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Study of The Different Tubal Factors Causing Primary Infertility In This Eastern Region of India.

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HIGHLIGHTS

1.Investigating tubal causes of infertility.
2.Examining infertility in Eastern India.
3.Researching primary infertility in Eastern India.
4.Studying tubal factors in Eastern infertility.
5.Exploring tubal factors in Eastern infertility.

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ABSTRACT

Introduction: Primary infertility is a significant concern affecting many couples worldwide, including those in the eastern region of India. Tubal factors are among the leading causes of primary infertility, accounting for a substantial proportion of cases. This study aims to investigate the different tubal factors contributing to primary infertility in the eastern region of India. Tubal factors are a significant cause of primary infertility, affecting the fallopian tubes, which are vital for fertility. These tubes serve as the pathway for eggs to travel from the ovaries to the uterus, where fertilization occurs. Any abnormalities or conditions that hinder this process can lead to infertility. One common tubal factor is tubal blockages, which occur when the tubes are obstructed, preventing the egg from reaching the uterus. This blockage can result from infections, such as pelvic inflammatory disease (PID), or conditions like endometriosis, which can cause scarring and adhesions that block the tubes. Tubal damage is another important factor, often caused by infections or surgeries in the pelvic area. This damage can affect the structure of the tubes, making it difficult for them to function properly. Tubal abnormalities, such as abnormal shape or size of the tubes, can also contribute to infertility by impairing the movement of the egg or sperm. Understanding the specific tubal factors prevalent in the eastern region of India is crucial for developing effective strategies for managing and treating primary infertility in this population. Factors such as cultural practices, environmental exposures, and genetic predispositions may influence the prevalence of tubal factors in this region. By identifying and addressing these specific factors, healthcare providers can develop targeted interventions to improve fertility outcomes for individuals affected by tubal factors. This may include treatments such as surgery to repair damaged tubes, in vitro fertilization (IVF) to bypass tubal issues, or lifestyle changes to reduce the risk of tubal damage. The study will employ a cross-sectional design, involving the recruitment of a sample of women diagnosed with primary infertility attending fertility clinics in the eastern region of India. A detailed medical history will be obtained from each participant, including information on previous pregnancies, menstrual history, and any known reproductive health issues. Diagnostic tests such as hysterosalpingography (HSG), laparoscopy, and hysteroscopy may be performed to assess the condition of the fallopian tubes.

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INTRODUCTION

Infertility is a growing problem now a days word wide, because of several social and cultural trends like women achieving advanced education and careers, delaying marriage for men and women, delaying childbearing. Infertility is defined as a failure to conceive within one or more years of regular unprotected coitus. Fertility potential of both male and female partner is responsible for conception. The male factors are responsible in 30-40% ,the female in about 40-50% and both in 10% and unexplained in remaining 10% of cases[1]. Approximately 85 to 90% of healthy young couples achieve conception within one year of 'unprotected' and regular intercourse, and most conceive within six months[2]. About 10 to 15% of couples have difficulty conceiving and experience infertility or subfertility[3].

A. Causes of Male Infertility

Following are the common causes of male infertility:-

1. Hypothalamic-pituitary disorders (1-2%)
2. Primary gonadal disorders (30-40%)
3. Disorders of sperm transport (10-20%)
4. Idiopathic (40-50%)

B. Causes of Female Infertility (FIGO)

Following are the common causes of female infertility:-

1. Ovulatory dysfunction (30-40%)
2. Tubal factors (25-35%)
3. Uterine factors(10%)
4. Cervical factors(5%)
5. Pelvic Endrometriosis(1-10%)

Causes of Tubal Factor Infertility

a. Occlusion and adhesion:

I. Unilateral tubal blockage

ii. Bilateral tubal blockage

iii. Peritubal adhesions

iv. Polyps or mucosal debris within tubal lumen

v. Tubal spasm

Tubal occlusion and adhesion is the most common cause of female infertility. It's incidence is approximately 30-35% of younger as well as older infertile females[4].

