

Hysterosalpingographic abnormalities in women with infertility in a teaching hospital in Nigeria

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Abstract

Background: Structural tubal abnormalities are responsible for infertility in significant proportion of infertile couples. Hysterosalpingography (HSG) being a simple, less invasive, relatively inexpensive, and reproducible rapid diagnostic test provides valuable information about the uterine cavity and tubal architecture.

Methods: This was a 12-month review of 350 hysterosalpingograms of women with primary and secondary infertility.

Results: Seventy eight(22.3%) and 272(77.7%) patients were investigated for primary and secondary infertility. Half of the patients had tubal abnormalities constituting 31(39.7%) and 148 (54.4%) patients with primary and secondary infertility respectively; (p=0.022). Bilateral tubal occlusions was the most common abnormality seen in 99 (28.3%). Forty four (56.4%)

patients with primary infertility were aged 30 years and below while 106 (39%) out of 272 patients with secondary infertility were 30 years and below. This was statistically significant (p=0.026), as those with primary infertility were younger.

Conclusion: The high frequency of tubal abnormality in this study especially in patients with secondary infertility further emphasizes the significance of tubal factor in this environment and the need to guard against tubal damage in women of reproductive age .

Keywords: Hysterosalpingography, Primary, secondary, infertility, tubal abnormalities

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Introduction

Parenthood is undeniably one of the most universally desired goals in adulthood, and most people have life plans that include children. However, not all couples who desire a pregnancy will achieve one spontaneously and a proportion of couples will need medical help to resolve underlying fertility problems. Infertility has been recognized as a public health issue worldwide by the World Health Organization.¹ Millions of women and men worldwide are confronted with infertility. Many couples around the world have difficulty conceiving a child at some point in their lives.⁴ However, the incidence of primary and secondary infertility varies enormously

in each region.²

Hysterosalpingography (HSG) is a radiographic examination of endocervical canal, uterine cavity and fallopian tubes with the use of contrast medium. It is still a commonly used investigation in the evaluation of female genital tract as it gives a better tubal definition and resolution. The main indication for this investigation is infertility.³ The high specificity of hysterosalpingography makes it very helpful for ruling out tubal disease, even where endoscopic evaluation is available. Other than being diagnostic, it can prove to be therapeutic also.^{4,5}

Studies have showed a high proportion of structural hysterosalpingographic abnormality in infertile women in both developed and developing countries. This is however most marked in developing African countries.⁶ This fact underscores the importance of HSG in our setting. Tubal factors remained a cause of infertility which accounts for 35% to 40% of cases of infertility.^{6,7,8} Okafor and colleagues and other researchers also conclude that tubal pathology remained a major contributor to the female infertility in this part of the world.^{5,9,10}

The prevalence of primary and secondary infertility varies in different parts of the world.

Studies in this environment shows a high prevalence of secondary infertility compared with primary infertility.^{6,11} Karshima and colleagues¹² working in Jos

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documented 39.0% and 61.0% for primary and secondary infertility respectively. However, Mesbahi and co-workers working in Iran and Admassie in Adiss Ababa, Ethiopia found primary infertility to be significantly higher constituting 79% and 60% respectively.^{13,14}

This study aims to document the tubal abnormalities seen on HSG among patients with primary and secondary infertility.

Materials and Methods

This is a review of Hysterosalpingograms of 350 women with primary or secondary infertility carried out between January,2011 and December,2011 at the fluoroscopy unit of the department of Radiology, Jos University Teaching Hospital, Jos.

There was no specific patient preparation required and the examination was scheduled during days 7-10 of the menstrual cycle. After obtaining an informed consent, the procedure was explained to the patients and possible adverse effects. After assuring the patients, intravenous 20mg of Hyoscine N butyl bromide was given 5-15minutes before the examination, to prevent tubal spasm. The patients were also given Ibuprofen 400mg an hour before commencement of the procedure. Patient lies supine on the fluoroscopy table. The preliminary film was taken to assess for soft tissue calcifications, bony pathology and check for optimal radiographic factors.

