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PATTERN AND CORRELATES OF ABNORMAL TUBAL FINDINGS IN HSG STUDY OF WOMEN WITH INFERTILITY IN ENUGU, NIGERIA

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ABSTRACT

Introduction/Background: The fallopian tubes play a vital role in female fertility. Hysterosalpingography (HSG) is a foremost investigation in assessing tubal causes of infertility. The tubal findings may have significant relationships with some clinical features of the subjects. In the available literature, there was a paucity of studies showing such relationships. **Objective:** To ascertain the pattern of tubal lesions seen with HSG study of women with infertility and test for correlations between these findings and some clinical features of the subjects. **Methodology:** A prospective descriptive study with 200 subjects and analyzed with SPSS version 21. $P \leq 0.05$ was considered statistically significant. **Results:** The tubes were abnormal in 51% of the subjects; with tubal occlusion being the commonest and occurring in 31.5% (bilateral in 16.5%, left unilateral in 6.5%, and right unilateral in 8.5%) and peritubal adhesions occurring in 17% (bilateral in 6.5%, left unilateral in 6.5% and right unilateral in 4.0%), while hydrosalpinges were demonstrated in 2.5% and beaded appearances were seen in 1%. The pairs of age and tubal occlusion, secondary infertility and tubal occlusion, secondary infertility and peritubal adhesions, and history of D&C and peritubal adhesions showed significant correlations (with P values of 0.003, <0.001, <0.001 and 0.023 respectively); while the pairs of age and peritubal adhesions, parity and peritubal adhesions, parity and tubal occlusion, and D&C and tubal occlusion showed no significant correlations. **Conclusion:** HSG demonstrated tubal causes of female infertility and these correlated well with some clinical presentations of the subjects.

KEYWORDS: Infertility, hysterosalpingoraphy, tubal occlusion, peritubal adhesions.

INTRODUCTION

Infertility is the inability of a couple to achieve conception after twelve months or more of unprotected coitus of average frequency.[1] It can be due to male or female factors.[2] In our society, female factors are the commonly presumed causes of infertility among couples and infertile women are viewed with societal disapproval.[3] In Nigeria, infertility is the commonest indication for hysterosalpingography,[4,6,7,10] and can be primary or secondary.[4,8,11] Peritubal adhesions frequently cause infertility by occluding the abdominal orifice of the tube (anatomic blockage), or by retracting the ovary and/or tube thereby increasing the distance between the ovary and the orifice of the tube (functional blockage).[12] Tuberculosis (TB) of the fallopian tube is another important cause of infertility especially in developing countries.[13]

Radiological procedures play a major role in the diagnosis and management of infertility in women.[14] Hysterosalpingography (HSG) can demonstrate the cervical canal, uterine cavity and the lumen of the fallopian tubes and remains the best modality to image the fallopian tubes.[5,15,17] These tubal findings on HSG may have significant relationships with some clinical

features of the patients. In the available literature, there was a paucity of studies showing such relationships.

MATERIALS AND METHODS

This is a prospective and descriptive study of women with infertility. Study was carried out at department of Radiation Medicine, University of Nigeria Teaching Hospital (UNTH) Enugu and Hansa Clinics (a radiological centre) also located in Enugu.

Institutional ethical approval was obtained from the ethical committee prior to the study. Patients with history of infertility and were booked for HSG and who gave their consent for the study, were recruited over an interval of six months and in a consecutive pattern. Patients that were booked on account of recurrent abortion or who did not give their consent were excluded.

Ten day rule was adhered to. Preliminary film of the pelvis was taken in anterior-posterior projection. It was used to check for any abnormal pelvic calcification (that may constitute a misleading information when radio-opaque contrast medium is administered) and also to assess the exposure factors. A spasmolytic agent (Hyoscine bromide, 20mg) was administered intravenously when necessary. With the patient in lithotomy position, and under asceptic condition, the cervix was displayed with Cusco's speculum introduced through the vagina. Anterior lip of the cervix was held firmly in place with volsellum forceps and uterus was sounded. Wikinson's cannula was introduced through the external os and serial volume of 5-60ml of sodium diatrizoate/meglumine diatrizoate 76% (Urografin 76%) was injected to demonstrate the cervical canal, uterine cavity, fallopian tubes and peritoneal spill. Images were acquired (while patient is holding her breath) in anterior posterior projection with screen-film radiography and processed manually.

