

Hysterosalpingographic Findings Among Infertile Women: Review at a Tertiary Health Care Institution in Nnewi, South-east Nigeria

Eleje GU, Okaforcha EI, Umeononihu OS, Udegbunam OI, Etoniru IS, Okwuosa AO

ABSTRACT

Background: Tubal pathology is a key factor in infertility particularly in the tropics. Hysterosalpinography remains a vital tool for investigating tubal patency.

Objective: This was to determine the pattern of hysterosalpingographic (HSG) findings among infertile women in a tertiary health care institution.

Materials and Methods: The case files of 183 infertile women who had HSG between 1st January 2006 and 31st December 2010 at the Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, South-east Nigeria were reviewed retrospectively. The data was analysed using Epi-info 2008 version 5.3.1.

Results: A total of 183 patients out of 320 new patients investigated for tubal factor infertility were reviewed. Their ages ranged from 25 to 49 years with a mean age of 34.1 ± 6.3 years. Forty three patients (23.5%) had primary infertility while 143(76.5%) had secondary infertility. The commonest tubal pathology was bilateral tubal blockage 71 (38.8%). Nine (4.9%) patients had right tubal occlusion, 23 (12.6%) had left tubal occlusion, 8(4.4%) had right-sided hydrosalpinx while 15 (8.2%) had left-sided hydrosalpinx.

Conclusion: Bilateral tubal occlusion remains the major tubal pathology in female infertility in Nnewi, Nigeria. This may probably occur following sexually transmitted infections, mismanaged pregnancies and septic abortions, since the majority of the women presented with secondary infertility. Measures to prevent the occurrence of these infections *ab initio* are paramount.

Key words: Hysterosalpingography, infertile women, Nnewi

INTRODUCTION

Hysterosalpingography (HSG) remains the most widely used and readily available radiological investigation for infertile women in Nigeria, apart from ultrasound scanning^{1,2}. It has widely replaced Rubin's test for assessing tubal patency in infertile women², and is

Department of Obstetrics and Gynaecology, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria
*E-mail: georgel21@yahoo.com

routinely performed on women evaluated for infertility at Nnamdi Azikiwe University Teaching Hospital (NAUTH), which is the main referral hospital in Anambra State and environs. Records show that infertility ranks high on the list of indications for attendance of gynecological out-patient clinics. It is documented that 15% of all women experience primary or secondary infertility at one point in time in their reproductive life^{3,4}. Tubal causes of infertility account for 35% to 40% of cases of infertility⁴⁻⁶.

Nevertheless, HSG still remains the most commonly used technique for evaluation of tubal blockage in Nnewi. Other techniques for assessing structural causes of female infertility like sonohysterography (Hycosy), laparoscopy and dye test and hysteroscopy are increasingly used elsewhere^{7,8}. Despite the advantage of being radiation free, they lack the clear tubal resolution and definition that conventional x-ray HSG offers^{1,7}.

Abnormalities and /or obstruction of the fallopian tubes due to congenital and acquired causes can impair fertility and or implantation. The pathologies detected on HSG may include tubal blockage, peritubal adhesion, submucosal leiomyoma, endometrial polyp, endometrial carcinoma, synechiae and adenomyosis⁸. The degree of tubal obstruction is best diagnosed using HSG⁹.

Some authors have demonstrated a higher likelihood of tubal obstruction on HSG in women with secondary infertility when compared with those with primary infertility and recommend routine evaluation for tubal patency in patients with secondary infertility¹⁰. Thus, hysterosalpingography remains an essential radiological technique for evaluating tubal patency in an infertile patient.

This study aims at evaluating the pattern of HSG findings in infertile women presenting at Nnamdi Azikiwe University Hospital (NAUTH), Nnewi, South-east Nigeria. This study is therefore necessary, as it will help strengthen the usefulness of HSG in tubal factor infertility.

MATERIALS AND METHODS

A retrospective review of records of 183 infertile women who underwent HSG during their infertility work-up at Nnamdi Azikiwe University Teaching Hospital, Nnewi, South-east Nigeria between 1st January 2006 and 31st December 2010 was undertaken.

The names and hospital numbers of all cases of infertility in the hospital over the 5-year period were obtained from the register of the gynaecology clinic.

The information on the age, parity, type of infertility and duration of infertility were all extracted from the files. The HSGs were performed between the 7th and 10th day of the menstrual cycle. Water-soluble contrast media was used under aseptic conditions. Out of 320 new patients investigated for tubal factor infertility, only 183 had the documented HSG and were used in this study. All patients who did not have HSG were excluded from the analysis.

The clinical data and radiological findings were entered into a pre-coded data sheet. The data obtained were put in percentages, mean and standard deviation. The data was analysed using Epi Info 2008 version 5.3.1.

RESULTS

Total number of patients examined was one hundred and eighty-three out of 320 patients investigated for tubal factor infertility. One hundred and forty three (76.5%) had secondary infertility and 43 (23.5%) had primary infertility.