b. Pelvic inflammatory disease:

This is the most prevalent cause of tubal factor infertity. Most common organisms responsible for PID are Chlamydia trachomatis, Neisseria gonorrhea and anaerobic organisms. The incidence of tubal infertility has been reported to be 8%,19% and 40% after one, two and three episodes of PID respectively. The contribution of M. hominis and U. urealyticum in infertility is less clear although they are also implicated in PID. But many patients with documented tubal pathology have no history of PID and are presumed to have had subclinical Chamydialinfections[5,6].

Tubal involvement from PID causes inflammation and tubal changes in the form of fimbrial agglutination, fimbrial phimosis, tubal obstruction, hydrosalpinx and salpingitis isthemicanodosa. This increases the risk of ectopicpregnancy by six to sevenfold[7].

c. Genital tuberculosis:

including India. The incidence of genital tuberculosis varies widely with the socio-economic status and the environment condition of the patient. It's incidence is high (about 5-10%) in the patients of infertility. Incidence of genital tuberculosis is further rising with the prevalence of HIV infection.

The fallopian tubes are invariably the primary sites of pelvic tuberculosis(100%) from where secondary spread occurs to other genital organs. Both the tubes are affected simultaneously.

Genital tuberculosis is almost always secondary to primary infection elsewhere in the extragenital sites such as lungs(50%),lymph nodes, urinary tract, bones and joints. Pelvic organs are involved in 90% cases by hematogenous spread from any primary sites.

In genital tuberculosis, the initial site of infection is the submucosal layer(interstitial salpingitis) of ampullary part of the tubes followed by destruction of muscle causing fibrosis This leads to thickening, calcification ,ossification or sometimes segmentation of the tubal wall. The infection may further spread inwards up to the mucosal layer causing it's swelling and destruction. The fimbria are everted and the abdominal ostium usually remains patent. The elongated and distended distal tube with the patent abdominal ostium gives rise the tobacco-pouch appearance[8].

d. Endometriosis:

This is the chronic cause of tubal factor infertility and responsible for approximately 10-15% of reproductive aged women[9].

In endometriosis, the ectopic endometrium leads to the production of reactive cytokines and chemokines ,causing chronic inflammatory changes in the form of distal tubal adhesive disease and occlusion[10].

e. Other causes:

Among other causes of tubal factor infertility, scarring from pelvic surgeries, myoma near tubal ostium and ruptured appendix are common[10].

DIAGNOSIS OF TUBAL FACTOR INFERTILITY

These are the common tests used to assess the anatomical patency and functional integrity of the tubes:-

1. Laparoscopy and chromopertubation:

It is considered to be definitive test for evaluation of tubal disease. Under general anaesthesia, laparoscopy combined with chromopertubation (injection of a dilute blue dye through a cannula that passes through the cervix into the uterus, allowing the dye to enter the uterine cavity and fallopian tubes) done to evaluate the bilateral tubal patency and hysteroscopy to evaluate the uterine cavity. This test may be done in the proliferative phase. When done in the secretory phase, recent corpus luteum may be seen and endometrial biopsy can be taken in the same sitting.

2.Hysterosalpingography(HSG)

HSG is less invasive, less expansive and faster method of examination for tubal patency than laparoscopy, It is an outpatient radiographic procedure, ideally performed 2 to 5 days immediately after the end of menses to minimise the interference from blood clots and menstrual debris, to prevent the chance that the procedure may be performed after conception and also to minimise the risk of infection. This procedure is standard and preprocedure preparation is simple and involves the doxycycline,100mg twice a day for 5 days to prevent post-procedure PID and ibuprofen 30 to 60 minutes before procedure to minimise discomfort during procedure.

