PATTERN OF HYSTEROSALPINGOGRAPHIC FINDINGS AMONG INFERTILE WOMEN AT A TERTIARY HOSPITAL IN NORTH WEST, NIGERIA

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ABSTRACT

BACKGROUND: Infertility is a global public health problem, with the highest prevalence in sub-Saharan Africa where infection-related tubal damage is the commonest cause. Hysterosalpingography (HSG) is the first line investigation in the evaluation of tubal patency.

OBJECTIVES. The study was performed to assess the prevalence and pattern of HSG findings in patients who went through infertility clinic at Aminu Kano Teaching Hospital

METHODOLOGY. It was a retrospective study of the HSG findings among infertile women at the infertility clinic of Aminu Kano Teaching Hospital between 1st January 2016 to 31st December 2017.

RESULTS. Majority of the patients had normal HSG findings (55.6%, n=124). The commonest abnormality was bilateral tubal blockage with or without hydrosalphinx (25.6%, n=57). Other abnormalities include right tubal blockage only (3.6%, n=8), left tubal blockage only (2.2%, n=5), right hydrosalphinx (13.5%, n=30), left hydrosalphinx (10.8%, n=24), intrauterine adhesions (6.7%, n=15), uterine fibroids (4%, n=9), pelvic adhesions (8.1%, n=18) and congenital uterine anomalies (1.3%, n=3).

CONCLUSION. The commonest abnormality on HSG among infertile patients at the gynaecology clinic was bilateral tubal blockage with or without hydrosalphinx which are usually infection related . Prompt diagnosis and treatment of sexually transmitted infections and other pelvic infections will therefore go a long way in preventing tubal damage and the dreaded sequelae of infertility.

KEY WORDS: Hysterosalpingography, Infertility, Kano

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INTRODUCTION

Infertility is the inability of a couple to achieve pregnancy after one year of regular and unprotected sexual intercourse[1,2]. It can be primary or secondary; primary infertility applies to those who have never conceived, whereas secondary infertility designates those who have conceived at some time in the past[1,2]. It is a global public health problem, but the highest prevalence is in low resource countries, particularly sub-Saharan Africa where infection-related tubal damage is the commonest cause[3]. Overall, an aetiology for infertility can be found in 80% of cases, Ovulatory dysfunction and tubo-peritoneal factors comprise the majority of female factor infertility[2]. The armamentarium of diagnostic tests available for the evaluation of an infertile couple is large. One of the most important diagnostic modality is the hysterosalpingogram (HSG). A hysterosalpingogram is a fluoroscopic study performed by instilling radiopaque dye into the uterine cavity through a catheter to determine the contour of the endometrial cavity and patency of the fallopian tubes[2]. Abnormal findings include congenital malformations of the uterus, submucous leiomyomas, intrauterine synechiae (Asherman's syndrome), intrauterine polyps, salpingitis isthmica nodosa, and proximal or distal tubal occlusion[2]. HSG is one of the first line investigation in the evaluation of tubal patency[4,5]. HSG's sensitivity and specificity are estimated at 65 – 81% and 47 – 50% respectively for tubal pathologies[6,7]. Even though laparoscopy is considered as the reference standard in infertility workup, HSG can be performed first and the use of laparoscopy should be limited to

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cases suspected for aetiologies other than intra tubal, such as endometriosis and peritubal adhesions[8]. HSG is less invasive and enhances fertility in selected situations[9,10]. Laparoscopy is also done to confirm tubal pathologies suspected on HSG. Some patients decline to carry out the investigation either due to increasing high cost or fear of pain[11]. This study was therefore performed to assess the prevalence and pattern of HSG findings in patients who went through infertility clinic at Aminu Kano Teaching Hospital (AKTH), Kano.

METHODOLOGY

The study was a retrospective study conducted at the infertility clinic of Aminu Kano Teaching Hospital, Kano. Participants in the study included women who attended the infertility clinic of Aminu Kano Teaching Hospital, from 1st January 2016 to 31st December 2017, with a history of inability to achieve conception of at least 1-year duration. Their folders were retrieved from the medical record department of the hospital and a proforma was used. All the infertile patients who had hysterosalpingography (HSG) were included in the study. HSG are done at radiology department of the hospital between day 7 and 10 of the menstrual cycles using a soluble contrast medium. The HSGs are performed in the proliferative phase of the menstrual cycle to rule out pregnancy and ensure that the endometrium is thin for better evaluation. All patients received 10mg of Buscopan antispasmodic injection, before each examination, in order to eliminate false or physiological fallopian tube blockage due to cornual spasm.

Control film of the pelvis are obtained in an anteroposterior projection for proper positioning and technical review. 15-40mls of water soluble contrast media are instilled into the endometrial canal under aseptic technique. Anteroposterior and oblique views are taken for evaluation depending on the radiologist's discretion. A series of images are captured as contrast flowed through the genital tract. These included: early filling phase to capture small filling defects, distended endometrial cavity phase to assess the uterine cavity morphology, tubal phase which outlined the tubes and spillage into the peritoneal cavity and the delayed phase for further assessment in cases of loculation. Cases with contrast intravasation, reflux and ambiguous information were excluded from the study. The relevant clinical findings and results of HSGs were documented using a proforma. The data were extracted from the proforma and analyzed using SPSS version11.