After reassurance, perineum was cleaned with antiseptic and draped with sterile towels. A speculum was inserted in the vagina and the cervix was localized and cleansed with antiseptic. The anterior lip of cervix was held with a volsellum forceps and uterine sound was used to assess uterine depth. A Leech Wilkinson's canula inserted into the distal end of the cervical canal after expelling air bubbles. While maintaining a tight seal between the cervical canal and canula, water soluble contrast medium (urographin) was slowly injected under Fluoroscopy guidance, until there was appreciable filling of the uterine cavity, fallopian tubes and if possible demonstration of peritoneal smearing. Spot films were taken serially; Antero-posterior (AP), left and right oblique views were also done for better assessment of tubes and pelvic masses if present.

On average 10–20 ml of contrast medium was administered for each patient and occasionally more than 30 ml was used in cases of uterine mass lesion.

A delayed radiograph was obtained in Supine anteroposterior projection 30 minutes after completing the procedure to confirm and assess the degree of loculation of contrast, where this apply.

After care was mainly to reassure the patients and to ensure that the patient is in no serious discomfort nor

has significant bleeding before she leaves the fluoroscopy unit.

The demographic variables collected from the patients and the tubal findings were analyzed using statistical package for social sciences(SPSS Incorporated Chicago version 20.0)statistical software. Test for association using Chi-square test was done where appropriate and the level of significance was set at $p < 0.05$.

The study was undertaken after due approval from the Research and Ethics committee of the Jos University Teaching Hospital(JUTH).

Results

Of the 350 HSG studies conducted, 78 (22.3%) was performed on account of primary infertility while 272 (77.7%) was conducted for secondary infertility. The age range of the patients was 18 years to 46 years with a mean age of 32 ± 6 years. Two third (64.6%) of the patients were aged 25 to 35years. Forty four (56.4%) patients with primary infertility were 30 years and below while 166 (61.0%) out of 272 patients with secondary infertility were above 30 years (Table 1).

Table 1: Age distribution and type of infertility(n=350)

Age group (years)	Type of infertility		Total (%)
	Primary Frequency (%)	Secondary Frequency (%)	
15-19	3(3.8)	2(0.7)	5(1.4)
20-24	6 (7.7)	11 (4.0)	22 (6.3)
25-30	35(44.9)	93 (34.2)	128(36.6)
31-35	16 (20.5)	82 (30.1)	98(28.0)
36-40	15 (19.3)	57 (21.0)	72(20.6)
41-45	3 (3.8)	27 (9.9)	30(8.6)
Total	78(100.0)	272(100.0)	350(100.0)

$\chi^2 = 11.008$; $df = 4$; $P = 0.026$

Bilateral patent tubes was seen in 171 (48.9%) patients comprising 47(60.3%) and 124(45.6%) patients with primary and secondary infertility respectively. This was statistically significant ($\chi^2 = 5.220$; $p = 0.022$).

Bilateral tubal occlusions was the commonest tubal abnormality seen 99(28.3%) patients, constituting 17 (21.8%) and 82 (30.1%) patients with primary and secondary infertility respectively.

Bilateral hydrosalpinges was seen in 3 (3.8%) and 11 (4.0%) patients with primary and secondary infertility while unilateral hydrosalpinx was seen in 1 (1.3%) and 12 (4.4%) patients with primary and secondary infertility respectively as shown in figure 1. (Table 2, $\chi^2 = 9.045$; $p = 0.171$)