The Statistical Package for Social Sciences (SPSS) version 21.0 by IBM Corp. Armonk, New York, USA was used for the analyses.

Scale categories (quantitative data), were analyzed using frequency and further by the measures of central tendencies and dispersions. Paired numerical / nominal categories were tested for paired sample correlation. P-value ≤ 0.05 was considered statistically significant. Missing data and data outliers were discarded and not used for the analyses.

RESULTS

Two hundred (200) subjects were studied. Age range was 20-49 years and the mean age was 33.1 ± 5.6 years. The age group with the highest frequency of distribution was 30-34 years, followed by 35-39 years; while that with the lowest frequency was 45-49 years followed by 20-24 years. Primary (1°) infertility occurred in 20.5% of the subjects, while secondary (2°) infertility occurred in 79.5%. Sixty-six percent of the subjects were nulliparous, 32% were either uniparous or multiparous, 2% were grand multiparous (parity ≥ 5).

Both tubes were normal in 98 subjects (49%); while in 51%, the tubes were abnormal: bilateral in fifty eight subjects (29%), left unilateral in 12% and right unilateral in 10%. Table 1 shows the tubal findings.

The commonest tubal abnormality present was tubal occlusion and occurred in 63 subjects (31.5%); bilateral in 16.5%, left unilateral in 6.5%, and right unilateral in 8.5%. The occlusion was cornual in location in 30%, isthmic in 2.5%, and ampullar in 0.5%. Peritubal adhesions occurred in 34 subjects (17%); 6.5% showed bilateral involvement, 6.5%, left unilateral, and 4.0%, right unilateral. Perifimbrial adhesions were seen in 29 subjects (14.5%); 5.5% were bilateral, 5.4% left unilateral, and 3.5% right unilateral. Hydrosalpinges [see fig.1 (A and B)] occurred in 2.5% of the subjects. It was bilateral in 1.0%, left unilateral in 1.0% and right unilateral in 0.5%. Loculated spill / peritoneal adhesions [see fig.2 (A and B)] were seen in 3.5%. The tubes appeared beaded in two subjects (1%).

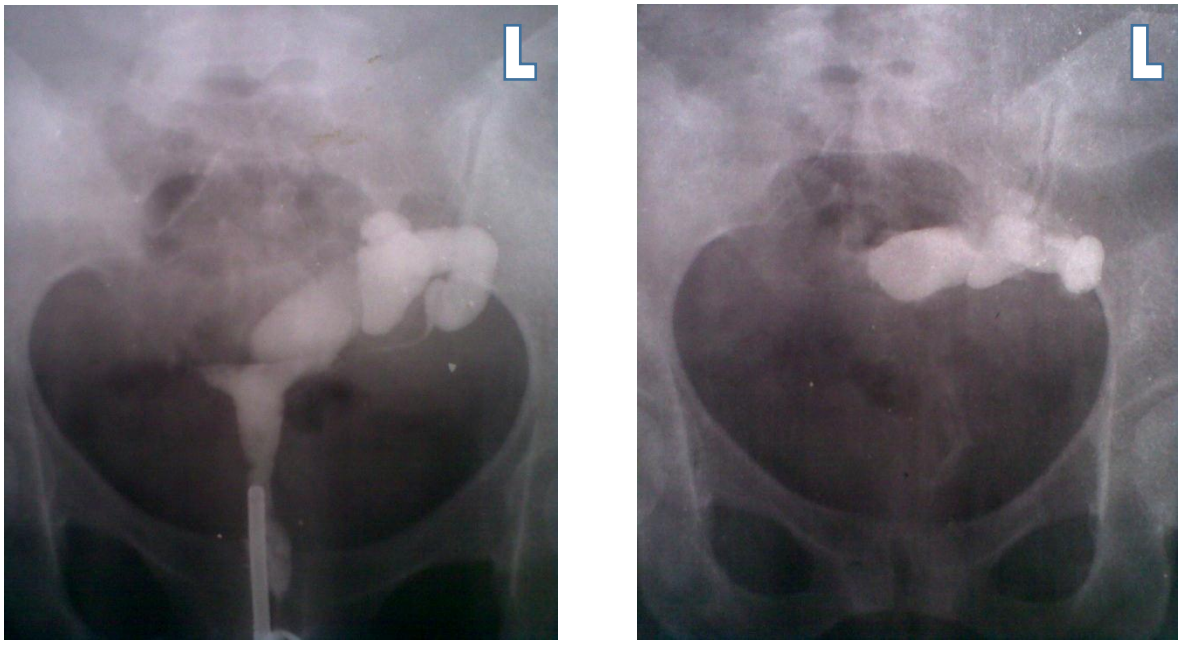
Table 1: Tubal and tubal related abnormalities seen on HSG.

