ORIGINAL ARTICLE

Hysterosalpingographic findings in infertile women: A seven year review

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Abstract

Objectives: To review the hysterosalpingographic (HSG) findings in women investigated for infertility in a tertiary center in north eastern Nigeria.

Materials and Methods: A retrospective review of HSG films of 272 women investigated for infertility between January 2000 and December 2006 were reviewed.

Results: One hundred and thirty (47.8%) were investigated for primary infertility, while 142 (52.2%) were investigated for secondary infertility. Most of the women investigated for infertility by HSG had abnormal findings 192(70.6%). The most common pathology revealed among the infertile women was tuboperitoneal factor in 196 (72.1%) followed by uterine synechia in 35(12.9%). Seventeen (6.3%) had bilateral tubal block and 5 (1.8%) had bicornuate uterus.

Conclusion: HSG is helpful in the investigation of infertile women.

Key words: Hysterosalpingography, Infertility, Maiduguri

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Introduction

Although an invasive procedure, hysterosalpingography (HSG) remains an important investigation in the management of infertility, HSG has proven to be an important diagnostic method in clinical gynecology for so many decades and is of particular value in the investigation of the uterine and tubal factors of female infertility.[1] Two common indications for obtaining an HSG are evaluation of tubal patency as part of an infertility workup and of congenital uterine anomalies,[2] thus it remains a reliable test of assessing the uterine cavity and fallopian tubal patency but has low sensitivity for diagnosis of pelvic adhesion.[3] Rare indications include checking the efficacy of tubal sterilization, abnormal uterine bleeding, before artificial insemination to exclude structural abnormalities of the genital tract, assessment of the tube prior to attempted reversal of sterilization, and determining the integrity of a uterine scar following a caesarean section.[3,4] HSG is a safe, relatively inexpensive, simple, and rapid diagnostic test.[5] Some authorities belief that laparoscopy and hysteroscopy can really replace HSG.[6] However, the superiority of HSG in detecting uterine and intraluminal tubal pathology,[7] its ready availability and cost effectiveness still makes it the standard procedure for evaluating female infertility in most developing countries. Although HSG is associated with some disadvantages which include patient discomfort, radiation exposure to patient and personnel, higher cost than ultrasound, and sometimes scarcity of resources, it is the gold standard for diagnosing infertility.[8]

The purpose of this paper is to report the experience in University of Maiduguri Teaching Hospital of using HSG studies in the workup of infertile female patients seen in the gynecological unit.

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Materials and Methods

This is a retrospective review of 272 HSG studies carried out at the Radiology department of University of Maiduguri Teaching Hospital (UMTH) which is a tertiary institution serving as a referral center for Borno, Adamawa, Taraba, Yobe, and Gombe states. It also caters for the neighboring countries of Niger, Chad, and Cameron.

A total of 272 HSG studies of women between the ages of 15 and 45 years residing in this geopolitical zone and referred from the Gynecology unit for infertility over a 7 year period from January 2000 to December 2006 were reviewed. The biodata and indications for each HSG were obtained from the referral forms. All HSG studies done to investigate primary and secondary infertility were included in this study, whereas inconclusive film series, studies without request forms, and those with intravasation of contrast media were excluded as were studies done for indications other than infertility. A control film of the pelvis was checked for correct positioning of the patient and for accuracy of radiographic factors. The films were obtained from the archives of the Department of Radiology and those that had no reports which were in the majority were re-reported by a radiologist/gynecologist. All HSG examinations were interpreted by direct visualization of hard copy images, checking for unilateral and bilateral spillage of contrast medium into the peritoneal cavity, and abnormalities in the outline of the uterine cavity which may suggest uterine anomalies. Numbers and frequencies were analyzed using SPSS version 13.0.

Results

The patient's ages were between 15 and 45 years. One hundred and thirty (47.8%) were investigated for primary infertility, while 142 (52.2%) were investigated for secondary infertility.

The age distribution is depicted in Table 1. The majority 228(83.8%) of those subjected to HSG for infertility were less than 35 years of age. One hundred and thirty (47.8%) were investigated for primary infertility, while 142 (52.2%) were investigated for secondary infertility. Table 2 shows the distribution of HSG findings among the 272 women investigated for infertility. One ninety two (70.6%) had abnormal findings. The most common pathology revealed among the infertile women was tuboperitoneal factor in 196 (72.1%) followed by uterine synechia in 35(12.9%). There was predominance of bilateral tubal block 17 (6.3%) over left 13(4.8%) and right tubal block 10(3.7%). Bicornuate uterus was the most common congenital uterine anomaly seen in 5(1.8%).

