

Hysterosalpingography: A Re-Emerging Study in Health Care Transformation

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Abstract:

Background: Hysterosalpingography is a commonly performed examination due to recent advances and improvement in reproductive medicine. It involves the radiographic delineation of female reproductive organs. The major role of Hysterosalpingography is to investigate the uterus and the fallopian tubes which is achieved following the introduction of contrast agent into the female reproductive system.

Objectives: The objective of this study is to analyze the common pathological requests and findings of Hysterosalpingography patients in Ahmadu Bello University Teaching Hospital Zaria.

Methodology: Two hundred and thirty five (235) request cards, reports/films from Radiology Department of Ahmadu Bello University Teaching Hospital Zaria were reviewed retrospectively and analyzed in order to determine common indications, provisional diagnosis, age of patients undergoing Hysterosalpingography procedure. The result was obtained and categorized according to their clinical findings and they were analyzed using Statistical package for social science Version 16.0.

Results: Results showed 8.9% (n=25) Cervical abnormalities, uterine abnormalities accounted for 25% (n = 67), abnormalities of the fallopian tubes 44.1% (n = 124) while peritoneal adhesions were 19.57% (n = 55). Most of the referrals were those who had secondary infertility 40.4% (n = 95) as opposed to those with primary infertility 29.4% (n = 69)

Conclusion: Hysterosalpingography is effective in evaluating the internal organs of female genital tract in clinically suspected cases of infertility. It is a re-emerging study in reproductive medicine and valuable in health care transformation.

Key Words: Hysterosalpingography, findings, contrast agent, infertility, pathological.

1. Introduction

1.1 Background

Hysterosalpingography is a fluoroscopically guided contrast examination of the female genital tract using about 10 to 20 mls of contrast media usually urografin in our environment^[1]. HSG evaluates the integrity of the female genital tract in clinically suspected cases of infertility. It is valuable in radiographic delineation of uterine and tubal cavities and it also serves as a vital tool for the diagnostic evaluation of conjugal infertility^{[2],[3]}. HSG procedure offers the best method to evaluate the female reproductive tract^{[4],[8]}.

Infertility is defined as inability of a couple to establish pregnancy within a certain period of regular unprotected coital exposure usually one year⁴. It is primary, if the couple has had no previous pregnancy irrespective of the outcome of the pregnancy^{[3],[4],[10]}. In radiographic practice however, the number of HSG procedures have increased dramatically over the past few years, the increase is likely due to advances in reproductive medicine and the tendency of women delaying child bearing^[8]

HSG is considered as gold standard for assessment of fallopian tubes giving relevant information and vital clues about patency and morphology^{[6],[7]}. It remains a very important diagnostic tool in the investigation of the infertile women especially in Nigeria^[16]. The advantages of HSG include producing a global image of the reproductive canal with details of endothelial architecture from cervix to fimbriae using water soluble contrast media^[8]. HSG is the most frequently used diagnostic tool to evaluate the endometrial cavity. However, meticulous and well executed procedure performed provides accurate information about endocervical canal, viz a viz diameter and configuration of the internal canal, location and direction of fallopian tubes, status of the fimbriae and spillage into the peritoneal cavity. HSG must be carefully interpreted as under or over interpretation may be misleading in the management of patient^{[4],[12]}.

Recent advances in reproductive medicine have generated a demand for more accurate imaging methods for identifying the specific cause of infertility and other gynecological disorders^{[8],[10]}. Hysterosonography and ultrasonography are valuable in the evaluation of the endometrium while Magnetic Resonance Imaging is useful in evaluating the ovaries and uterine myometrium for uterine contour myomas. Multidetector Computed Tomography is capable of depicting both the external and internal surfaces of the uterus, fallopian tubes and other pelvic organs providing high resolution data^{[12],[13],[15]}.

Infertility is the commonest complain encountered in the gynecology outpatient clinics in Nigeria^{[11],[12],[15]}. Infertility is common worldwide, it has been estimated that about one in every ten couples has difficulty in conceiving^{[10],[12]}. Majority of patients that come to gynecological out patients clinic in Ahmadu Bello University Teaching Hospital Zaria complained of infertility which are subsequently referred to radiology department for HSG. The frequency of this referral to the Radiology department in this teaching hospital was the major problem that necessitated this research.

