Prevalence of Infertility in a Cross Section of Pakistani Population

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        Abstract.- The study aims at determining the prevalence of infertility, and its various causes, among the studied population. The study was carried out in Unit-III of Gynaecology and Obstetric Department at the Federal Government Services Hospital, Islamabad, Pakistan on 7628 out-patients examined for different problems during a three year period, as 534 women presented for inability to conceive. Frequency of infertility in this population was 7%. A standard protocol of investigations revealed a number of causes for fertility deprivation. Diagnostic laparoscopy was carried out in 260 patients. Hysterosalpingography was performed in 84 women, and tubal blockage was confirmed in 77 patients. Within the Pakistani social set-up, immense pressure mounts up on the newly married couple for child bearing. Proper diagnosis is a must for effective management.

    Key words: Infertility, hysterosalpingography, tubal blockage, laparoscopy.

INTRODUCTION

Fertility is defined as the ability of a man and woman to reproduce, while infertility denotes lack of fertility, or an involuntary reduction in the ability to produce children. The World Health Organization's definition of infertility is based on 24 months of trying to conceive. Primary infertility, the complete inability to conceive is loss of something that was never there to start with, ranges from 2 to 5%, while secondary infertility, indicating cessation of further fertility, has a prevalence rate of 20%, globally (Fathalla, 1992). Secondary infertility is thought to promote the small family norm, thus its impact on the individuals concerned often goes unnoticed by the general population. A consequence of this is that infertile couples remain as the most neglected and silent majority in the world (Domar and Seibel, 1990).

    Information on the prevalence of infertility indicates great variability, and only few reliable data are available (Schmidt and Münster, 1995). The percentage of infertility, based on data collected in demographic surveys, in which voluntary and involuntary infertility cannot be distinguished even in the developed world, varies between different countries as well as gender, with the higher being in men, examples being >10% and 17% for Finland

and 18% and >21% for Switzerland. Prevalence of infertility among women in Norway, Poland, Romania, Czech Republic, Ukraine has been recorded as between 5–8%, which increases to >10% in Sweden and Canada. The large differences among countries could be attributable to large differences in voluntary infertility (Lunenfeld and VanSteirteghem, 2004).

    Although Pakistan is among the currently most populous countries of the world, and has a population growth rate of around 2%, it also has high rate of infertility (21.9%); 3.5% primary and 18.4% secondary (Tahir *et al*., 2004). This signifies that more than one fifth of the country's married population is directly associated with this problem. However, the high population growth rate subdues this fact, as according to statistics on married Pakistani women, the average number of children per woman is 6.5 (Arnold and Sultan, 1992).

    Even in case of patients where the problem of infertility can be resolved through therapeutic or surgical interventions, barriers to treatment do exist, which may broadly be grouped into three main categories: accessibility, economic cost, and cultural/societal factors (Lunenfeld and VanSteirteghem, 2004). In developing countries like Pakistan, all three exist simultaneously.

    The present study was carried out to determine the prevalence of infertility among women attending the gynaecology out patient department, and identify the percentage distribution of various factors.

PATIENTS AND METHODS

Setting

This descriptive collaborative study was carried out in Unit-III of Gynaecology & Obstetric Department at the Federal Government Services Hospital, Islamabad, Pakistan and patients were evaluated during a three year period.

There are 3 units in the department. A separate fertility clinic in the gynaecology out patient department (GOPD) is run by a medical officer. Women with a history of fertility deprivation presenting in the GOPD are referred to fertility clinic where they are investigated and managed under supervision of concerned consultant incharge of each unit.

Patients

All patients attending the fertility clinic were included in the study irrespective of age, duration and type of fertility problem. The initial assessment for fertility deprivation was carried out according to the fertility clinic protocol. Each patient had complete history recorded, including age, duration of fertility deprivation, years of living together, sexual history including male factor, history of contraception, any gynaecological history other than infertility, past medical/surgical history and previous treatment for fertility problems. General physical, as well as systemic examination, was performed alongwith pelvic examination. Assessment of ovulation was done by maintaining basal body temperature chart, cervical mucus studies, ultrasonic tracking of ovum and hormonal assay. Male factor was judged by semen analysis and postcoital test.

