

THE PATTERN OF HYSTEOSALPINGOGRAPHIC FINDINGS IN WOMEN BEING INVESTIGATED FOR INTERTILITY IN NNEWI, NIGERIA

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ABSTRACT

Background: Tubal occlusion is the commonest cause of female infertility in the developing societies. Hysterosalpingography remains a vital method of assessing tubal patency especially in resource limited settings such as ours.

Objective: To review the pattern of hysterosalpingographic findings among women being investigated for infertility in Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria over a period of five years (2001-2005).

Method: The data obtained from the request forms and radiologists' reports were analyzed using SPSS version 11. The level of statistical significance was set at $p < 0.05$.

Results: Of the 320 studied, 230 were found suitable for analysis. Their ages ranged from 20 to 44 years (mean 32.8 ± 5.8 years).

The indications were primary infertility in 103 (44.8%), secondary infertility in 88 (38.3%), while in 39 (16.9%) patients the type of infertility was not specified. The reports revealed that 67 (29.1%) had normal HSG. Cervical abnormalities were found in 34 (14.8%), uterine cavity abnormalities in 108 (47.0%).

Tubal pathologies were seen in 100 (43.5%) with bilateral tubal occlusion in 43 (18.7%) and bilateral hydrosalpinges in 6 (2.6%) patients.

Conclusion: Tubal pathology remains a major contributor to female infertility in this part of the world.

Key Words: Pattern, Hysterosalpingography, Infertility.

(Accepted 19 June 2009)

INTRODUCTION

Hysterosalpingography (HSG) is the radiographic evaluation of the cervical canal, the uterine cavity and fallopian tubes after injection of a radio opaque medium through the cervical canal^{1,2}. This test should normally be performed in the follicular phase of the cycle. Laparoscopic chromopertubation is another method of assessing tubal patency, though this cannot assess the cervical canal and the uterine cavity. This limitation makes HSG to still be relevant (at least as a complementary test), even in technologically advanced societies. However, in such centres fluoroscopy with image intensification are used to obtain the best results. Hysterosalpingo-Contrast Sonography (HYCOSY) is gaining acceptance as an alternative approach³, this is an ultrasound based method in which the contrast is injected into the fallopian tubes through the cervical canal. When HSG is properly performed and the uterine cavity shows no abnormality, hysteroscopy is not likely to reveal an abnormality¹. Insufficient injection of dye will give rise to an incomplete study, while excess injection of dye creates difficulty in

interpretation of the result.⁴ Hysterosalpingography is primarily diagnostic but it can occasionally prove to be therapeutic⁵.

The test is contraindicated in pregnancy and active pelvic infection⁶. The possible complications associated with HSG are pain, pelvic infection, haemorrhage and vasovagal attacks⁶.

The prevalence of infertility in most countries of sub-Saharan Africa exceeds 15%, while in the United Kingdom and the United States; it is estimated to be about 6% and 10% respectively⁷. Community-based studies in some parts of Nigeria reported rates of infertility as high as 45%⁸. Infertility in most African communities carries several stigmas, causing marital disharmony, social rejection and physical violence against women⁷.

The aim of this study is to review the pattern of Hysterosalpingographic findings among women being investigated for infertility in our centre.

MATERIALS AND METHODS

This retrospective study was carried out in the department of Radiology, Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria. This is a tertiary health institution serving as a referral centre to health facilities in Anambra State and parts of Imo,

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Abia, Enugu and Delta States. The request forms of all the patients that had HSG over a 5year period (January 2001-December 2005) were analyzed for age and indications for the test. The Radiologists' reports were also analyzed for abnormalities in the cervical canal, uterine cavity and fallopian tubes. The data obtained were analyzed using SPSS version II. The level of statistical significance of the study findings was set at $p < 0.05$.

RESULTS

During the period under review 320 HSG were performed but because of poorly completed request forms 230 were considered suitable for analysis.

Table 1 shows the age distribution of the patients. Their ages ranged from 20-44 years with a mean of 32.8 ± 5.8 years. More than half (54.4%) of them were in the age range of 25-34 years.

Table 2 shows the indications for HSG. Primary infertility was more frequent, 103(44.8%) patients, while secondary infertility was the indication in 88(38.3%) patients. For the remaining 39(14.8%) patients the type of infertility was not specified. When the indication was further analyzed by age group, primary infertility was commoner among the younger age group (20-34 years), but for the older age group (35-44 years) secondary infertility was commoner as shown in the table.

Table 3 shows the pattern of cervical findings. The patients with abnormal cervical findings were 34(14.8%), with irregular outline accounting for majority (44.1%) of the cervical abnormalities.

Table 4 shows the pattern of uterine cavity findings. Abnormal findings were reported in 108(47.0%) patients.