Table 1: Age distribution

Age	Frequency	Percentage
15-24	81	29.8
25-34	147	54.0
>35	44	16.2
Total	272	100

Discussion

The optimum time to perform HSG is toward the end of the first week after the menstrual period when the isthmus is at its most distensible and the fallopian tubes are most readily filled by contrast medium.[4] HSG is avoided in the second half of the cycle because of fear of inadvertently irradiating an ongoing pregnancy and because the thickened secretory endometrium increases the risk of venous intravasation which could lead to false positive diagnosis of cornual occlusion.[3] In agreement with previous studies,[7,9-11] secondary infertility was also the main indication for HSG in this review. The demonstration of abnormalities in 70.6% of films is comparable to that reported from Enugu and Ile Ife.[7,10] The high sensitivity of HSG in identifying uterine and tubal abnormalities makes it an important diagnostic tool for uterine and tubal condition in our environment. Although laparoscopy and dye test provide more information than HSG, radiologic studies are valuable non-operative procedures for detection of uterine and tubal pathology.[12,13] Recent studies have however shown that sonohysterography is superior to HSG for assessing intrauterine abnormalities.

Table 2: Distribution of HSG findings among 272 women investigated for infertility

Findings	Number	Percentage
Normal	80	29.4
Cervix		
Cervical stenosis	1	0.4
Patulous cervix	1	0.4
Uterus		
a) Congenital abnormalities		
Bicornuate	5	1.8
Hypoplastic	3	1.1
Arcuate	2	0.7
b) Acquired abnormalities		
Uterine synechia	35	12.9
Uterine fibroid	16	5.9
Fallopian tubes		
Right tubal block	10	3.7
Left tubal block	13	4.8
Bilateral tubal block	17	6.3
Hydrosalpinges		
Right hydrosalpinges	10	3.7
Left hydrosalpinges	9	3.3
Bilateral hydrosalpinges	4	1.5
Pelvic adhesions		
Perifimbrial adhesion	44	16.2
Peritubal adhesions	26	9.6

44 (16.2%) had multiple pathologies detected on HSG

In addition, sonohysterography is cheaper, more tolerable and is free of ionizing radiation[14] but the place of HSG in the evaluation of the infertile woman will remain undisputed for a long time to come. Tuboperitoneal factor was the largest abnormality detected in this series with bilateral tubal block being the most common seen in 17(6.3%). This is comparable to 6.6% reported from Port Harcourt but lower than the 23.3% and 17.5% reported by Mgbor and Adinma *et al*. respectively.[7,15] The findings of Adetiloye of the preponderance of the right tubal block over the left tubal block[16] is in contrast to finding from this study. The high incidence of tuboperitoneal factor 196 (72.1%) found in this and in many previous studies[7,11-15] further supports infection as the leading cause of infertility in our environment. The poor sensitivity of HSG in the diagnosis of pelvic/peritubal adhesions suggests that the incidence may even be higher at laparoscopy which is better in evaluating extrinsic tubal pathology.[7,12,14] Primary prevention of reproductive tract infection is the key to reducing the unacceptably high incidence of tuboperitoneal infertility in our environment.

Congenital uterine abnormalities accounted for 10(3.7%) of the abnormalities detected on HSG in this study. This is similar to 10(4%) reported by Arthur *et al*. but higher than 1.4% and 1.58% reported by Sanfilippo *et al*. and Nickerson respectively.[17-19] The most common congenital uterine abnormality was Bicornuate uterus 5(1.8%). This is similar to 2(1.0%) reported from Enugu.[7] Uterine synaechia, 35(12.9%) was the most commonly acquired uterine pathology detected on HSG followed by uterine fibroid 16(5.9%). This is similar to the finding of Asaleye *et al*. but contrast with that of Mgbor who found uterine fibroid as the leading uterine pathology.[10,7] The high incidence of uterine synechia may be due to postpartum endometritis or overzealous curettage of a recently pregnant uterus. The widespread use of manual vacuum aspiration for evacuation of the uterus is expected to lower the incidence of uterine synechia and consequently the contribution of uterine synechia to infertility in our environment. Multiple abnormalities detected on HSG in this study of 44(16.2%) are lower than the 66% and 23.5% reported from earlier studies.[20,21]

In conclusion, the high detection rate of uterine and tubal pathology on HSG makes it a very important diagnostic tool for the evaluation of the infertile woman. When the advantages of low cost and easy availability are added to this the case for its continued use becomes more evident.

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