Invasive investigations

There was a set criterion for performing invasive investigations including diagnostic laparoscopy, hysteroscopy and HSG. Diagnostic laparoscopy was performed when there was inability to conceive for $\geq$ 2 years and certain factors contributing to infertility (male factor, sexual dysfunction and ovulation failure), were excluded. In a regular menstrual cycle, laparoscopy was performed in premenstrual phase. During laparoscopy, health of the pelvic organs was assessed, and tubal patency was checked by methylene blue dye test. Hysteroscopy was performed at the same session if there was suspicion of some local endometrial pathology such as polyp, sub mucous fibroid or a history of irregular bleeding. If the fallopian tubes were found blocked on laparoscopy, hysterosalpingography (HSG) was done to look for the site of tubal blockage and intra-uterine pathology.

RESULTS

During the three years period, 7,628 patients attended GOPD for different problems, 534 women presented for inability to conceive, indicating frequency of infertility in this population as 7%. A standard protocol of investigations revealed a number of causes for fertility deprivation (Table I). Diagnostic laparoscopy was carried out in 260 patients. HSG was performed in 84 women, confirming tubal blockage in 77 patients.

Table I.-   Causes of infertility among the studied couples (n=534).

Causes	No of cases	Percentage
Male factor	117	21.91%
Ovulatory failure	118	22.09%
Sexual dysfunction	30	5.61%
Mucus hostility	09	1.68%
Normal pelvis	141	26.40%
Tubal blockage	77	14.41%
Tubal blockage and Tubo-ovarian masses	07	1.31%
Endometriosis	35	6.55%

DISCUSSION

Assisted reproductive techniques (ART) are available as an intervention for infertility. In a study carried out in Michigan, USA, a questionnaire using a hypothetical patient model suggested that primary care physicians may not be sufficiently aware of the infertility risk of African American women as well as women with lower socioeconomic status to ensure that women in need of services could be identified (Ceballo *et al.*, 2009). A Mexican study demonstrated that there were clinical and demographic risk factors associated with female

infertility and their identification in women at reproductive age could diminish the frequency of female infertility and, thus, avoid them consequences (Romero Ramos *et al*., 2008).

Due to differences in the living standards between developed and developing countries, there is a great difference in the use of ART, as calculated by the number of treatment cycles divided by the number of women expected to require ART or in the number of cycles per 106 women. When looking at the ART rates (in terms of number of ART cycles resulting in follicular aspiration) Denmark had the highest at 31.5%, Belgium, 18% and France, 15.8%. In comparison, it was 1.9% in Argentina, 0.7% in Brazil and 0.3% for the Mexicans (Lunenfeld and VanSteirteghem, 2004).

An Iraqi study, carried out during January 2000 to May 2001 (Razzak and Wais, 2002), studied causes of infertility for 250 couples, 193 (77.2%) of whom had primary and 57 (22.8%) secondary infertility. Male infertility was found in 36.8% of cases. The most common cause of female infertility was ovulation disorders (41%) while tubal obstruction contributed to only 5% of cases. On the other hand, in our study, it was seen that the prevalence of male factor and ovulatory failure was low, while tubal obstruction was much higher as compared to Iraqi women. Similarly, a Mongolian study (Bayasgalan *et al*., 2004) also reported higher incidence of male factor (25.6%).

A woman's desire to have a child is so powerful that the emotional toll of infertility is enormous and visible, thus requiring detailed and in-depth studies on the emotional status of infertile women. In a study involving both partners of infertile couples, when a question was put across as to why they wanted to have a child, women most commonly stated that it was just a feeling, while the most frequent response given by their male partners was that it was to make life worth living (Lalos *et al*., 1985). Emphasis placed by society on parenthood makes infertile women feel unfeminine.

Within the Pakistani social set-up, immense pressure mounts up on the newly married couple for child bearing. With a high prevalence of infertility in Pakistan (Tahir *et al*., 2004), a common definition of subfertility and infertility is vital for the appropriate management of infertility. Subfertility

generally describes any form of reduced fertility with prolonged time of unwanted non-conception. A review (Gnoth *et al*., 2005) has reported that most of the pregnancies occur in the first six cycles with intercourse in the fertile phase (80%). After that, serious subfertility must be assumed in every second couple (10%) although, after 12 unsuccessful cycles, untreated live birth rates among them will reach nearly 55% in the next 36 months. Thereafter (48 months), approximately 5% of the couples are definitive infertile with a nearly zero chance of becoming spontaneously pregnant in the future.