Variable	Frequency	Percentage
Normal	98	49.0
Tubal occlusion	63	31.5
- Cornual	60	30.0
- Isthmic	5	2.5
- Ampullar	1	0.5
Peritubal adhesions	34	17.0
- Hydrosalpinges	5	2.5
- Perifimbrial	29	14.5
- Loculated spill	7	3.5
Beading	2	1.0

NB: Some subjects have multiple lesions

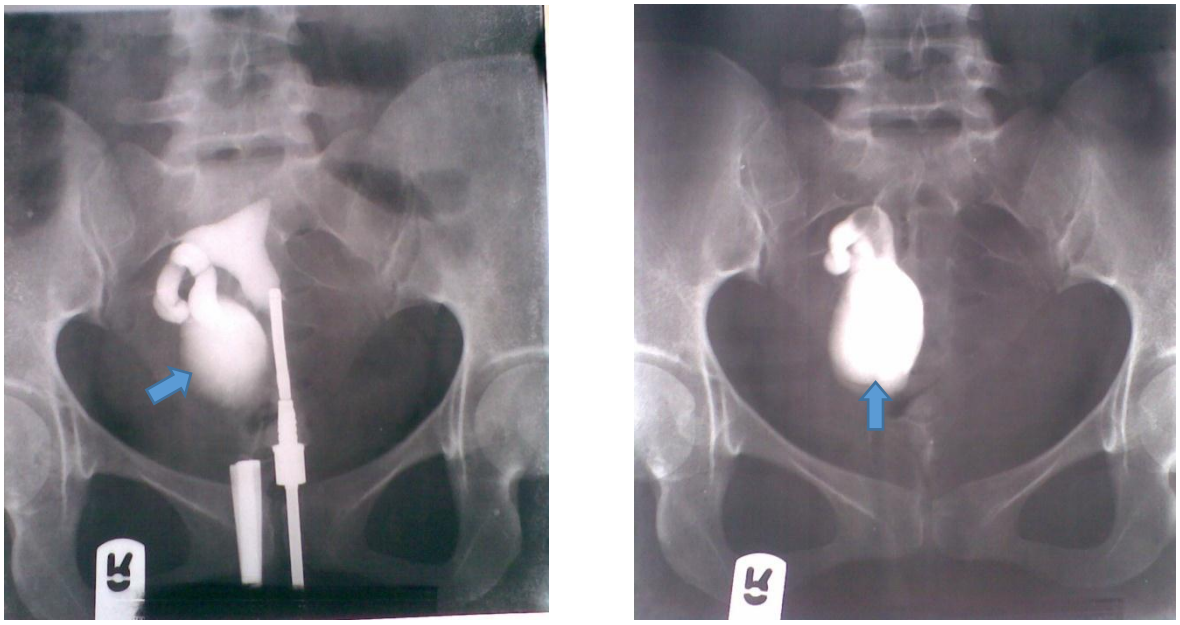
Table 2: Correlation of tubal findings with some clinical features of the subjects.