The age range of the patients was between 15 and 54 years with a mean of 34.0 ± 6.3 years. This is shown in Table 1 while the parity distribution is shown in Table II majority were nulliparous.

Table III shows the relationship between previous pelvic infection and abnormal findings at HSG. As shown in Table IV, the duration of infertility ranges from 1 year to 16 years. The various risk factors seen in patients is shown in Table III while the duration of infertility is shown in Table IV.

Table V illustrates the HSG findings of the one hundred and eighty-three patients. Forty (21.9%) patients had the fallopian tubes outlined with normal caliber and free peritoneal spill. The fallopian tubes were classified bilaterally blocked in 71 (38.8%) patients.

TABLE I: AGE OF PATIENTS WHO HAD HSG .

Age (Years)	Frequency (%)
15 – 19	3(1.6)
20 – 24	8(4.3)
25 – 29	22(12.0)
30 – 34	43(23.5)
35 – 39	51(32.2)
40 – 44	27(14.8)
45 – 49	16(8.7)
50 – 54	5(2.7)
Total	183(100.0)

Table II: PARITY OF PATIENTS WHO HAD HSG IN NAUTH, NNEWI.

Parity	Frequency (%)
0	111(60.7)
1	43(23.5)
2-4.1	29(15.9)
> 5	0 (0)
Total	183(100.0)

**Table III
PREVIOUS PREGNANCY LOSSES / STI IN PATIENTS THAT HAD HSG IN NAUTH, NNEWI.**

Variable	Frequency (%)
TOP	41(22.4)
Miscarriage	46(25.1)
STI	78(42.6)
None of the Above	18(9.8)
STI =	sexually transmitted Infection
TOP =	Termination of pregnancy

**Table IV
DURATION OF INFERTILITY IN PATIENTS THAT HAD HSG**

Duration of infertility (Years)	Frequency (%)
2	89(48.6)
3	19(10.4)
4	14(7.7)
>5	61(33.3)
Total	183(100.0)

Table V: TUBAL FINDINGS ON HSG

Tubal Findings	Frequency (%)
Normal	40(21.9)
Right Tubal Occlusion	9(4.9)
Left Tubal Occlusion	23(12.6)
Bilateral Hydrosalpinx	71(38.8)
Bilateral Hydrosalpinx	17(9.3)
Right Hydrosalpinx	8(4.4)
Left Hydrosalpinx	15(8.2)

DISCUSSION

Hysterosalpingography (HSG) is still an integral part of gynecological evaluation of infertile couple and its value has not been underestimated in modern gynecological practice despite emerging use of laparoscopy and dye test in developing countries.

Infertility is regarded as an indelible problem and a major striking health problem in the lives of patients that have it and the main indication for HSG still remains infertility. The incidence and causes of

infertility, primary or secondary varies in different parts of the world. In this study, the incidence of secondary infertility was higher than that of primary infertility with a ratio of 3:1. This is similar to the findings of others in the sub-region^{1,2,3,5}. However this differs from reports from some other studies where it has been noted that primary infertility is commoner^{11,12,13}. The high rate of secondary infertility and the fact that there was a high rate of tubal related abnormalities could be due to post abortion sepsis, puerperal sepsis and/ or sexually transmitted infections (STIs). This could also explain why in this study, more than 65% of patients with abnormal HSG findings either had previous termination of pregnancy or sexually transmitted infections. In contrast, the prevalence of primary infertility is higher than secondary infertility in Kano, Nigeria because the predisposing factor for the latter such as sexually transmitted infections, pelvic inflammatory disease and induced abortion are not common in their society because of early marriage¹⁴ unlike in the South-Eastern part of the country, including Nnewi.

Bilateral tubal occlusion was the commonest finding in this study. This is similar to the study done in the Nigerian sub-region and beyond¹⁵. This is however, different from most studies that reported hydrosalpinx as the commonest. Bilateral tubal blockage was found in 71 (38.8%) patients while unilateral right tubal blockage occurred in 9 (4.9%) patients and 23 (12.6%) patients left tubal occlusion.

In this study, normal findings were seen in 21.9% indicating that the cause of their infertility was not physical. It is noteworthy that many women with infertility are investigated without investigating their male counterparts and so their spouses might be infertile.

Hysterosalpingography is still widely used in the investigation of infertility, recurrent abortions and for follow-up after tubal surgery. Other investigations such as sonohysterography, laparoscopy and dye test, and hysteroscopy are being increasingly advocated for but not yet readily available in south east Nigeria; thus HSG is still widely used. Though sonohysterography has been reported to be as sensitive as HSG in imaging uterine pathology, it has not yet been used in Nnewi².