Although laparoscopy with chromopertubation is the gold standard investigation for tubal patency, HSG has moderate sensitivity of 65% but excellent specificity of 83%.HSG can also delineate the contour of uterine cavity and the lumen of the fallopian tubes. Sometimes there is advantage of using oil soluble contrast media is that it flushes tubal debris from their lumen and shown to increase the fertility in women with patent tubes[11,12].

3.Sonohysterosalpingography(SHG)

It is an alternative imaging technique to the HSG. It is also a noninvasive technique and based on ultrasound imaging modality. In this technique a paediatric Foley catheter is inflated at the level of the cervix and normal saline is pushed within the uterine cavity and with the help of ultrasound probe the fluid followed through the tubes up to the peritoneal cavity and in the pouch of Douglas. Use of three-dimensional imaging to generate coronal images and Doppler to highlight fluid movement through the fallopian tubes can further improve the diagnostic capabilities of the sonohysterosalpingography.

There are many advantages of the SHG like it is fast, noninvasive test that can be performed in an outpatient setting without anaesthesia or sedation.There is no exposure to radiation and is better tolerated than the HSG[13]. Side effects are very less in the form of nausea, vomitting, moderate to severe pelvic pain and vasovagal symptoms. Severe post-procedure complications like fever and peritonitis occurred in only 0.95% of procedures[14,15].

4.Other methods

a. Insufflation Test(Rubin Test)

b. Falloposcopy

c. Salpingoscopy

d. Chlamydia serology

AIM AND OBJECTIVES

The aim of this study is to find out the tubal factors causing primary infertility. We used two method, hysterosalpingography and laparoscopic chromopertubation to find out these causes in the Department of obstetrics and gynaecology and Department of Surgery.

MATERIAL AND METHODS

The present study has been done to find out different causes of tubal factor infertility. The pool of present study were the patients visited the Department of obstetrics and gynaecology and department of surgery with the complains of pain abdomen along with primary infertility and the diagnosis was made by detailed history, physical examination, hysterosalpingography, laparoscopy and chromopertubation.

OBSERVATION AND RESULT

Total fifty patients were taken for this study. The maximum incidence of tubal factor infertility was found in between 29-38 years age group (32 patients ,64%),followed by 10 patients (20%) in between 39-48 years age group and 8 patients (16%) in between 19-28 years age group.

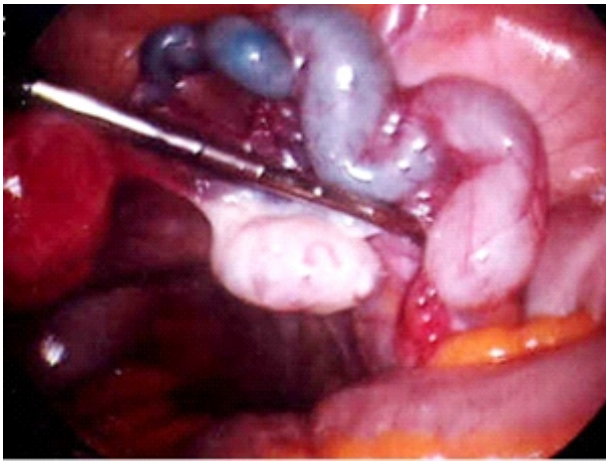
Among different causes of tubal factor infertility, unilateral tubal obstruction was found in 18 patients (36%),bilateral tubal obstuction in 12patients(24%),pelvic inflammatory disease in 10 patients (20%),periadnexal adhesion in 5 patients (10%),endometriosis in 4 patients (8%),and tubo-ovarian mass in 1 patient(2%).