RESULTS

A total of 235 folders of infertile patients who had HSG during the study period were retrieved, but only 223 (95%) met the inclusion criteria and were included in the study. The sociodemographic characteristics of the patients are shown in table 1. The age range of the patients was between 20 and 46 years with a mean of 29.16 $\pm$ 6.01years. Majority of them (48%, n=107) had secondary education, and 3.6% (n=8) had no formal education. The duration of infertility ranges between 1 and 28 years, however in most of the patients (58.7%, n=131) the duration ranges between 1 and 5 years. The mean duration of infertility was 6.15 ± 4.425 years with maximum duration of 28 years.

Table 2 shows the obstetrics history of the patients; majority were nulliparous (55.6%, n=124) and the mean parity was 0.75 $\pm$ 1.15. Most of the patients (85.2%) had no history of spontaneous abortions (miscarriages), but 14.8% had history of at least one miscarriage.

Figure 1 shows the hysterosalpingographic findings of the patients, majority of them had normal HSG findings (55.6%, n=124). The commonest abnormality was bilateral tubal blockage with or without hydrosalphinx (25.6%, n=57). Other abnormalities include right tubal blockage only (3.6%, n=8), left tubal blockage only (2.2%, n=5), right hydrosalphinx (13.5%, n=30), left hydrosalphinx (10.8%, n=24), intrauterine adhesions (6.7%, n=15), uterine fibroids (4%, n=9), pelvic (peritubal) adhesions (8.1%, n=18) and congenital uterine anomalies ; 2 bicornuate uteri and 1 septate uterus (1.3%, n=3).

When we compared the age of the patients with HSG findings (Table 3) using the chi-square test the presence of abnormal HSG was found to increase as the age of the patients advances; 87% of the patients at the age group above 35 years has some form of abnormal HSG, and it was found to be statistically significant (X^2 = 49.6 P = 0.0001 OR= 0.5)

Duration of infertility was also found to be associated with abnormal HSG (Table 4) in which 52.9% of patients who have been infertile for more than or equal 10 years have a form of abnormality. However this finding was not found to be statistically significant (X^2=0.549, p=0.760 and OR=0.6)

Table 1 : Sociodemographic Characteristics

AGE GROUP	FREQUENCY	PERCENTAGE
18-20	6	2.7
21-25	68	30.5
26-30	84	37.7
31-35	17	7.6
36-40	36	16.1
41-45	9	4.0
>45	3	1.3
Total	223	100.0
EDUCATION	**FREQUENCY**	**PERCENTAGE**
None	8	3.6
Primary	30	13.5
Secondary	107	48.0
Tertiary	72	32.3
Quranic	6	2.7
Total	223	100.0
DURATION OF INFERTILITY	**FREQUENCY**	**PERCENTAGE**
1-5	131	58.7
6-10	75	33.6
>10	17	7.6
TOTAL	223	100.0

Table 2: Obstetrics History

PARITY	FREQUENCY	PERCENTAGE
0	124	55.6
1	63	28.3
2	21	9.4
3	3	1.3
4	6	2.7
5	6	2.7
TOTAL	223	100
ABORTIONS	**FREQUENCY**	**PERCENTAGE**
0	190	85.2
1	15	6.7
2	12	5.4
3	6	2.7
INFERTILITY TYPE	**FREQUENCY**	**PERCENTAGE**
PRIMARY	109	48.9
SECONDARY	114	51.1
TOTAL	223	100.0

Figure 1: HSG Findings

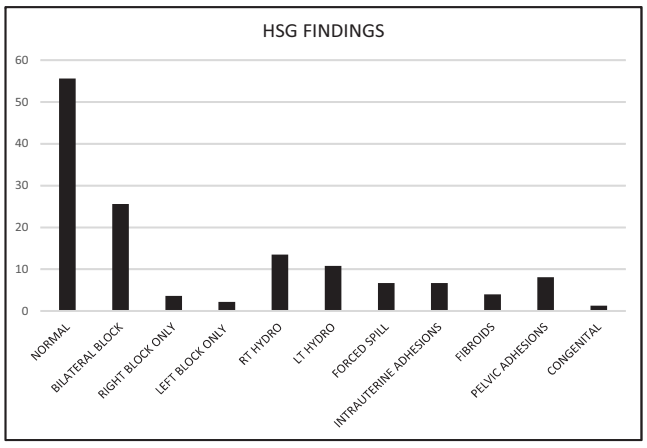

Table 3: Age of patients and abnormal HSG

AGE GROUP	NORMAL HSG	ABNORMAL HSG
15-25	56(76%)	18(24%)
26-35	62(61%)	39(39%)
>35	6(13%)	42(87%)
TOTAL	124(56%)	99(44%)

