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HYSTEROSALPINGOGRAPHY (HSG) IN FEMALE INFERTILITY, ITS RELEVANCE TODAY

Radiodiagnosis

Aman Kumar* Post Graduate Student, Department of Radio-diagnosis, Muzaffarnagar Medical College, Uttar Pradesh - 251203 *Corresponding Author

Supreethi Kohli Professor, Department of Radio-diagnosis, Muzaffarnagar Medical College, Uttar Pradesh - 251203

ABSTRACT

Rising number of infertile couples is a cause of concern in developing countries. Hysterosalpingography has been in use since 1914. 60% of infertility cases have fallopian tube abnormality. Role of HSG in determining the patency of fallopian tube has not yet been surpassed by any other modality. 3D/4D USG, Contrast USG, MRI imaging modalities are also used in assessment of infertility in women. Aim of this study is to retrospectively analyse Hysterosalpingography done in Tertiary Health care hospital to evaluate the need and relevance of hysterosalpingography in present age.

KEYWORDS

Infertility, Hysterosalpingography, Contrast Medium

INTRODUCTION

World Health Organization reports reveal one out of four couples in a developing country suffer from infertility.[1] India accounts for 15 - 20 million (25%) cases. [2] HSG was first performed by Carey in 1914.[3] HSG still continues to be used for assessment of infertility, as a simple, low-cost procedure.[4] HSG has advanced in last two decades to selective hysterosalphingography, where tubes are selected and contrast injected.[5] Sonosalpingography ,laparoscopy and hysteroscopy have been deemed superior.[1] However performed only after HSG or as a part of treatment . Magnetic resonance imaging is performed for evaluation of uterus and ovaries. HSG is mainly used to assess the tube morphology and patency. However, its value also extends to delineation of congenital anomalies, uterine size, filling defects and mucosal irregularity [6]

Aim

Retrospective evaluation of hysterosalpingography investigation and to document the structural abnormalities of the uterus and fallopian tubes in infertile females.

MATERIALS & METHODS

The retrospective cohort analysis of HSG performed for infertility at the Radiodiagnosis Department of a tertiary health institution between July 2023 and September 2023. Exclusion criteria were patients whose clinical data, indication and request forms were not available. 52 patients were included in the study.

The standard protocol for performing HSG was followed. Informed consent was obtained from the patient after due explanation of the procedure and possible complications. Exclusion criteria for HSG were pregnancy, bleeding, recent instrumentation, vaginal infection and severe allergy to iodine-based contrast. The examination was performed during days 7–12 of the menstrual cycle. During this period the endometrium was thin and excluded the possibility of existing pregnancy. Urine Pregnancy test was done in selected patients who had amenorrhoea and at suspected risk of pregnancy. HSG was performed on 800mA direct digital fluoroscopy machine and contrast used was 15–20 ml of Urograffin 76% (sodium amidotrizoate + meglumine amidotrizoate). The appearance of the uterine cavity and patency of the fallopian tubes were assessed by direct image intensifier. Spot films during the phases of early uterine filling, tubal filling and peritoneal spill were taken. A release film was taken to check for the clearance of the contrast, especially if there was hydrosalpinx.

The HSG images were retrieved from the Picture Archiving. Retrieved images were evaluated and their observations were documented. Biodata and indications for the investigation were obtained. The relevant history such as age, parity and duration of infertility of each subject were recorded from data

Statistical Analysis

The data were analysed using MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA).

RESULTS

Total of 52 patients were evaluated. 17 patients (32.69%) were referred for Primary infertility and 35 patients (67.30%) for secondary infertility. Maximum patients (22) were in the 25 – 29 years age group (42.30%), followed by age group 30-34 years 20 patients (38.46%) and 4 (7.69%) in the 35 -39 age group. Youngest patient was 23 years and oldest was 37 years. Among 17 patients of primary infertility 8(47%) showed normal HSG(Fig.1), 9(52.94%) showed congenital anomalies (Fig.2) viz Subseptate(2), Bicornuate(2), Unicornuate with rudimentary horn(1), Absent uterus(1), Infantile(1), Hypoplastic(2).

Out of 35 patients of secondary infertility, 17(48.57%) revealed tubal abnormalities (Fig.3) and tubal block, (right tube 6, left tube 3, bilateral tubes 8).10 patients (28.25) showed normal findings, 8 (20%) showed uterine filling defects. Intravasation (3) was associated with bilateral fallopian tube blockage.

