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Causes of Infertility among Married Women - A Review

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Abstract

Infertility is considered to be a heart breaking and painful condition for couples and of course the family members. According to 1981 and 2011 statistics, childless married women has been increased from 13 percent to 70 percent. These radical changes are at present no longer recognized as only a female problem. In fact, male disorders also directly contribute to childlessness in a couple. This mini review was conducted to identify the causes of infertility. Fourteen studies included married women with inability to conceive were included in the mini meta-analysis. Fourteen studies with a total of 44017 participated in the study with 3459 diagnosed with infertility due to tubal blockage, tubal defects, tubal obstruction, tubal factors and abnormal findings at hystero-salpingography were included in the review. The other causes of infertility that are commonly seen among diagnosed women are pelvic inflammatory diseases, genital tuberculosis, and history of pelvic surgery, pelvic adhesion, and alcohol consumption. The outcomes of these suggest; causes for infertility.

Keywords: *Infertility, tubal defect, women.*

Introduction

World health organization defined Infertility as failure of a couple to conceive after 12 months of regular intercourse without use of contraception in women less than 35 years of

age; and after six months of regular intercourse without use of contraception in women 35 years and older. Infertility is growing at an alarming pace, especially in the cities according to a survey conducted by an International Institute of Population Sciences. Out of 250 million individuals estimated to be attempting parenthood at any given time, 13 to 19 million couples are likely to be infertile. Nearly 30 million couples in the country suffer from infertility, making the incidence rate 10%.^[1]

Infertility is a worldwide health problem with one in six couples suffering from this condition and with a major economic burden on the global healthcare industry. Today, infertility is no longer recognized as only a female problem. In fact, the term infertility is a broad term, often loosely used. It actually refers to a range of disorders some of which affect the male, and some the female, and contribute to childlessness in a couple. In female, polycystic ovary disease (PCOD), genital tuberculosis, fallopian tube defects, blockage of tube, endometriosis, obesity, use of certain medication, and smoking and alcohol consumption may contribute to the conception problems.

Globally, every year 60-80 million couples suffer from infertility as estimated of which India alone is probably between 15-20 million (25%).^[2] Thus this review will focus on finding causes that may lead to infertility.^[2]

Objectives

To identify the common causes of infertility among married women.

Search methods

The author searched the MEDLINE (1992 to 2014), Pubmed, Cinhal, google search, google articles. The citation lists of relevant publications and review articles studies were also included. Searches were limited to English language. The bibliographies of the studies were included. Studies which have less than 40 samples diagnosed with infertility were excluded.

Selection criteria

Population study, case-control study, retrospective and prospective observational cohort study to identify the causes of infertility among married women was included in the review.

Types of participants

- Married women

- Any age group of married women at reproductive stage
- Could not conceive for more than a year
- Women with an indication for IVF
- Diagnosed with laparoscopic, hysteroscopy and other diagnostic procedures for visualization of the tube.

Results

Description of Studies

The search strategies as outlined yield a large number of studies, the actual number varying with the prevalence of tubal causes for infertility.

Fourteen studies included married women with inability to conceive were included in the mini meta-analysis.

Following screening of the titles and abstracts, many studies of potential relevance were identified and are considered to have the conclusion that tubal causes is one among the commonest causes for women's infertility. Majority of these studies, were case-control study, population study, retrospective and prospective observational cohort study with women complaints of inability to conceive for more than a year. These women with infertility were diagnosed with tubal defects through laparoscopic procedures. Some studies show that women with the history of previous pelvic inflammatory diseases and sexually transmitted diseases came to the hospital and Primary health centre with the complaints of inability to conceive.

From the above selected literatures, there remains a body of opinion that the major causes of infertility among women are the tubal damage and tubal blockage. The tubal defects are mainly due to the complaints of infections and history of pelvic inflammatory diseases and genital tuberculosis. With the numbers of infections and severity of infections these lead to defects and adhesion of the tube.

Tubal blockage in almost 70% of women with primary infertility is being diagnosed laparoscopically and who were indicated with IVF. The rate of unexplained infertility included the non-tubal endometriosis was next major causes of infertility next to tubal damage. Sexually transmitted diseases associated with genital infections cause permanent damage to the reproductive tract resulting in sub or infertility.

One study examined the effect of genital infections resulting in association of infertility with

