

HYSTEOSALPINGOGRAPHIC BASED DIAGNOSIS OF TUBO-OVARIAN PATHOLOGIES IN INFERTILITY

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ABSTRACT

Background: Hysterosalpingography is radiological technique performed for the diagnosis of infertility by this technique. The aim of this study was to diagnose the tubo-ovarian causes of infertility. **Methods:** This descriptive, cross-sectional study was conducted at Radiology Department, Combined Military Hospital, Dera Ismail Khan, Pakistan, from July 2010 to June 2011. Eighty Patients were investigated for Infertility and Subfertility by Hysterosalpingography. Patients of both primary & secondary infertility were included except those who have allergy to contrast media or history of pelvic surgery. **Results:** Hysterosalpingography outlined normal tubes bilaterally with peritoneal spill in 30 patients. (37.5%), Same findings but with venous extravasation in 4 patients (5%), Both tubes normal with no peritoneal spill in 3 patients (3.75%), both tubes blocked at cornual ends in 9 patients (11.25%), blocked right tube at cornual end in 8 patients (10%), blocked left tube at cornual end in 7 patients (8.75%), hydrosalpinx of both tubes in 2 patients (2.5%), right hydrosalpinx with block left tube in 3 patients (3.75%), left hydrosalpinx with block right tube in 4 patients (5%), left hydrosalpinx with normal right tube in 2 patients (2.5%), right hydrosalpinx with normal left tube in 2 patients (2.5%), beaded fallopian tubes in 1 patient (1.25%), blocked right tube at corneal end with normal left also outlining the ovarian cyst in 1 patient (1.25%), normal both tubes up to peritoneal spill with follicles in left ovary in 1 patients (1.25%), normal both tubes up to peritoneal spill with bilateral peritubal adhesion in 2 patients (2.5%) and normal both tubes up to peritoneal spill with left peritubal adhesion in 1(1.25%) **Conclusion:** Hysterosalpingography is a useful diagnostic technique for patients with infertility, especially to evaluate fallopian tube patency.

KEY WORDS: Hysterosalpingograhya, Infertility. Tubo-ovarian pathology.

INTRODUCTION

Patency of fallopian tubes and its normal functions are prerequisites for human fertility. Fallopian tubes serve as the passageway for the ovum to travel from the ovary to the uterus. They are 10–12 cm in length and course along the superior aspect of the broad ligament. Each fallopian tube have three segments. The interstitial or cornual region that traverses the muscular wall of the uterus. The isthmic portion is between the interstitial and ampullary regions. The ampullary portion is near to the ovary. Tubal blockage can be in any part. Pelvic adhesions due to infection, inflammation, endometriosis, previous tubal or non tubal pelvic surgeries and ectopic pregnancy are common factors in tubal based sub fertility. Prior abortions, medical termination of pregnancy and myomectomy may predispose to tubal damage by sub clinical inflammation or infection. Hysterosalpingography (HSG) was performed as early in 1920, an examination for the diagnosis of infertility.¹ It is widely used as a first-line approach to assess the patency of fallopian tubes and uterine anomalies in the routine fertility workup. Its findings in the tubal patency are reliable and does

not have to be confirmed by laparoscopy.^{2,3} It detects congenital tubal anomalies, tubal occlusion, salpingitis isthmica nodosum, polyps, hydrosalpinx, and peritubal disease.⁴ The differential diagnosis of tubal occlusion includes tubal spasm, infection, and prior surgery. Delayed radiography is performed to differentiate the tubal spasm from true tubal occlusion. A spasmolytic agent glucagon may be administered to relax the uterine muscle & relieve a tubal spasm. Occlusion at the ampullary end of the fallopian tube results in Hydrosalpinx, commonly caused by pelvic inflammatory disease, outlines as dilated part of tube with no intra peritoneal spill of contrast. HSG can outline the tubal irregularity and sub-centimetric protrusions from the isthmic portion of the tube due to salpingitis isthmica nodosa, an inflammatory process within the fallopian tube. An abnormal accumulation of contrast material adjacent to the ampullary ends of the tubes at HSG. is suggestive of peri tubal adhesions. Both endometriosis and pelvic inflammatory disease may lead to peri tubal adhesions with resultant infertility.⁵ Sonohysterography is investigation to diagnose uterine abnormalities of infertility and it is inferior

to HSG for evaluating tubal anomalies.⁶ Pain, bleeding, infection, vasovagal reaction, venous intravasation & allergy to contrast medium can occur by HSG. Pain is due to utero-tubal distension or peritoneal spillage and can be minimized by slow injection or by using isomolar contrast agent. Infection is more common in patient with previous history of pelvic inflammatory disease and hydrosalpinx. Vasovagal reaction is due to rough handling of cervix. Venous extravasation can make interpretation difficult and occurs due to fibroids or tubal blockage with increased pressure of contrast in distended uterine cavity.

MATERIAL AND METHOD

This descriptive, cross-sectional study was conducted at Radiology Department, Combined Military Hospital, Dera Ismail Khan, Pakistan, from July 2010 to June 2011. Gynecologist performed the HSG in pre-ovulatory phase under supervision of Radiologist. A scout radiograph of pelvis was exposed before injection of contrast. The standard method used in which vaginal speculum is passed. The speculum is removed and water-soluble contrast is injected slowly through the cannula into the uterine canal and fallopian tubes. First image was obtained during early filling of uterine canal. Small filling defects are best visualized at this stage. Second film was taken when uterine canal was fully distended which outlined the shape of uterine canal. Third image was for fallopian tubes and fourth film was for free intra-peritoneal spillage of contrast. If the tubes are blocked then contrast will cause cramping because of their stretch but when there is no blockage then fluid will spill slowly out from the far ends of the tubes and it is absorbed by the body. After the images were made, the cannula was removed.