Pairs	Coefficient of correlation(R)	P-value
Age and tubal occlusion	-0.210	0.003
Secondary infertility and tubal occlusion	0.325	<0.001
Secondary infertility and peritubal adhessions	0.309	<0.001
D&C and peritubal adhesions	0.161	0.023



A **B**

Fig.1: (original): Left sided hydrosalpinx; ampullar dilatation with convoluted appearance of the left fallopian tube.



A **B**

Fig.2: (original): Right sided loculation of contrast (arrows) due to peritoneal adhesions.

The following pairs showed significant correlation (see table 2): age and tubal occlusion (P=0.003), secondary infertility and tubal occlusion (P<0.001), secondary infertility and peritubal adhesions (P<0.001), history of D&C and peritubal adhesions (P=0.023). There was no significant correlation between; age and peritubal adhesions, parity and peritubal adhesions, parity and tubal occlusion, history of D&C and tubal occlusion.

DISCUSSION

Secondary infertility (79.5%) was commoner in this study than the primary type (20.5%). This is in agreement with the findings by Anyanwu and Agwuna,[18] Akinola et al.[8] Botwe et al.[19] in Ghana, Kiguli-Malwadde and Byanyima.[20] in Uganda, and Kitilla.[21] in Ethiopia. On the contrary 1° infertility was found commoner than the 2° type by Admassie and Negatuy[22] in Ethiopia, Sinawat et al.[23] in Thailand, Malek et al.[24] in Egypt, and Felice et al.[25] in Italy. The causes of these differences are not obvious, but it appears that socio-cultural and religious factors play a role.

This study found bilateral normal tubes in 98 subjects (49%). This value is slightly higher than 45% reported by Anyanwu and Agwuna,[18] and higher than 33.8% reported by Abasiattai et al.[3] but lower than 56% reported by Eze et al.[26] Since 51% of the subjects had abnormal tubes, and 29% were bilaterally so, this study supports the idea that tubal factors are contributory to female infertility and should be considered seriously in its management.

The commonest tubal abnormality present was occlusion. The 31.5% recorded in our study was similar to that reported by Eze et al.[26] but lower than that reported by both Udobi and Aronu,[27] and Anyanwu and Agwuna.[18] The occurrence of bilateral tubal occlusion in 16.5% of the study is higher than that reported by Nwankwo and Akani[9] and Omidiji et al.[28] but lower than that of Eze et al.[26] Udobi and Aronu,[27] Dutta and Guha[29] in India, Kiguli-Malwadde and Byanyima.[20] in Uganda, and Kitilla.[21] in Ethiopia. In concordance with the findings of Akinola et al.[8] and Eze et al.,[26] our study found right sided occlusion commoner than the left. Anyanwu and Agwuna.[18] On the other hand reported equal incidence in right and left sided tubal occlusion. The incidence of cornual block found in our study was lower than that noted by Imo and Adeoye,[30] but higher than that of Sinawat et al.[23] The reasons for these variations are not obvious.

Malek et al.[24] in Egypt recorded a higher incidence of peritubal adhesions than that seen in our study, while Bacevac.[31] in Serbia indicated a lower incidence. Kiguli-Malwadde and Byanyima.[20] Noted higher incidence of perifimbrial and peritoneal adhesions than that seen in our study, but Anyanwu and Agwuna.[18] reported a lower incidence of perifimbrial adhesions.

Hydrosalpinges occurred in 2.5% of the present study. Udobi and Aronu,[27] in Awka (South-East Nigeria), Eze et al.[26] in Benin (South-South, Nigeria), Bello.[5] in Oshogbo (South West Nigeria) and Malek et al.[24] in Egypt all reported higher incidences. Beading of the fallopian tube occurred in 1.0%. This is lower than the incidence reported by Imo and Adeoye.[30] (1.4%) and Eze et al.[26] (1.5%) but higher than that reported by Akinola et al.[8] (0.5%).

