

TO DETERMINE FREQUENCY OF TUBAL BLOCKAGE IN INFERTILITY PATIENTS UNDERGOING X-RAYS HYSTEOSALPINGOGRAPHY

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ABSTRACT

BACKGROUND: X-rays Hysterosalpingography is a safe, rapid, cost effective and readily available imaging tool in diagnosis of infertility and tubal blockage. The aim of this study was to determine frequency of tubal blockage in infertility patients undergoing x-rays hysterosalpingography. **MATERIAL AND METHODS:** This cross sectional descriptive study was conducted from 01-Oct-16 to 31-Mar-17, enrolling married patients with normal pelvic examination between ages 25-40 and presenting with clinical symptoms of infertility. The patients having fibroids diagnosed on ultrasound abdomen, active pelvic inflammatory disease, endometrial polyps & malignancy were excluded. **RESULTS:** The demographic data like age, duration of infertility / marriage, education status & socio-economic status were analysed. Frequency of tubal blockage was calculated. **CONCLUSIONS:** Tubal blockage is common in patients with infertility which can be readily diagnosed on x-rays Hysterosalpingography. Patients residing in rural areas have more tubal blockage than patients living in urban areas

Keywords: Infertility, Hysterosalpingography, Ultrasonography

Introduction

Infertility is a major public health problem¹ Childlessness is seen as a major personal tragedy and can result in marital instability and suicidal tendencies² Primary infertility comprises 20% and secondary infertility constitutes 80%.³ Higher rate of secondary infertility, compared to primary infertility, could be used as a crude indicator of the possible effects of post abortal and post-partum infection.

X-rays Hysterosalpinography (HSG) is an imaging modality used in assessing the patency of fallopian tubes in women with primary and secondary infertility. Tubal pathologies may be responsible for primary and secondary infertility. Based on several research studies, women with secondary infertility had a higher likelihood of having fallopian tube obstruction on HSG than those with primary infertility.⁴

A newly described radiological technique; selective ostial salpingography can be used to differentiate true mechanical obstruction from spasm without subjecting the patient to laparoscopy.

Hysterosalpingo contrast sonography is a relatively new modality of evaluating tubal patency. The study utilizes a special contrast agent.⁵ Which is injected through a Foley's catheter placed at the internal os. The anechoic interface provided by the fluid allows visualization of the lumen of the fallopian tubes. The results are comparable with that of X-rays HSG, and diagnostic accuracy of 86% and 90% have been obtained. The procedure is less painful and is also radiation free.

The complications of HSG, which have been reported, include infection, urticaria and syncope.⁶ Others are

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haemorrhage and shock, pulmonary and retinal embolus formation. Despite new innovations and recent advances in imaging modalities, x-ray hysterosalpinography (HSG) remain important for visualizing the fallopian tubes.⁷

Previous studies done in other parts of world showed that the major underlying cause for the high levels of infertility is tubal blockage.^{7,8} One study showed that almost 19% of infertile patients had tubal blockage.⁸ This calls for a study that is cheap, available and sensitive to document the tubal blockage that is the culprit of infertility among majority of women in world. In developing countries like Pakistan, where resources are still limited, investigation cost should be kept in mind. Therefore high frequency of tubal blockage would justify widespread installation of fluoroscopy units to investigate and even manage the women with infertility. Therefore, the results of this study would help in better management of these patients.

