patients. No demonstrable cause was detected in 37 (36.6%) of female population.

While studying the features of patient who presented with polycystic ovarian disease as most frequent cause of anovulation 41.2% had regular menses and 47.1% had secondary amenorrhea, only 11.8% had oligomenorrhoea. There was altered FSH/LH ratio of 1.2 in 76.5% of patients ultrasound findings were consistent with polycystic ovaries in 24(70.8%) of females Most of them (41.2%) were overweight, while 23.5% were obese.

Table III depicts the distribution of causes of infertility per female patient 55.1% of patients had one demonstrable cause while 9.9% and 1% had two or three causes respectively. 37 (36.6%) patients had unexplained infertility.

Among the males investigated 34.3% had identifiable defects upon semen analysis. In 5.9% no spermatozoa were found (Obstructive Azospermia and Idiopathic Infertility with Azospermia) while in remaining 23.8% there were different variants of pathospermia. The distribution of male infertility causes are given in table IV. The most frequent was no identifiable cause in 61.4%. Two patients were identified with endocrinal problems with hyperprolactinemia and one with hypogonadism and klinefelter syndrome. 2% patients had demonstrable varicocele, while 3(3%) had sexual dysfunction.

Table I: Distribution of the causes of infertility among study women (n=101)

Diagnosis	=n	%age
Hyperprolactineamia	7.0	6.9
PCO	34	33.7
Endometriosis	03	3.0
Fibroid Uterus	03	3.0
Premature Ovarian Failure	03	3.0
Bilateral Tubal Blockage	07	6.7
Congenital Uterine Abnormality	02	2.0
Hypothyroidism	2.0	2.0
Unexplained	37	36.6
TO Masses	03	3.0

No of female affected 64 (63.4%)

Table II: Features of patient with PCO (n=34)

Diagnosis	=n	%age
Regular Menstrual	14	41.2
Oligomenorrhoea	04	11.8
Amenorrhoea	16	47.1
FSH/LH Ratio Reversed	24	70.8
Normal Ratio	08	23.5
U.S.G/PCO Ovaries	24	70.6
Normal BMI 18-24.9kg/m ²	12	35.5
Over Weight 25-29.9	14	41.2
Obese > 29.9	08	23.5

Table III: Distribution of number of causes of infertility per female patient.

Diagnosis	=n	%age
No. of distinct causes of Infertility	No. of patients	
One	53	(52.47%)
Two	10	(9.9%)
Three	01	(0.9%)
Four	NIL	
No Diagnosis	37	(36.6%)

Table IV: Distribution of the causes of infertility among study men (n=101)

Diagnosis	=n	%age
Azospemia	06	5.9
Oligozospermia	15	14.9
Asthenospermia	09	8.9
Teratozospermia	0	
Pyospermia+Azospermia	02	2.0
Varicocele	02	2.0
Endocrine Causes(Hyper Prolactineamia)	01	1.0
Congenital abnormality+hypogondism	01	1.0
No demonstrable Causes	62	61.4
Sexual dysfunction	03	3.0

No of men affected 39 (39.3%)

DISCUSSIONS

Determining the cause of anovulatory infertility is the key to treatment as correction of cause will result in cumulative conception rates that mimic those

expected from normal women of same age¹¹. Although Pakistan is currently among the most populous countries of the world, it has a population growth rate of around 2%, it also has a high rate of infertility (21.9%); 3.5% primary and 18.4% secondary¹². This signifies that more than one fifth's of this country's married population is directly affected with problem, this make it a major health care problem which has definitive physiological, psychological and sociological implications. Population based studies quote the prevalence of ovulatory disorder at 21%. In our study higher percentage 46.4% could be explained due to study being carried out at tertiary level hospital. Patients are usually referred to these institutes after being evaluated initially and at times even mismanaged at smaller centre or local hawks¹³.

In ovulatory disorder polycystic ovarian disease was found in (33.7%) of patients. It has emerged as major health burden, the prevalence in general population being in the order of 20-33%¹⁴. PCOS is associated with approximately 75% of women who suffer from infertility due to anovulation¹⁵. The majority of women with anovulation or oligo-ovulation due to PCOS often have clinical and/or biochemical evidence of hyperandrogenism. Almost all these women have typical ultrasonic appearance of ovaries.¹⁶ As in our study 41.2% of PCOS had ultrasound features of polycystic ovaries in addition to altered FSH/LH ratio in 70.8% of female. There are, however, a number of strategies to restore ovulation, most of them reliant on increasing FSH concentration either endogenously or exogenously or reducing insulin level by medications or surgical intervention in the form of ovarian drilling.

The mean duration of infertility in our study was 5.4 years. It matches with other study, which quotes 6 years as mean age¹². Hyperprolactineamia interferes with normal pulsality of GnRH leading to menstrual disorders and ovulatory dysfunction. In infertile female patients it is quoted at 13.2% in Pakistan¹⁷. Our study concluded it to be 6.9%. Difference may be explained because of smaller size of this study.

Thyroid disease has significant effect on estrogen and androgen metabolism, menstrual function and fertility¹². Hypothyroidism was present in 3.03% of study population. Although premature ovarian failure presented as amenorrhea and/or oligomenorrhoea and elevated gonadotrophin level in 3.03% although it was low as compared to western cultures, where females delay child bearing due to career building and age and diminished ovarian reserve is emerging as No one cause¹¹.

One of the major etiological factors in infertility is a pelvic abnormality resulting in tubal blockage. Tubal

infertility is estimated to be present in 30-40% of women with infertility, salpingitis, endometriosis and post operative adhesions remain the primary cause¹⁸. In our study tubal blockage was detected in 13.13% of patients, tubo-ovarian masses, hydrosalpinx, endometriosis and proximal tubal blockage contributed to it. The difference may be explained, due to study population was mostly urban, that reduces the chances of intervention by Dia and birth attendants who play a major role in introducing the pelvic infection.

Infertility is a multifactorial condition with more than one factor involved. Women may have both tubal factor and endometriosis or she may have ovulatory dysfunction and her partner may have oligospermia. In our study 52.4% had one cause, 10 patients had two and one had 3 problems at one time.

In our study 39.3% of male population was affected, while 61.4% did not have any identifiable cause. Other studies have reached same conclusion that a clear diagnosis of cause of male factor infertility can be made in only a small proportion of men who present with infertility. Many will be labeled as having "Idiopathic" male factor infertility for which there are no specific therapies. Indeed a survey by the European Society for Human Reproduction and Embryology (ESHRE) of over 7000 with male factor infertility revealed that there was no identifiable cause in 48.5% idiopathic abnormal semen in 26% (12% oligospermia 7% teratozoospermia 4% asthenospermia), varicocele in 12% and infection in 7% congenital and sexual factors each 2 % and endocrinal problem each in 0.6%¹⁹.

CONCLUSION

Anovulation has emerged as No. 1 cause in infertile population and polycystic ovaries is playing major role. This study concluded that epidemic of polycystic ovarian disease should be curtailed by life style modification as weight loss leads to correction of hormonal profile, the likelihood of ovulation and healthy pregnancy and also preventing the risk of developing the metabolic syndrome.

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