This study is aimed at determining the common pathological findings in HSG patients at radiology department of ABUTH Zaria.

II. Methodology

This research work is a three and half year retrospective study carried out at the Radiology department of Ahmadu Bello University teaching hospital Zaria. A total of two hundred and thirty five(235) studies of women between 16 to 45 years were referred to the department. After due consent from the hospital ethical committee, information such as clinical indications/ provisional diagnosis, age of patients and findings were extracted from the records, films of inappropriate reports were reviewed by certified and experienced Radiologist. This is to ensure accuracy of research data. The data was analyzed using SPSS version 16.0.

III. Data Analysis And Presentation

3.1 Result

The result shows that the commonest age group affected were between the ages of 20 years and 39 years 84.8% (n = 198) with peak range at 25 – 29 years 32.0% (n = 75). There was only 1 (0.4%) patient below 20 years . the ages of 18 (7.5%) patients have incomplete/insufficient clinical details.

Table I : Shows the age distribution of patients (n = 235)

Ages (year)	No of patients	Percentage %
≤ 20	1	0.4
20 – 24	27	11.5
25- 29	75	32.0
30 – 34	45	19.1
35 – 39	51	22.2
40 – 45	18	7.5
Unspecified	18	7.5
Total	235	100

Table II: This table shows clinical indications requiring HSG investigation

Clinical indication	Number (n)	Percentage %
Primary Infertility	69	29.4
Secondary infertility	95	40.4
Recurrent Abortion	10	4.3
Sub-fertility	3	1.3
Secondary Amenorrhea	10	4.3
Post myomectomy	4	1.7
Uterine Fibroid	43	18.2
Cervical incompetence	1	0.4
Total	235	100

The above table II Presents higher percentage of secondary infertility to primary infertility, which shows 29.4% (n = 69) of women with primary infertility, while 40.4% (n = 95) were with secondary infertility only 0.4% (n = 1) patient had cervical incompetence.

Table III: Distribution of findings from HSG reports (n = 235)

FINDINGS	NUMBERS OF CASES	PERCENTAGE (%)
1) Normal	10	3.56
2) CERVIX		
a) Synechiae	14	4.98
b) Incompetence	1	0.36
c) Fibroid	10	3.56

TOTAL	25	8.9
3) UTERUS		
a) Asher man's syndrome/ synechiae	21	7.47
b) Fibroid	45	16.0
c) Congenital anomaly	1	0.36
TOTAL	67	23.84
4) FALLOPIAN TUBES		
a) Tubal occlusion/blocked tubes	62	22.1
i) Unilateral	34	12.0
ii) Bilateral	28	9.96
b) Hydrosalpinges	62	22.1
i) Unilateral	32	11.4
ii) Bilateral	30	10.7
TOTAL	124	44.1
5) PERITONEAL ADHESIONS		
a) Pelvic adhesions	23	8.19
b) Perifimbrial adhesions	32	11.39
TOTAL	55	19.57
SUM TOTAL	281	100

IV. Discussions

The recommended period to perform HSG is towards 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. HSG is avoided in the second half of the cycle because of fear of inadvertently irradiating an ongoing pregnancy and because the thickened Endometrium which could lead to false positive diagnosis of cornual occlusion^{[10],[12],[19]}.

The study showed that the commonest age group affected was between the ages of 20 years and 39 years 198 (84.8%) with peak range at 25 – 29, 75 (32.0%). This is so because the active reproduction period in females is this age range. The ages of 18 (7.5%) patients were not specified while 1 (0.4%) was below 20 years. This findings concurs with previous studies^{[1],[4]} Routine (HSG) is a gold standard for evaluating the structural changes in the uterus and fallopian tubes^{[6],[7]}. In this finding, it was found that 29.4% (69) of the investigated women had primary infertility while 40.4% (95) were with secondary infertility. Previous studies showed varying values for primary and secondary infertility^{[1],[8]}.

There was higher percentage of secondary infertility compared to primary infertility in previous researches and this is in harmony with the findings in this research work^{[1],[4],[5],[8]}. This shows that the main clinical problem requiring HSG is secondary infertility^{[1],[4],[5],[8]}. From the findings in this work it was noted that some of the patients presented more than one pathological condition. Five 10 (3.56%) cases in this study demonstrated normal findings while 230 (97.5%) revealed abnormal findings with a breakdown of tubal, uterine, cervical and peritoneal factors of 92(39.1%), 65(27.7%), 13(5.6%) and 60(25.5%) respectively. This work agrees with prevailing findings and suggests that there are many cases of infertility with Tubal factors as the main cause. Research shows that this may be secondary to disease such as peritonitis, endometriosis and pelvic inflammatory diseases^{[4],[8]}.