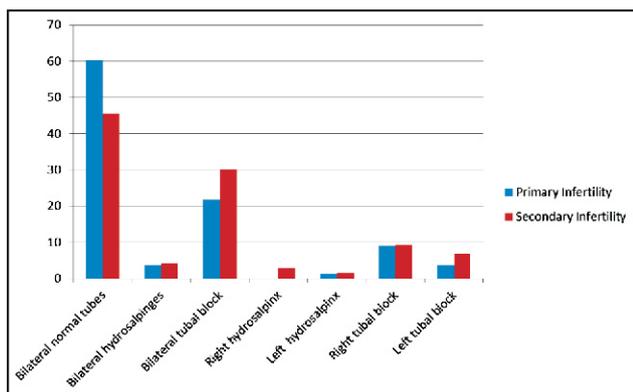


Figure 1: Relationship between HSG tubal findings and type of infertility in percentage

Discussion

In Africa, children are regarded as the fabric of the society, without which no meaningful social and economic progress is considered worthwhile. Infertility is regarded as a social stigma and constitutes a public health problem.

The age of the patients ranged between 18 and 46 years with a mean of 32 ± 6 years. Majority of the patients (64.6%) were aged 25-35 years. Similar findings were reported by other researchers.^{11,13} Abnormalities of the fallopian tubes was seen in 51.1% of the patients in this study. Similar but higher findings of were reported from Maiduguri in Nigeria, Kampala in Uganda and Addis Ababa, Ethiopia^{9,14,15} The rather high incidence of fallopian tubal abnormality in this study further emphasizes the significance of tubal factor in patients with infertility and the need to guard against tubal damage in women of reproductive age. Bilateral tubal occlusion was significantly higher than occlusions involving a single tube.

This was seen in 99 (28.3%) patients. This is comparable with the findings of 32.9% and 27.5% in this environment in previous reports.^{13,14} However, a higher prevalence of 65.5% was observed by scholars researching in the same field in Johannesburg, South Africa.¹⁶ This variance was mostly due to the geographical location, developmental status of Johannesburg and the associated poor health indices in 1999 when the study was carried out.

The common pitfall of HSG is non opacification from cornual or isthmic occlusion which may be due to spasm or pathology. These may be difficult to differentiate. Radiologically, cornual spasm is characterized by round cornual contour while isthmic spasm shows tapered termination.¹⁷ Antispasmodic was used in this study to reduce occlusions attributable to spasm. However, tubal spasm could not be entirely ruled out. Laparoscopy may be useful in differentiating cornual spasm from cornual occlusion. A newly

described radiological technique; selective ostial salpingography can also be used to differentiate true mechanical obstruction from spasm without subjecting the patient to laparoscopy.⁶

The different individual tubal findings in primary and secondary infertility appear numerically higher in those with secondary infertility. The overall abnormal tubal appearances in both primary and secondary infertility were seen in 31 (17.3%) and 148 (82.7%) patients respectively and shows a significant difference in the tubal findings ($p=0.022$). Previous studies revealed that tubal pathology is significantly associated with secondary infertility.^{7,19} This is most likely due the fact that a significant proportion of patients with secondary infertility might have had postpartum infections, septic abortions and sexually transmitted that was not properly managed.

Hydrosalpinx was another fallopian tubal abnormality observed in this study. It is a result of fallopian tubes inflammation following infections of the genital tract.⁷ The fimbrial ends are eventually occluded due to adhesions leading to collection of the secretions in the lumen with gradual distension of the fallopian tube. The frequency of 7.7% reported for hydrosalpinx in this study is quite distant from 33.4% reported over two decades ago from Ilorin.¹⁶ This may most probably be due to increase awareness and improvement in health care delivery over the years.

The contribution of right hydrosalpinx appears to be higher than left hydrosalpinx. This was in agreement with earlier reports.^{12,16} However, this finding is at variance with that of Akinola and colleagues¹⁹ who found left hydrosalpinx to be commoner. Some researchers are of the opinion that the presence of the appendix on the right side may predispose to this increase.^{12,16}

The data from this study shows that hysterosalpingography has a high diagnostic yield for tubal abnormalities. This underscores the need for HSG to remain as an integral part of female subfertility work-up.

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