Table 1: Details characteristics of articles included in the mini review

<i>Author</i>	<i>Study title</i>	<i>Participation/ Sample size</i>	<i>Method</i>	<i>Findings</i>
1. Singh N. et al.	Genital tuberculosis: a leading cause for infertility in women seeking assisted conception	140 with IVF indication	A retrospective study	The finding shows that the prevalence of genital tuberculosis in tubal factor infertility was 34 out of 70 (48.5%). 82.8% of patients with tubal factor had history of prior treatment for tuberculosis. Menstrual abnormalities were seen in only 8 patients: hypo-menorrhea (7) and secondary amenorrhea (1). A diagnostic hysteroscopy showed that 11 had uterine adhesions (18.9%) and 1 patient had pale endometrium. Twenty patients out of 70 cases (28.5%) showed evidence of extra genital tuberculosis. ^[3]
2. Parikh FR. et al	Genital tuberculosis--a major pelvic factor causing infertility	300 women	A retrospective study	The study findings show that 117 women with a tubal factor were found to have tuberculosis as the cause of tubal blockage. On laparoscopy, 49.5% were found to have simple tubal blockage, 15.3% showed tubo-ovarian masses, and 23.9% had a frozen pelvis. 75% complained of menstrual irregularities, thus indicating endometrial involvement; 25.6% underwent an IVF procedure. The pregnancy rate after IVF-ET was 16.6% per transfer. The study highlights the fact that tuberculosis, a chronic infectious disease, is one of the major etiologic factors of female tubal infertility. ^[4]
3. Westrom et al	Pelvic inflammatory disease and fertility	1844 women with laparoscopically verified disease and 657 control women with normal laparoscopy results.	A cohort – retrospective study	Finding shows that 1309 (75.6%) of the patients and 451 (75%) of the control subjects attempted to conceive during the follow-up period. Of these women, 209 (16.0%) of the patients and 12 (2.7%) of the control subjects failed to conceive. A total of 141 (10.8%) of the patients and 0 (0%) of the control subjects had confirmed tubal factor infertility, 21 (1.6%) of the patients and 3 (0.7%) control subjects had other causes of infertility, and 47 (3.6%) patients and 9 (2.0%) control subjects do not have a complete infertility evaluation. Additional information on tubal morphology in women from couples for whom evaluation was incomplete indicated those 165 (12.2%) patients and 4 (0.9%) of the control subjects had abnormal tubal function or morphology after index laparoscopy. Tubal factor infertility after PID was associated with number and severity of PID episodes. ^[5]
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<i>Author</i>	<i>Study title</i>	<i>Participation/ Sample size</i>	<i>Method</i>	<i>Findings</i>
4. Hull.MG. et al	A population study of causes, treatment, and outcome of infertility	708 couples	A population retrospective study	Study shows that failure of ovulation occurred in 21% of cases and was successfully treated. Tubal damage (14%) had a poor outlook (19%) despite surgery. Endometriosis accounted for infertility in 6%, although seldom because of tubal damage, cervical mucus defects or dysfunction in 3%, and coital failure in up to 6%. Sperm defects or dysfunction were the commonest defined cause of infertility (24%) and led to a poor chance of pregnancy (0-27%) without donor insemination. Obstructive azoospermia or primary spermatogenic failure was uncommon (2%) and hormonal causes of male infertility rare. Infertility was unexplained in 28% and the chance of pregnancy was mainly determined by duration of infertility. ^[6]
5. Bahamond es L. et al.	Identification of main risk factors for tubal infertility in a tertiary care	215 cases and 215 control	A case control-retrospective study	The study revealed that history of pelvic surgery and uses of alcohol were significantly associated with the risk of infertility caused by tubal obstruction. The use of barrier, oral, and medroxy-progesterone acetate (MPA) contraceptives was associated with a protective effect. When only women with secondary infertility were analysed, history of pelvic surgery and number of lifetime sexual partners were significant risk factors, and the previous use of oral contraceptives was the only protective factor. The study concluded that history of pelvic surgery was the most important risk factor for tubal infertility. ^[7]
6. Preeti, Sharma Sanjay	A study of primary infertility by diagnostic laparoscopy	40 women	A retrospective study	The findings of the study show that abnormal pelvic findings in 70% cases of primary infertility. Maximum number of patients 46.67% presented with less than 6 years of infertility. Tubal blockage was found to be the most common cause of infertility i.e. 42.5% which is then followed by pelvic adhesions. ^[8]

<i>Author</i>	<i>Study title</i>	<i>Participation/ Sample size</i>	<i>Method</i>	<i>Findings</i>
7. Farhi J, Haroush B	Distribution of causes of infertility in patients attending Primary Clinics	2515 couples	A retrospective study	Primary infertility accounted for 65% of cases. Causes of infertility were male factor (45%), oligo-ovulation disorders (37%) and tubal damage (18%). Infertility factors were identified in the woman alone in 30.6% of cases and the man alone in 29.2%. Two combined infertility factors were found in 18% of patients, and three combined factors in 0.5%. The rate of unexplained infertility (which probably includes non-tubal endometriosis) was 20.7%. ^[9]
8. Chatterjee, Chowdhury, Dey and Poddar	Minor tubal defects - The unnoticed causes of unexplained infertility	1726 of unexplained infertility	A cohort study	The study revealed that 846 were detected with minor tubal defects and according to their observation tubal defects were classified into six categories. Most of them belonged to combined etiology. The study concluded that different laparoscopic surgical techniques to restore structural and functional integrity of fallopian tubes may be useful in achieving pregnancy in many cases of so called unexplained infertility. ^[10]
9. Wiesenfeld HC et al.	A Study on pelvic inflammatory disease causes for infertility	418 women	A prospective observational cohort study	The study revealed that subclinical PID is believed to be an important cause of tubal factor infertility, were 146 incident pregnancies during follow-up, 50 pregnancies in 120 (42%) women with subclinical PID and 96 in 187 (51%) women without subclinical PID. Women with subclinical PID diagnosed at enrolment had a 40% reduced incidence of pregnancy compared with women without subclinical PID (hazard ratio 0.6, 95% confidence interval 0.4-0.8). Women with Neisseria gonorrhoeae or Chlamydia trachomatis, in the absence of subclinical PID, were not at increased risk for infertility. The study concluded that subclinical PID decreases subsequent fertility despite provision of treatment for sexually transmitted diseases. ^[11]