Laparoscopy may be omitted in women with normal HSG or suspected unilateral distal tubal pathology on HSG^{16,17}, since study has not shown it to change the original treatment plan indicated by HSG in 95% of the patients⁵. However, laparoscopy should be recommended in cases with suspected bilateral tubal occlusion on HSG, since in one study, it altered the

original treatment plan in 30% of the patients from in-vitro fertilization (IVF) to induction of ovulation with intra uterine insemination (IUI)⁵.

This being a retrospective study, the clinical data obtained was limited and this made it difficult to elucidate the factors responsible. Therefore, a further study to elucidate this is recommended.

In conclusion, bilateral tubal occlusion remains the major tubal pathology in female infertility in Nnewi, Nigeria. Tubal blockages with subsequent tubal factor infertility are still common among infertile couples. This may probably be due to chronic pelvic inflammatory disease or pelvic infection following sexually transmitted infections, mismanaged pregnancies and septic abortions, since the majority of the women presented with secondary infertility. Measures to prevent the occurrence of these infections should be paramount.

REFERENCES

1. Karshima JA, Daru PA, Ekedigwe JE. Hysterosalpingographic evaluation of 998 consecutive infertile women in Jos, Nigeria. *Int J Gynecol Obst*. 2010; 108(3): 255-257.
2. Okafor CO, Okafor CI, Okpala OC, Umeh E. The pattern of hysterosalpingographic findings in women being investigated for infertility in Nnewi, Nigeria. *Niger J Clin Pract*. 2010; 13(3):264-7.
3. Ibekwe PC, Udensi AM, Imo AO. Hysterosalpingographic findings in patients with infertility in South eastern Nigeria. *Niger J Med*. 2010; 19(2):165-7.
4. Streda R, Mardesic T, Kult D, Lazarovská S, Slámová J, Voboril J. The diagnostic value of hysterosalpingography in the diagnosis of tubal disease. *Ceska Gynekol*. 2009; 74(1):18-21.
5. Lavy Y, Lev-Sagie A, Holtzer H, Revel A, Hurwitz A. Should laparoscopy be a mandatory component of the infertility evaluation in infertile women with normal hysterosalpingogram or suspected unilateral distal tubal pathology? *Eur J Obstet Gynecol Reprod Biol*. 2004; 114(1):64-8.
6. Adesiyun AG, Ameh CA, Eka A. Hysterosalpingographic tubal abnormalities and HIV infection among black women with tubal infertility in sub-Saharan Africa. *Gynecol Obstet Invest*. 2008; 66(2):119-22.
7. Torre A, Pouly JL, Wainer B. [Anatomic evaluation of the female of the infertile couple]. [Article in French]. *J Gynecol Obstet Biol Reprod (Paris)*. 2010; 39(8 Suppl 2):S34-44.
8. Eng CW, Tang PH, Ong CL. Hysterosalpingography: Current Applications. *Singapore Med J*. 2007; 48(4): 368-73.
9. Freeman – Walsh CB, Fahrig R, Ganguly A, Rieke

- V, Daniel BL. A Hybrid Radiography/MRI System for Combining Hysterosalpingography and MRI in infertility Patient. *Am J Roentgenol.* 2008; 190 (2): 157-160.
10. Lash MM, Yaghamee A, Strohsnitter W, Lalwani S. Association between secondary infertility and fallopian tube obstruction on hysterosalpingography. *J. Reprod. Med,* 2008; 5 (9): 677-680.
 11. Ikechebelu JI, Adinma JIB, Orié EF, Ikegwuonu SO. High prevalence of male infertility in South-eastern Nigeria. *Journal of Obstetrics & Gynaecology.* 2003; 26(6): 657-659.
 12. Bello TO. Pattern of tubal pathology in infertile woman on hysterosalpingography in Ilorin, Nigeria. *Annals of African Medicine* 2004. 3 (2): 77-79.
 13. Eng CW, Tang PH, Ong CL. Hysterosalpingography: Current Applications. *Singapore Med J.* 2007; 48(4): 368-73.
 14. Umar UA, Ibrahim SA, Omoloe-Ohonsi A, Yakassai IA. Comparative Evaluation of Tubal Patency; Hysterosalpingography versus laparoscopy. *International Journal of Academic Research,* 2011; 3 (4): 70-74.
 15. Kiguli-Malwade E, Byanyima RK. Structural findings at hysterosalpingography in patients with infertility at two private clinics in Kampala, Uganda. *Afr. Health Sci.* 1994; 4 (3): 178-181.
 16. Boudhraa K, Jellouhi MA, Kassaoui O, Ben Aissia N, Ouerhani R, Trik A, Gara MF. Role of the hysteroscopy and laparoscopy in management of the female infertility: about 200 cases. *Tunis Med,* 2009; 87 (1): 55-60.
 17. Odusoga OL, Olayede OAO, Adewunmi AA, Fakoya TA. Experience with Laparoscopy in Evaluation of Infertile women in Shagamu. *Nig J of Clin Practice,* 2002; 5 (2): 127-129.