Majority of patients have unilateral tubal occlusion 34(12.0%) this disagree with the earlier findings in Port-Harcourt (16.6%) and (17.5%)^[5]. In their study they assessed the value of (HSG) in tubal patency and peritubal adhesion, they found tubal factors in 89.2%, Uterine 9.4% peritoneal 12.7% when compared with this study finding of 124(44.1%) tubal factors, 67(23.84%) uterine factors and 55(19.57%) peritoneal factors^{[6],[8],[12]}. This finding shows that tubal abnormality is most likely due to infection which may be sub-clinical in many cases and especially sexually transmitted disease. The tubal abnormality may be explained by possible spread of infection from chronically inflamed appendix to the tube. The appendicular inflammation may however be subclinical in most cases it is as a result of antibodies in this environment^{[8],[10],[14]}.

Uterine fibroid 45 (16.0%) is the commonest uterine abnormality in this study which concur with that of Enugu^[5]. Leiomyomas generally referred to as fibroids are benign tumors arising from smooth muscles of the uterus and fallopian tubes^[20]. The exact etiology of fibroid is uncertain, but it is diagnosed in 20% to 25% of women 35 years of age or older incidence is up to 7 times higher in black women compared to Caucasians^{[8],[20]}. Evidence strongly suggests that fibroids are estrogen depended and diminish with age hence their rarity in postmenopausal and prepubertal age^[20]. Fibroids are generally classified according to their location^[20]. Such classification results in fibroids being described as intramural, submucosal, subserosal and cervical. A fibroid may also be pedunculated, If it develops some pedicle which attaches itself to the uterine wall and grows externally into the peritoneal cavity^{[15],[18],[20]}.

Pelvic adhesions 23 (8.19%), perifimbrial adhesions 32(11.4%) were also seen among the peritoneal abnormalities. HSG is very weak in diagnosis of these abnormalities. However, it could sometime be inferred by

delaying or localized spill, lack of tubal mobility, abnormality and tubal contour. The extrinsic tubal pathology is better evaluated with Laparoscopy although HSG is inferior to laparoscopy in defining peritubal disease, this agrees with most findings^{[2],[3]}.

Bilateral hydrosalpinges 30(10.7%) and unilateral 32(11.4%) varies with the study carried out in Enugu^[8]. Hydrosalpinx is elongated tortuous dilatation of the Ampullary portion of the fallopian tube that shows contrast retention even in delayed film. The incidence of bilateral tubal occlusion 28(9.96%) and unilateral hydrosalpinx 32(11.4%) reveals that infection is not the leading etiology factor in infertility in our environment. This is in disagreement with the findings of Enugu^[8]. Prevention of sexually transmitted disease and its prompt treatment will decrease the incidence of tubal blockage since they are the causes of tubal blockage and hydrosalpinges, since they are the end result of acute and chronic salpingitis. It must be noted that the evaluation of tubal patency could be misinterpreted many times due to some technical difficulties resulting from tubal spasm or under filling. The usual practice is to give antispasmodium drug (20mg Buscopan) to patients suspected to have tubal spasm.

There was only one 1(0.36) case of cervical incompetence. Secondary infertility is common points to pelvic infection complicating mismanaged pregnancies, septic abortions and sexually transmitted diseases.

Since most of the case of tubal occlusion and the uterine and cervical synechiae are secondary to poorly treated infection, it is strongly advised that good hygiene and proper treatment of any form of infection be advocated.

V. Conclusion

The commonest clinical problem requiring investigation on HSG patients at ABUTH Zaria is uterine fibroid. Only one case of congenital anomaly noted. Despite the fact that secondary infertility is common points to uterine fibroid, a study to establish associated factors is recommended.

Also, since most cases of Asherman's syndrome, tubal occlusion and peritoneal adhesions are secondary to poorly treated infection, it is strongly advised that good hygiene and proper treatment of any form of infection be advocated. HSG is vital in modern gynecological practice.

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