A comparison between infertile immigrant Muslim women and Austrian women (Schmid *et al*., 2004) revealed that Muslim women had very high reproductive pressure, and health-related quality of life of women from an Islamic background was affected to a greater degree than that of Austrian women, although no differences in symptomatology were found. This was true of all five domains investigated (infertility, overweight, hirsutism, menstrual irregularities and emotional problems). It was concluded that health professionals should be sensitive to the ethnicity, religious and cultural background of their patients to provide the best possible medical support. In a recent study on Turkish women (Akyuz *et al*., 2008), 67.2% of the infertile women accepted increased ovarian cancer risk, indicating the importance they gave to overcome infertility.

China is the most populous country of the world, with the national level of primary infertility being relatively low (1.3%). A study deliberating upon the prevalence of primary infertility in China reported that primary infertility was higher in Qinghai (2.3%), Tibet (3.7%) and Xinjiang (3.7%), compared to other provinces (Liu *et al*., 2005). It is interesting to note that Xinjiang is a muslim majority province.

In a Nigerian study (Ikeme and Ezegwui, 2004), 1060 consecutive infertile patients with a mean age of 31.7 years underwent endometrial biopsy as part of the infertility evaluation protocol. Of these, 406 (38.3%) had primary, while 654 (61.7%) had secondary infertility. With regard to histology of the endometrial currettings, the findings in the order of prevalence were secretory endometrium (56.7%), endometrial hypoplasia

(20%), proliferative endometrium (16.6%), pregnancy (5%) and non-specific endometritis (1.7%). In the study under discussion, endometriosis was seen in 6.55% cases only.

In another Nigerian study (Imo and Sunday-Adeoye, 2008), analyzing 188 hysterosalpingograms, it was observed that abnormality of the fallopian tubes constituted 54.6%, followed by uterine 33.6% and cervical abnormalities 11.8%. Cornual occlusion and hydrosalpinx were the leading abnormalities of the fallopian tube, being 32.2% and 20.3% respectively, while beading was the least tubal abnormality recorded in 1.4%, suggesting that abnormalities of the fallopian tube are probably still a prominent contributor to infertility in their community.

Infertile women in the developed world have high levels of emotional distress, anxiety, and depression. It has been observed that anxiety and depression in childless Japanese women were significantly associated with lack of husband's support and a feeling of stress (Matsubayashi *et al.*, 2004). In a Polish study (Drosdzol and Skrzypulec, 2009) it was observed that (35.44%) infertile women scored above the cut-off for severe symptoms of depression, compared with 19.47% of fertile women .

A pioneering study (Fido and Zahid, 2004) was carried out to assess psychological factors which are part of the experience of infertility in Arab women, using an Arabic version of the Hospital Anxiety and Depression Scale (HADS). Compared with age-matched pregnant control sample, the infertile women exhibited a significant higher psychopathology in all HADS parameters in the form of tension, hostility, anxiety, depression, self-blame and suicidal ideation. The illiterate group attributed the causes of their infertility to supernatural causes such as evil spirits, witchcraft and God's retribution, while the educated group blamed nutritional, marital and psychosexual factors for their infertility. Faith and traditional healers were considered as the first treatment choice among illiterate women, while the educated women opted for an infertility clinic for treatment. Childlessness resulted in social stigmatization for infertile women and places them at risk of serious social and emotional consequences.

In the study under discussion, where the setting was a public sector tertiary care hospital in the capital, it was seen that over a three year period only 534 patients consulted with a history of infertility. Keeping in view the socio-cultural environment of Pakistan, where affording individuals mostly turn towards private medical practitioners, only the economically middle and lower class turn towards public facilities. However, this economic segment represents the major component of the Pakistani population, and awareness towards available health facilities for investigation, as well as possible subsequent treatment of infertility, needs to be created in this cohort using the network of lady health workers. Upon referral to major hospitals, where units for management of infertility cases exist, these couples can be investigated and provided treatment or counselling, which ever is required. The data generated can be transformed into a consolidated national database by making it a part of the already in place Health Management Information System (HMIS), so that an estimate of primary infertility as well as secondary infertility cases is available with the government to prepare strategies for welfare of both primary and secondary infertility cases.

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