<i>Author</i>	<i>Study title</i>	<i>Participation/ Sample size</i>	<i>Method</i>	<i>Findings</i>
10. Malwadde Elsie K and Bvanyima Rosemary	To find the pathology detected at HSG in patients with infertility	289 consecutive patients	A retrospective study	Findings revealed that secondary infertility was commoner than primary infertility. Abnormal findings at hystero-salpingography were found in 83.4%. The commonest finding was tubal blockage. The study concluded that the commonest pathology found on HSG in women presenting with infertility is tubal blockage possibly secondary to chronic pelvic inflammation. The fact that secondary infertility is common points to pelvic infection complicating mismanaged pregnancies, septic abortions or sexually transmitted infections. ^[12]
11. Sami, Ali, Wasim and Saleem	A study on risk factors for Secondary Infertility	400 cases and 400 control	A matched case-control study	The multivariate logistic regression model revealed that after adjusting for age, cases were more likely to be the housewives (AOR = 2.6, 95% CI: 1.5–4.4), had used inappropriate material to absorb blood during menstruation (AOR = 9.0, 95% CI: 5.0–16.4), and at their last delivery, had a birth attendant who did not wash hands with soap and water (AOR = 3.0, 95% CI: 1.4–5.7). Moreover, women with secondary infertility were more likely to report current or past history of having STI symptoms (AOR = 3.6, 95% CI: 2.4–5.6) and use of intra-vaginal indigenous medicines during their last post-partum period (AOR = 3.1, 95% CI: 1.6–5.7). ^[13]
12. Philippoy OS et al	The study on estimation of the prevalence and causes of infertility	2000 married women	Randomly methodological approaches	The study revealed that female infertility dominated (12.9%), while primary infertility affected 3.8% of the women. The most frequent causes of female infertility were disturbances to tubal patency (36.5%) and pelvic adhesions (23.6%). Endocrine pathology was found in 32.8% of cases. The most frequent cause of male infertility was inflammatory disease of male accessory glands (12.9%). In 8.6% of cases infection resulted in obstructive azoospermia. varicocele was registered in 11.3% of cases, and idiopathic pathospermia in 20.9%. Inflammatory complications among females were 4.2 times more frequent than among males. ^[14]

<i>Author</i>	<i>Study title</i>	<i>Participation/ Sample size</i>	<i>Method</i>	<i>Findings</i>
13. Manna Nirmalya, Pandit Dipanwita, Bhattacharya Raja and Biswas Soumi	A community based study on Infertility and associated socio-demographic factors in West Bengal, India	8,865 eligible couples	An observational cross sectional study	In the study it was found that 191(2.15%) couple were diagnosed to be infertile with 108(56.54%) maximum number of women. Maximum (64%) women suffered from PID followed by PCOD (19%). About 61% women have done USG followed by hormonal assay (26%) and HSG (11.80%). Out of 191 infertile couples 111 (58.12%) were evaluated for infertility. Among them, 89(46.60%) couples showed abnormality. 43% had PCOD, 29% had endocrinal abnormalities, 11% had tubal block, and 6% had tubo-ovarian mass. ^[15]
14. Ajeet Vasant Saoji	To find out some risk factors pertaining to female primary infertility.	240 cases and controls (120 each)	Matched case control study	Finding shows cases and control of Polycystic ovarian syndrome (PCOS) with 82.4% and 17.6% respectively, irregular menstrual cycle with 70.1% and 29.9% respectively, Fibroids with 57.1% and 42.9% , Endometriosis with 85.7% and 14.3% respectively, OCP intake with 48.7% and 51.3% respectively, sexually transmitted infections (STI) with 72.1% and 27.9% respectively, females who had delayed age of menarche (>14 years) with 62.7% and 37.3% respectively. ^[16]

age of the women and delayed of treatment. One more studies revealed that the history of pelvic surgery and uses of alcohol were significant with the risk of infertility caused by tubal obstruction. It was found that a use of barrier, oral and MPA contraceptives was associated with a protective effect.

Conclusion

The overall conclusion is that with the evidenced of the infertility causes which occur due to pelvic infections or pelvic inflammatory disease that leads to tubal defects and blockage. Still, there is currently insufficient evidence from randomised controlled trials to evaluate the unknown causes of the infertility. The author, therefore suggests, that women with pelvic infection or pelvic inflammatory should be started with the early treatment so as to prevent further damage of the tube which may cause infertility to the married couple.

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