Fig.1 Bilaterally Patent Fallopian Tubes.

Fig.2 A Case Of Bicornuate Uterus.

Fig.3 Left Side Beaded Hydro Salpinx.

DISCUSSION

Prevalance of infertility varies from 6% -10% in western countries[7] and as high as 60% in African sub-region.[8] India accounts for 25% of the suffering couples.[9] Hysterosalphingography is the most simple and safe method to assess the patency of Fallopian tubes with a tubal blockage sensitivity of 65% and a specificity of 83%. [10] Hysterosalpingography also has a therapeutic effect in treatment of infertility.[11] Ultrasound and MRI are also being used in assessment of uterus and ovaries in infertility . Hysteroscopy and laparoscopy are not desirable due to their invasive nature.[12] Abnormality in the fallopian tubes is the reason for infertility in 35–40% of cases.[13] Pelvic inflammatory disease (PID) tubal adhesions are seen in 30 – 50% of female infertility. [1,4]

In this study, secondary infertility (67.30%) is more prevalent than primary infertility (32.69%). This is in concurrence with several other studies.[12 ,13 ,14] Few studies which reported greater number of hysterosalpingography in primary infertility.[15,16] revealed improper history by the patients and erroneous exclusion criteria .[15]

This study reveals 22 (42.30%) of women were in the age range of 25–29 years. Indian woman marries early and with social pressure to conceive undergo investigations and treatment for infertility earlier. [12]

The result of the study revealed that 30.7% of the cases had normal HSG findings. Studies of Kampala and Nnewi also showed normal HSG in 16.6 and 29.1% respectively.[14,15] While Nwanko et al reported normal HSG in 44.2% cases.[17] High normal HSG in their study may be due to the fact that HSG was done by blind procedure which increased chances of uterine lesions being obliterated by contrast.

This study revealed 55.76% of patients had uterine cavity abnormalities which is similar to the 47% in study by Nnewi [15] but higher than the 26.8% in an Nwankwo et al. [17] the lower percentage may be due to blind technique HSG as mentioned above. Uterine smooth filling defects due to leiomyoma in this study was (5)9.61 %, as compared to other studies viz 17.6%, 13.5 % and 20% respectively by Mgbor[18], Imo and Adeoye[19] . Low figures in our study may be because USG and MRI are being performed in Leimyomas instead of HSG .Uterine synechiae was seen in 3 (5.77%) of the cases which may be result of pelvic infections and uterine instrumentation [13]

Congenital uterine anamoly was seen in 9 cases (17%)in this study which is higher than 0.9% Danfulani et al.[20] ,0.8% Akinola et al.[21] and 3.6% Bukar et al.[13]respectively.

This study shows that 34 cases (65.3%) had normal fallopian tubes with free contrast material spillage, whereas 18 (34.61%) cases had fallopian tube abnormalities. This is comparable to 33.6% and 43.55% fallopian tube abnormalities recorded in previous studies. [19 ,15]

Bilateral tubal occlusion was seen in 15.38% which is similar to 15% of Broeze et al.[22] and 18.7% reported in Nnewi.[15] This is higher than the 4% and 4.5% in previous reports of Port Harcourt[17] and Sokoto[20] Tubal obstruction was found to be more common on the right 11.53 % than on the left 7.6% of the cases. A high frequency of right fallopian tube involvement was also reported by previous researchers [15, 23]. Tubal obstruction is commonly caused by previous pelvic infections and adhesions; [18]

Hydrosalpinx was also noted to be more common on the right side (9.61%) This is comparable to earlier studies of right sided hydrosalpinx in 7.2 to 11%. [19,18]. Most literature explain that hydrosalpinx and tubal blockage are as a result of pelvic infection which cause tubal adhesions. [24]

Intravasation occurred in 3 (5.76) % of the study population which is similar to 6.9% in earlier study.[25] Intravasation was associated with bilateral tubal blockage. Chang and Shim [26] and Perry,[27] also observed similar findings and concluded that increased intrauterine pressure caused intravasation of contrast due to the obstruction of the tubes.

CONCLUSION

Inspite of advanced imaging modalities the need for hystero-salpingogram in infertility still exists. It is simple, readily available, cost effective, non-invasive procedure which assess uterine cavity and evaluates patency of fallopian tubes.

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