The reviewed literature showed paucity of the correlation studies of tubal occlusion and the following variables: age, type of infertility, parity and history of previous D & C. There is also paucity of correlation study of peritubal adhesion with the aforementioned variables. However, the available correlation study by Eze et al.[26] found no statistically significant relationship between history of previous D & C and occurrence of tubal occlusion. This is in consonance with the finding in our study.

CONCLUSION

In this study, HSG demonstrated tubal causes of female infertility, notably tubal occlusion and peritubal adhesions, and these correlated well with some clinical features of the patients. It is therefore still recommended as important part of female infertility work-up. Some of these factors, however, did not correlate well with the clinical features. However, since there are few of these correlation studies in the available literature, more of such studies are further recommended.

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Conflict of Interest: None

REFERENCES

1. Eskondari N, Cadieux M. Infertility. In: DeCherneyAH, Nathan L, editors. Current Obstetric and Gynaecologic Diagnosis and Treatment. 9th ed. Lange Medical Books/McGraw Hill, 2003; 979-990.
2. Ibinaiye PO, Lawan RO, Polite O, Hamidu HU, Igashi B. Evaluation of pattern of uterine and cervical abnormalities potentially responsible for infertility in Zaria, Nigeria: Hysterosalpingographic assessment. Boi Med J, 2015; 12: 1-8.
3. Abasiattai AM, Edemkong II, Bassey EA. Hysterosalpingographic Findings Among Infertile Women in Uyo, South-Eastern Nigeria. West Afr J Radiol., 2007; 24-28.
4. Mgbor SO, Ezegwui HU, Obikili E, Ikeme ACC, Onuh AC, Onwuasoigwe C. Perception of Hysterosalpingogram by Infertile Women in a Developing Country. J Obstet Gynaecol., 2005; 504-5.
5. Bello TO. Pattern of Tubal Pathology in Infertile Women onHysterosalpingography in Ilorin, Nigeria. Annals of Afr Med., 2004; 77-79.
6. Zafarani F, Ghaffari F, Ahmadi F, Soleimani Mehranjani M, Shahrzad G. Hysterosalpingography in the Assessment of Proximal Tubal Pathology: A Review of Congenital and Acquired Abnormalities. Br J Radiol., 2021; 94: 20201386.
7. Oguntoyinbo AE, Amok AOD, Komolafe OF. Sonographic Assessment of Fallopian Tube Patency in the Investigation of Female Infertility in Ilorin, Nigeria. Afr J Reprod Health, 200; 100-105.
8. Akinola RA, Akinola OI, Fabamwo AO. Infertility in women: Hysterosalpingographic Assessment of