The abnormalities reported were Smooth filling defects 39(36.1% of 108), small uterine cavity and uterine displacement 16(14.8%) respectively and irregular outline 15(13.9%), stretched and elongated uterine cavity 6 (5.6%). There was no congenital abnormality seen in this series. The use of vulsellum forceps to pull and steady the uterus (as is our practice in this centre), makes any uterine displacement significant.

Table 3: Pattern of HSG cervical findings.

Age in years	Pattern of HSG cervical findings							
	Irregular outline N=15 (%)		Narrowed N=9 (%)		Dilated N=4 (%)		Filling defect N=6 (%)	
25-29	4	26.7	1	11.1	2	50.0	1	16.7
30-34	3	20.0	3	33.3	1	25.0	2	33.3
35-39	4	26.7	2	22.2	1	25.0	2	33.3
40-44	4	26.7	3	33.3	0	0.0	1	16.7

The proportion of patients with abnormal cervical findings was 34 (14.8%), with irregular outline accounting for majority (44.1%) of them.

Table 5 shows the pattern of tubal findings. Bilateral tubal occlusion was reported in 43(18.7%) and bilateral hydrosalpinges reported in 6(2.6%).

Unilateral tubal blockage and unilateral hydrosalpinx are as shown in the table. Dilated and beaded tubes were also found as shown in the table.

Overall, 100(43.5%) patients had some form of tubal abnormality. Tubal occlusion being the commonest tubal pathology reported.

A total of 320 HSG results were collated. Ninety of them were rejected because of improper recording or absence of age. Thus, only 230 results were then analysed and the result is as presented below.

Table 1: Age distribution of the Patients.

Age in years	N =230	(%)
20-24	10	4.3
25-29	65	28.3
30-34	60	26.1
35-39	57	24.8
40-44	38	16.5
Total	230	100

The mean age of the respondents 32.8 ± 5.8 years,

Table 2: Pattern of indications for the HSG.

Age in years	Indications for HSG					
	Primary Infertility N=103 (%)		Secondary Infertility N=88 (%)		Unspecified N=39 (%)	
20-24	7	6.8	3	3.4	0	0.0
25-29	30	29.1	21	23.9	14	35.9
30-34	26	25.2	23	26.1	11	28.2
35-39	25	24.3	26	29.5	6	15.4
40-44	15	14.6	15	17.0	8	20.5

Among the patients with known indications primary infertility was commoner overall, while secondary infertility was commoner in the older age groups. (35-44 yrs)

Table 4: Pattern of HSG uterine findings.

Age (in years)	Smooth filling defects N=39 (%)		Irregular outline N=15 (%)		Distorted & enlarged N=3 (%)		Small & Irregular N=16 (%)		Irregular filling defect N=13 (%)		Displaced N=16 (%)		Stretched & elongated N=6 (%)	
20-24	0	0.0	0	0.0	0	0.0	2	12.5	0	0.0	2	12.5	0	0.0
25-29	5	12.8	2	13.3	0	0.0	3	18.8	2	15.4	2	12.5	2	33.3
30-34	12	30.8	4	26.7	0	0.0	1	6.2	4	30.8	7	43.8	2	33.3
35-39	5	12.8	6	40.0	2	75	8	50.0	7	53.8	3	18.7	2	33.3
40-44	17	43.6	3	20.0	1	25	2	12.5	0	0.0	2	12.5	0	0.0

Abnormal uterine findings were reported in 108 (47.0%) patients. The common defects reported were smooth filling defects 39 (61.1% of 108), small and irregular uterine cavity, uterine displacement 16 (14.8%) respectively, irregular outline 15 (13.9%), irregular filling defect 13 (12.0%) stretched and elongated uterine cavity 6(5.6%), and distorted & enlarged cavity, 3(2.8%).

Table 5: Pattern of HSG tubal findings.

Age (in years)	Right tube N=62 (%)				Left tube N=49 (%)				Both tubes N=43 (%)							
	Blocked	Beaded	Hydrosalpinx	Dilated	Blocked	Hydrosalpinx	Dilated	Hydrosalpinx	Blocked	Hydrosalpinx	Dilated	Hydrosalpinx				
20-24	1	1.6	0	0.0	0	0.0	0	0.0	1	2.0	1	7.7	0	0.0	0	0.0
25-29	11	17.7	1	100.0	4	40.0	0	0.0	7	14.3	4	30.8	7	16.3	1	16.7
30-34	20	32.3	0	0.0	3	30.0	1	50.0	15	30.6	6	46.2	14	32.6	4	66.6
35-39	18	29.0	0	0.0	2	20.0	0	0.0	18	36.7	0	0.0	15	34.9	1	16.7
40-44	12	19.4	0	0.0	1	10.0	1	50.0	8	16.3	2	15.3	7	16.3	0	0.0

Overall, 100(43.5%) patients had some form of tubal pathology. Seventy five women (32.6%) had abnormal findings involving the right fallopian tube, 62 (27.0%) had abnormal findings involving the left fallopian tube, while 49(21.3%) had abnormal findings in both tubes. Tubal blockage was found to be the commonest abnormal finding involving the fallopian tubes.