Table 1: Age distribution

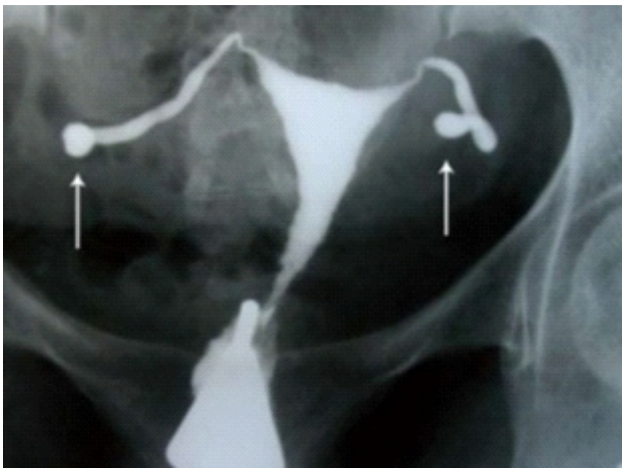
	No. of patients	Percentage(%)
19-28	8	16
29-38	**32**	**64**
39-48	10	20

Table 2:Incidence of different causes of tubal factor infertility

Causes	No. of patients	Percentage(%)
Unilateral tubal obstruction	**18**	**36**
Bilateral tuba l obstruction	12	24
Pelvic inflammatory disease	10	20
Periadnexal adhesions	5	10
Endometriosis	4	8
Tubo -ovarian mass	1	2
Total	**50**	**100**



Laparoscopy and chromopertubation showing hydrosalpinx due to tubal blockage at distal end



HSG showing distal tubal sacculation with a hydrosalpinx(Golf club-like appearance)

HSG showing beaded appearance of the tube with variable filling density(seen in pelvic tuberculosis)

DISCUSSION

Worldwide, female infertility is a growing problem and is mostly due to delaying age of marriage and childbearing.In Miller et al study the incidence of female was upto 40-50%[1]. In our study the maximum incidence of female infertility (60%) was found in between age group 29-38years,20% in between 39-48 years age group. These observation illustrates that a total of 80% cases of female infertility was found in between age group 29-48 years age group.

In present study, Unilateral tubal blockage was in 36% cases, bilateral tubal blockage in 24% cases, a combined total tubal pathology in 60% of cases. In study of Shetty SK et al the total tubal pathology was found to be 66% with 28% cases of unilateral and 8% cases of bilateral tubal blockage[16]. In study of Ikechebelu JI et al, tubal pathology was the cause in 66.4% cases of female infertility, out of which bilateral tubal occlusion in 38.3% cases and unilateral tubal occlusion in 22.1% of cases[17]. This indicates that tubal blockage is most common cause of female infertility in our community. But in our study unilateral tubal blockage is the most common cause of primary infertility in females.

In this study, 18 cases have unilateral tubal blockage, out of which 12 cases(66.66%) have distal tubal blockage and 6 cases (33.33%)

have proximal tubal blockage. Bilateral tubal obstruction was found in 12 cases, out of which 7 cases (58.33%) have pelvic inflammatory disease and 5 cases (41.66%) have tuberculosis. Pelvic inflammatory disease without any tubal blockage was found in 10 cases (20%). In study of Paavonen J et al and Guven MA et al ,many patient with documented tubal pathology have no history of PID and are presumed to be have had subclinical Chlamydial infection[5,6]. In Shetty SK et al study, non specific pelvic inflammatory disease was found to be 44% in primary infertility cases and genital tuberculosis in 2% of cases[16]. Genital tuberculosis is common in our country but no any large scale study available till date to evaluate it's incidence.

In present study, periadnexal adhesions was found in 5 cases(10%),endometriosis in 4 cases (8%) and tubo-ovarian mass in 1 case (2%). In Shetty SA et al, endometriosis was observed in 24% of cases and peritubal adhesion in 8% of cases[16].

CONCLUSION

Tubal blockage is the most common tubal factor cause of primary infertility in 60% of women in this Eastern region of India, out of which unilateral tubal blockage is in 36% and bilateral tubal blockage in 24% of cases. Pelvic inflammatory disease is commonest cause(58.33%) in bilateral tubal blockage cases.

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