Materials and Methods

This cross sectional descriptive study was conducted at department of Radiology, Combined Military Hospital, Quetta from 01-Sep-16 to 31-Mar-17. After permission from local ethical review committee, total number of 237 patients who will present in Gynecology /Obstetric departments of CMH Quetta and referred by clinician to the radiology department fulfilling the inclusion criteria will be selected. Informed consent is taken from every patient for HSG. Married female patients between ages 25-40 years, having infertility as defined by having no conception for >2 year after marriage with regular menstrual cycle & unprotected sexual intercourse determined on the basis of history and no evidence of pregnancy on ultrasound pelvis were included. The patients having fibroids diagnosed on ultrasound abdomen, active pelvic inflammatory disease, endometrial polyps & malignancy were excluded. Taking the prevalence of tubal blockage in infertility as 19%⁸ margin of error $d = 5\%$ and 95% level of confidence, Sample size came out to be $n = 237$. Detailed personal, menstrual and obstetrical history was obtained. This was followed by physical and gynaecological examination. Since such study is not available in our area of study as patients were less educated, poor and most were lost to follow up as

they belong to far off areas of Balochistan, we conducted this study to find causes of infertility and any subsequent tests like laparoscopy were not done as laparoscopy is an expensive test and is not available in most of the hospitals of Balochistan. Procedure was done during 6-12th days of menstrual cycle to clearly visualized endometrium since it is thinnest in these days and improves visualization. Tablet Hyosine 10mg (Buscopan) was given 30 min before procedure to minimize pain and avoid any spastic tubes. Cervix is cannulated with 6Fr Foley's after aseptic measures with balloon inflated in cervix. With patient lying supine, knees flexed, a total of 10ml of iodinated contrast is injected slowly under periodic fluoroscopic guidance and frontal projection views are obtained, further spot views as per requirements were also taken.

Results

Two hundred and thirty seven patients fulfilling the inclusion criteria were included in this study. The mean \pm standard deviation age of study population was 32.50 ± 5.695 years.

On analysis of demographics data it was observed that 73 (30.80%) patients were below 30 years of age and 164 (69.20%) were of age 30 years and above. On analysis of education status of wife, it was observed that 120 (50.63%) were uneducated, 72 (30.38%) were primary pass, 23 (9.7%) were intermediate and 22 (9.28%) were graduates. On analysis of education status of husband, it was observed that 63 (26.58%) were uneducated, 95 (40.08%) were primary pass, 59 (24.89%) were intermediate and 20 (8.44%) were graduates. 132 (55.7%) patients belonged to rural area. 120 (50.6%) belonged to poor, 72 (30.4%) belonged to middle and 45 (19%) belonged to upper class. On analysis of frequency of outcome variable 72 (30.38%) had tubal blockage.

On analysis of duration of infertility less than 2 years 97 patients were identified with 33 patients having tubal blockage & 64 patients without any tubal blockage ($p=0.192$). On analysis of duration of infertility more than 2 years 140 patients were identified with 39 patients having tubal blockage & 101 patients

without any tubal blockage ($p=0.192$). Stratification of duration of marriage, education status of wife, education status of husband, residence and economic status is mentioned in (Tab. 2 & 3).

| Variable | Number | Percent |
|-----------------------------------|--------|---------|
| Urban population | 105 | 44.3% |
| Rural population | 132 | 55.7% |
| Socioeconomic status poor | 120 | 50.6% |
| Socioeconomic status middle class | 72 | 30.4% |
| Socioeconomic status upper class | 45 | 19% |

Table 1: Frequency of study variables

| Age | Tubal blockage | | P-value |
|--------------------|----------------|-----|---------|
| | Yes | No | |
| Less than 30 years | 22 | 51 | 0.542 |
| 30 years and above | 50 | 114 | |

Table 2: Analysis of age with tubal blockage

| Socioeconomic status | Tubal blockage | | P-value |
|----------------------|----------------|----|---------|
| | Yes | No | |
| Poor | 39 | 81 | 0.483 |
| Middle | 18 | 54 | |
| Upper | 15 | 30 | |

Table 3: Analysis of socioeconomic status with tubal blockage



Figure 1: Normal hysterosalpingogram with free spillage of contrast into the peritoneal cavity without any fillings defects.