the Fallopian Tubes in Lagos, Nigeria. Educational Research and Review, 2009; 086-089.
9. Nwankwo NC, Akani CI. Pattern of Hysterosalpingographic Findings in Infertility in Port Harcourt. West Afr J Radiol., 2005; 15-19.
10. Arogundade RA, Awosanya GO, Adeyomoye AAO. Hysterosalpingography and Risks of HIV Dissemination in Women. Nig Hosp Pract., 2008; 37-41.
11. Bello TO. Tubal Abnormalities at Hysterosalpingography in Primary and Secondary Infertility. West Afr J Med., 2006; 130-133.
12. Karasick S, Goldfarb AF. Peritubal Adhesions in Infertile Women: Diagnosis With Hysterosalpingography. AJR 1989; 777-779.
13. Chavhan GB, Hira P, Rathod K, Zacharia TT, Chawla A, Badhe P, Parmar H Female Genital Tuberculosis: Hysterosalpingographic Appearances, BJR 2004; 164-169.
14. Ebrashy AN, Momtaz M, Shawky OA, Soliman EM, Maaty ZA. Three Dimensional Transvaginal Ultrasound in the Assessment of Uterine Lesions: When do We Really Need it. Mid East Fert Soc J., 2004; 79-83.
15. Eng CW, Tang PH, Ong CL. Hysterosalpingography: Current Applications. Singapore Med J., 2007; 368-374.
16. Gündüz R, Ağaçayak E, Okutucu G, Karuserci ÖK, Peker N, Çetinçakmak MG, et al. Hysterosalpingography: A Potential Alternative to Laparoscopy in the Evaluation of Tubal Obstruction in Infertile Patients? Afri Health Sci., 2021; 21: 373-8. Doi: https://dx.doi.org/10.4314/ahs.v21i1.47
17. Dutta S, Mazumder P, Mishra D, Saha JK. Study on Comparative Diagnostic Efficacy of HSG & Laparoscopy in Infertility. J. Evolution Med. Dent. Sci., 2020; 9: 937-942. DOI: 10.14260/jemds/2020/202
18. Anyanwu GE, Agwuna KK. Anatomical Defects at Hysterosalpingography in Patients with Infertility at University of Nigeria Teaching Hospital Enugu, Nigeria. J Expt & Anat, 2006; 7-12.
19. Botwe BO, Bamfo-Quaicoe K, Hunu E, Anim-Sampong S. Hysterosalpingographic findings among Ghanaian women undergoing infertility work-up: A study at the Korle-Bu teaching hospital. Fertil Res Pract., 2015; 1: 9.
20. Kiguli-Malwadde E, Byanyima RK. Structural Findings at Hysterosalpingography in Patients With Infertility at two Private Clinics in Kampala, Uganda. Afr Health Sci., 2004; 178-181.
21. Kitilla T. Hysterosalpingography in the Evaluation of Infertility: A Five Years Review. Ethiop Med J., 2010; 267-275.
22. Admassie D, Negatuy Y. Evaluation of the Fallopian Tube in Infertile Women by Hysterosalpingography in Tikur Anbessa Hospital, Addis Ababa, Ethiopia. Int J Nurs and Midwifery, 2011; 178-181. Available online at http://www.academicjournals.org/ijnm
23. Sinawat S, Pattamadilok J, Seejorn K. Tubal Abnormalities in Thai Infertile Females. J Med Assoc Thai., 2005; 723-727.
24. Malek KA, Hassan M, Soliman A, El-Sawah H, Azab AO. A Prospective Comparative Study to Assess the Accuracy of MRI Versus HSG in Tubouterine Causes of Female Infertility. Mid East Fert Soc., J 2005; 250-257.
25. De Felice C, Porfiri LM, Savelli S, Alfano G, Pace S, Manganaro L, Vestri AR, Drudi FM. Infertility in Women: Combined Sonohysterography and Hysterosalpingography in the Evaluation of the Uterine Cavity. Ultraschall Med., 2009; 52-57.
26. Eze KC, Awosanya GOG, Akhigbe AO, Benka-Coker LBO, Ohue AAA, Osibogun AO. Pattern of Uterine and Tubal Abnormalities in Hysterosalpingography of Women Presenting with Infertility at UBTH, Benin. Afr J Med & Pharm Sci., 2004; 8: 40-50.
27. Udobi SI, Aronu ME. Hysterosalpingographic Findings in Women With Infertility in Awka, Anambra State, South-East Nigeria. Niger J Surg Sci., 2017; 27: 47-50.
28. Omidiji OA, Toyobo OO, Adegbola O, Fatade A, and Olowoyeye OA. Hysterosalpingographic Findings in Infertility - What has Changed Over the Years? Afr Health Sci., 2019; 19: 1866–1874. Doi: 10.4314/ahs.v19i2.9
29. Duta S, Guha R. A Clinico-Anatomical Study on the Common Etiological Factors Pertaining to Primary Infertility in Females Using Some Common Investigative Procedures. J. Anat. Soc. India, 2007; 14-17.
30. Imo AO, Adeoye I. Radiological Assessment of the Uterus and Fallopian Tubes in Infertile Women at Abakaliki, Nigeria. Niger J Cli Pact., 2008; 211-215
31. Bacevac J, Ganovic R. Diagnostic Value of Hysterosalpingography in Examination of Fallopian Tubes in Infertile Women. Srp Arh Celok Lek., 2001; 243-246.