X^2 = 49.6 p = 0.0001 OR= 0.5

Table 4: Duration of Infertility And Abnormal HSG

DURATION OF INFERTILITY	NORMAL HSG	ABNORMAL HSG
1-5	74 (56.5)	57 (43.5)
6-10	42(56.0)	33 (44.0)
>10	8(47.1)	9(52.9)
TOTAL	124	99

DISCUSSION

Infertility is a global problem, but the highest prevalence is in low resource countries, particularly sub-Saharan Africa where infection-related tubal damage is the commonest cause[3]. Hysterosalpingography is one of the most important part of gynecological evaluation of infertile couples especially in developing countries and its value cannot be underestimated despite emerging use of laparoscopy and dye test. HSG is cheap, readily available and easy to interpret; it is noninvasive and reveals the abnormalities in the cervix, uterus and fallopian tubes.

This study revealed the age range of the infertile patients who presented for HSG to be between 20 and 46 years with a mean age of 29.16 $\pm$ 6.01years. The greatest number of infertile women presenting for HSG was within the age range 26 – 30 years. This is similar to other studies done in Northern Nigeria[12,13]. This is because most females in Northern Nigeria got married early, and if pregnancy is not achieved after marriage, there is a delay at presentation to the hospital because a lot of the patients first present to traditional healers. However, after a few years of failure to achieve conception they usually resort to orthodox medicine. However in other parts of Nigeria where women marry a little bit later, the presentation peaks around the age range of 30 – 35 years.[14,15]

Although the incidence of infertility varies in different parts of the world, in this study women

presenting with secondary infertility (51.1 %) were a little bit higher than those presenting with primary infertility (48.9 %). This is similar to other studies done in Africa and Nigeria[14-18], but varies from studies carried out in developed countries where primary infertility is commoner [2,4]. It is suggested that the higher prevalence of secondary infertility over primary infertility in Sub-Saharan Africa is attributed to post-abortal sepsis, puerperal sepsis, and PID resulting from STIs[1,2]. The higher prevalence of secondary infertility is also related to the high prevalence of abnormal HSG findings as discussed below.

Majority of the patients had normal HSG findings (55.6%, n=124). This is comparable to the findings in Sokoto[12], Maiduguri[13], and Enugu[19]. The inability of the patients to conceive could therefore be attributed in part to their male counterparts. However the cause could still be on the women's part due detection failures since HSG lacks some sensitivity. HSG's sensitivity and specificity are estimated at 65 – 81% and 47 – 50% respectively for tubal pathologies[6,7].

The commonest abnormality seen in our study was bilateral tubal blockage (25.6 %). Most studies in Nigeria, and other parts of Africa have tubal pathology as the most common abnormality[12,13,15]. They present as bilateral, unilateral tubal blockages with or without hydrosalphinx as well as peritubal pelvic adhesions (Figure 1). However studies from Port Harcourt[14], Sagamu[17] and Calabar[20] revealed uterine factors especially fibroids as the most common abnormality. This may be related to late marriages which are commoner in southern Nigeria and are associated with uterine fibroids. Although HSG is also conducted for patients with uterine fibroid to establish tubal patency before myomectomy especially for medicolegal reasons.

The high incidence of tubo-peritoneal factors in this study supports infection as the leading cause of infertility in our environment[1,2].
Intrauterine adhesions were the commonest uterine abnormality seen (6.7%) and is followed by uterine fibroids (4.0%). This is similar to studies done by Danfulani[12] and Bukar *et al*[13], however it is in contrast with the findings of Mgbor[19], Imo and Adeoye[21] who found uterine fibroid as the commonest uterine abnormality.

Three cases (1.3%) of congenital uterine abnormality (2 bicornuate uteri and 1 septate uterus) were seen in this study which is similar to 3 (0.9%) and 2 (0.8%) cases reported by Danfulani et al[12] and Akinola et al[22] respectively, but lower than 10 (3.6%) cases reported by Bukar et al[13].

When we compared the age of the patients with HSG findings (table 3) using the chi-square test the presence of abnormal HSG was found to increase as the age of the patients advances; 87% of the patients at the age group above 35 years has some form of abnormal HSG, and it was found to be statistically significant.

Duration of infertility was also found to be associated with abnormal HSG (Table 4) in which 52.9% of patients who have been infertile for more than or equal 10 years have a form of abnormality. However this finding was not found to be statistically significant (Table 4).

CONCLUSION

The most common hysterosalpingographic finding among infertile women who underwent HSG was bilateral tubal blockage. Factors such as pelvic inflammatory disease, puerperal and postabortal sepsis may be responsible for this finding as the majority of the women presented with secondary infertility. Prompt diagnosis of those infections and adequate treatment will go a long way in preventing the dreaded sequelae of infertility.

DECLARATION

We wish to declare that this study is solely funded by the authors and there is no conflict of interest.

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