Discussion

We found that about 30% of patients with infertility had tubal blockage. The incidence and causes of infertility, primary or secondary varies in different parts of the world. In some studies, the incidence of secondary infertility was higher than that of primary infertility with

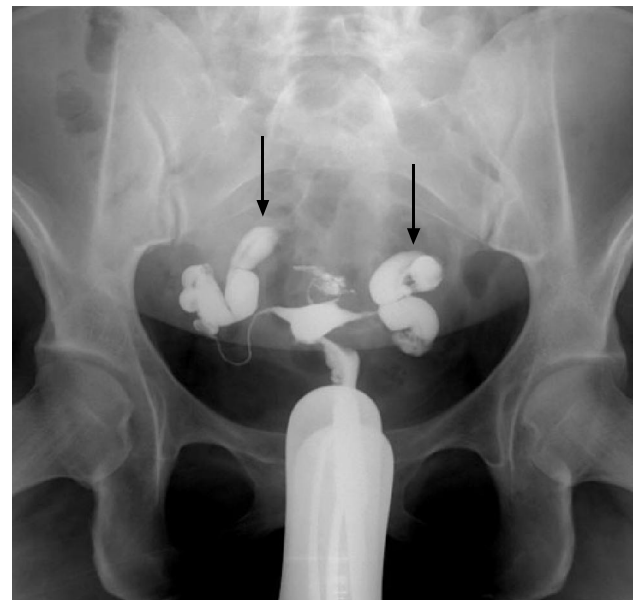


Figure 2: Bilateral distal tubal block with bilateral hydrosalpinx. No immediate or peritoneal spill could be detected.

a ratio of 3:1. This is similar to the findings of others. However this differs from reports from some other studies where it has been noted that primary infertility is commoner.⁹⁻¹¹

Assessment of tubal patency is an important part of the investigation of infertile females as tubal factors are responsible for almost one third of cases of female subfertility¹² the accuracy of x-ray hysterosalpingography over ultrasound for the diagnosis of tubal occlusion in women suffering from subfertility has been well established.^{13,14,15,16}

The ideal screening test for the diagnosis of tubal pathology is needed to be highly sensitive and specific. Sensitivity measures the number of people who truly have the disease who test positive, whereas specificity measures the number of people who do not have then disease who test negative.¹⁷ Sensitivity and specificity can be converted into likelihood ratios (LRs).

Conceptually, LR_s are among the most complicated characteristics of a diagnostic test.¹⁸ LR is a semi quantative measure of the performance of diagnostic test, which indicates how much a diagnostic procedure modifies the probability of the disease.¹⁹ LR_s assist in putting the value of testing in proper perspective.¹⁹ LR_s are not affected by the prevalence of the disease in the population studied.^{20,19} The likelihood of a positive test result (LR₊) indicates the likelihood of abnormal

test result in a patient with the disease, over the likelihood of an abnormal test result in a patient without the disease.²⁰ The likelihood of a negative test result (LR⁻) indicates the likelihood of a normal test result in a patient with the disease, over the likelihood of a normal test result in a patient without the disease.²¹ Calculation of LRs yields a score that allows categorization of test results: an LR⁺ of 2 - 5 indicates a fair clinical test, 5 - 10 is good, and >10 is excellent.²⁰ An LR⁻ of 0.5 - 0.2 indicates a fair clinical test, 0.2 - 0.1 is good, and <0.1 is excellent.²¹

In my study high rate of tubal blockage in rural population may be because of increased rate of infection. Infection is the most important cause of infertility in our environment as it is demonstrated by the high incidence of tubal pathologies as seen in this and many previous studies.²²⁻²⁴ Consequently, primary prevention and prompt treatment of the infection is of paramount importance and helps in the reduction of high incidence of tubal infertility in our environment.

Conclusion

Tubal blockage is very common in patients with infertility especially patients from rural areas have more prevalence of tubal blockage as cause of infertility. Other factors like education status of wife and husband and socioeconomic status has no effect on frequency of tubal blockage.

Conflict of Interest: None

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