RESULTS

Eighty patients were included in this study, and Hysterosalpingography outlined normal both tubes with peritoneal spill 37.5% cases (Fig.1), same as before but with venous extravasation in 5% cases (Fig. 2), normal both tubes with no peritoneal spill in 3.75% (Fig.3). Both tubes are blocked at cornual ends in 11.25% (Fig.4), right tubal blockage at cornual end in 10% (Fig.5), left tubal blockage at cornual end in 8.75% (Fig.6), hydrosalpinx of both tubes in 2.5% cases (Fig.7), right hydrosalpinx with block left tube in 3.75% (Fig.8), left hydrosalpinx with block right tube in 5% (Fig.9), left hydrosalpinx with normal right tube in 2.5% (Fig.10), right hydrosalpinx with normal left tube in 2.5% (Fig.11). Beaded fallopian tubes in 1.25% (Fig.12), right tubal blockage at cornual end with normal left outlining the ovarian cyst in 1.25% (Fig.13), normal both tubes up

to peritoneal spill with follicles in left ovary in 1.25% (Fig. 14), normal both tubes up to peritoneal spill with bilateral Peri tubal adhesion in 2.5% (Fig.15), and normal both tubes up to peritoneal spill with left peri tubal adhesion 1.25% cases. (Fig.16) The results of Hysterosalpingography are depicted in the Table 1.

Table 1: Pattern of tubal pathologies as revealed by hysterosalpingography (n=80).

Finding	Number	Percentage
Both tubes normal with peritoneal spill	30	37.5
Both tubes normal with peritoneal spill and venous extravasation	4	5
Both tubes normal with no peritoneal spill	3	3.75
Both tubes are blocked at cornual ends	9	11.25
Right tubal blockage at cornual end	8	10
Left tubal blockage at cornual end	7	8.75
Hydrosalpinx of both tubes	2	2.5
Right Hydrosalpinx with block left tube	3	3.75
Left Hydrosalpinx with block right tube	4	5
Left Hydrosalpinx with normal right tube	2	2.5
Right Hydrosalpinx with normal left tube	2	2.5
Beaded fallopian tubes	1	1.25
Right tubal blockage at cornual end with normal left outlining the ovarian cyst	1	1.25
Normal both tubes up to peritoneal spill with follicles in left ovary	1	1.25
Normal both tubes up to peritoneal spill with bilateral Peri tubal adhesion	2	2.5
Normal both tubes up to peritoneal spill with left Peri tubal adhesion	1	1.25
Total	80	100



Fig.1: Normal both tubes & peritoneal spill



Fig. 2: Normal both tubes with peritoneal spill and venous extra vacation



Fig.3: Normal both tubes with no peritoneal spill



Fig. 4: Bilateral tubal blockage at cornual end



Fig. 5: Normal L- F.T. with peritoneal spill and block R-tube at cornual end



Fig. 6: Normal right F.T. with peritoneal spill and block L-F.T at cornual end.



Fig.7: Hydrosalpinx of both tubes with no peritoneal spill.



Fig.8: Right hydrosalpinx and block left tube at cornual end.



Fig.9: Left hydrosalpinx and block R- tube at the cornual end.



Fig.10: Left hydrosalpinx with normal right tube and peritoneal spill.



Fig.11: Right hydro-salpinx and normal left tube with peritoneal spill.



Fig.12: Beaded fallopian tubes.



Fig.13: Block R-fallopian tube at the cornual end & normal L- tube/peritoneal spill/outlining the ovarian cyst



Fig.14: Normal both tubes up to peritoneal spill with follicles in left ovary



Fig.15: Normal both fallopian tubes, peritoneal spill with bilateral Peri tubal adhesion



Fig.16: Normal both fallopian tubes, peritoneal spill with left Peri tubal adhesion

DISCUSSION

The results of our study correlate with the other with some difference in percentages. The most common causes of tubal blockage observed in 44 patients (55%) out of 80 patients included in our study were due to pelvic inflammatory diseases, infection especially tuberculosis and Hydrosalpinx, while study in comparison outlined 37.4%.⁷ A large percentage (40%) of the patients in this study presented with blockage of tubes in secondary infertility while 8.75% in the primary infertility, which compares with earlier works done.^{8,9}

One of the study outlined that commonest causes of infertility in Sub-Saharan Africa is pelvic inflammatory disease (PID), which is now on the increase. Tubal factor accounts for 15-30% of infertility in all women in developing countries with high rates of pelvic inflammatory disease and limited resources.¹⁰⁻¹² The high rate of post infection infertility found was probably related to a combination of tubal damage before and during the index episode of PID.¹³

Genital tract tuberculosis is an important cause of infertility in the developing countries, where hysterosalpingograms (HSG) remain the initial diagnostic procedure in the assessment of tubal and peritoneal factors leading to infertility.¹⁴ In our study, the appearance of Tubal Tuberculosis as tubal thickening with peri-tubal adhesions and beaded appearance remained same as in other studies.¹⁵

Hydrosalpinx is another reported common tubal pathology in most studies like in this study, which cause the infertility.¹⁶ The incidence of Hydrosalpinx in our study ((17.25%) less than similar studies done in Ilorin by Adetiloye (1988) (44.5%)¹⁷ and Bello (2004) (23.3 %).¹⁸

CONCLUSION

Hysterosalpingography is a useful diagnostic technique for patients with infertility, especially to evaluate fallopian tube patency.

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