DISCUSSION

Laparoscopic chromopertubation remains the gold standard in the diagnosis of tubal disease⁹. However, HSG is still widely used, since it has the advantage of revealing abnormalities in the cervical canal and uterine cavity. Furthermore, HSG is less invasive and often less expensive. Cost is a major consideration in resource limited settings such as ours. In our centre, HSG is usually the first line test for tubal patency. Laparoscopic chromopertubation is reserved for patients with inconclusive HSG results or cases of “unexplained infertility” with apparently normal HSG. Occasionally, some highly motivated patients desiring a facilitated work up may be offered Laparoscopic chromopertubation as first line investigation to save time, especially those with prolonged infertility.

This study revealed that the age group most frequently investigated for infertility is 25-29 years. This is consistent with the findings in a similar study carried out in Kampala Uganda in 2004, where the most commonly investigated age group was 26-30years¹⁰. Regarding the indications, primary infertility was found to be commoner in this study (44.8%), while secondary infertility was 38.3%, those with unspecified type of infertility was 14.8%. In another study done at Ladoke Akintola University

of Technology College of Health Sciences Oshogbo, Nigeria in 2006, out of 120 patients studied, secondary infertility was much more frequent (80%) whereas primary infertility was only 20%¹¹. A study carried out in Burkina Faso in 2002 also showed a preponderance of secondary infertility at 65.6%¹². In a study done in Thailand in 2005, patients with primary infertility were in the majority (72.03%)¹³. In our study secondary infertility was commoner among the older age group (35-44years) while primary infertility was commoner among the younger age group (22-34years).

It is quite likely that studies where younger people are in the majority will record a higher incidence of primary infertility.

Analysis of the HSG reports showed that 67 (29.1%) patients had apparently normal HSG. In a study carried out in Port Harcourt, Nigeria in 2005, 44.2% of those studied had normal HSG¹⁴. In the Uganda study only 16.6% had normal HSG¹⁰. However, the Port Harcourt study did not analyze cervical abnormalities, which may have accounted for the higher percentage of the normal results reported. The incidence of cervical abnormality in our study was 14.8%, with irregular outline accounting for majority (44.1%) of cervical abnormalities.

Abnormal uterine findings were reported in 47% of

the patients, while the study in Port Harcourt showed 26.8% uterine abnormality¹⁴. The most frequent uterine abnormality we observed was smooth filling defects (36.1%). The least frequent uterine abnormality found was stretched and elongated uterine cavity(5.6%). Both of these abnormalities mainly result from uterine mass effect, most frequently caused by leiomyoma.

The incidence of tubal pathology was 43.5%. Our finding was closely similar to the 40% incidence of tubal pathology reported in the Oshogbo study¹¹. But the study in Burkina Faso reported a much higher incidence (62%) of tubal pathology¹². Bilateral tubal occlusion was found in 43(18.7%) patients and bilateral hydrosalpinges in 6(2.6%) patients. Unilateral tubal occlusion, unilateral hydrosalpinx, dilated and beaded tubes were also found as shown in table V. In the Port Harcourt study only 4% had bilateral tubal occlusion but they reported a higher incidence of bilateral hydrosalpinges (5%)¹⁴. A greater proportion (32.6%) of our patients had abnormal HSG findings involving the right fallopian tube when compared to the involvement of the left (27.0%), however the difference is not statistically significant ($\chi^2=1.76$; $P=0.185$).

This study demonstrated high prevalence of tubal pathology among infertile women in this environment most of which probably resulted from chronic pelvic inflammatory disease.

It is also worthy of note that the presence of uterine mass (mainly fibroids) was demonstrated in a large proportion of these patients as can be seen from the uterine cavity findings. Uterine fibroids is common in this environment; occurring in as much as 20-30% of women above the age of 30years. It is 3-9 times more common in the blacks than Caucasians¹⁵.

In conclusion, the high incidence of birth canal pathology especially tubal pathology revealed by this study shows that HSG is still a very vital tool for infertility work up. Improvement in the equipment and the skill of the Radiologists will improve the accuracy and reliability of the results. Request forms for specialized investigations such as HSG should be completed by trainee specialists not by interns, to supply all the necessary information.

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