

Pattern of Findings in Women Undergoing Hysterosalpingography (HSG) in Kano Metropolis, Nigeria

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Abstract

Hysterosalpingography (HSG) is the first line investigation in evaluation of the female genital tract, particularly in the initial diagnostic work up of female infertility in most developing countries like Nigeria. The study aims at evaluating the patterns of findings in patients undergoing HSG in Kano metropolis, Nigeria. A prospective and cross-sectional study design was used, and the study was conducted in the Kano metropolis from September, 2018 to May, 2019. Two hundred and twelve subjects were studied, and selected using a convenient sampling method. The data were collected from the Aminu Kano Teaching Hospital, Abdullahi Wase Specialist Hospital and Murtala Muhammad Specialist Hospital. Informed consent was obtained from every selected subject. The obtained data was recorded on the data capture sheet and analyzed using SPSS version 21. The age of the selected subjects ranged from 18-45 years with a mean of 29.47 ± 5.63 . Primary infertility 107 (50.2%) and secondary infertility 93 (43.7%) were found to be the predominant requested indication. Normal finding was found to have higher frequency 133 (62.4%). Tubal abnormality was found to be the most prevalent pathology 64 (30.1%) followed by uterine abnormality 25(11.7%). The findings of the study showed a relatively high diagnostic yield of HSG in the detection of both tubal and uterine abnormalities.

Keywords: Hyterosalpingography, Fallopian Tubes, Kano metropolis

INTRODUCTION

Hysterosalpingography (HSG) is a radiological procedure that involves the use of contrast media to outline the female reproductive tract (Danfulani *et al.*, 2014). The female reproductive tract comprises of the vaginal canal, uterine cavity and Fallopian tubes, but the main focus of the HSG is the uterine cavity and Fallopian tubes. The HSG procedure is usually performed during the follicular phase of the menstrual cycle, strictly following the 10 day rule. In developed countries, it is carried out under fluoroscopic guidance for best result, while in developing countries, HSG is being carried out even without fluoroscopy due to certain reasons, among which are lack of equipment and frequent breakdown due to poor maintenance (Olatunji *et al.*, 2017). Despite advancements in gynecological imaging in the western world, the readily availability and cost effectiveness of HSG still makes it a first line investigation in evaluation of the female genital tract, particularly in the initial diagnostic work up of female infertility in most developing countries like Nigeria (Olufunso *et al.*, 2016).

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Hysterosalpingography remains one of the best modality for imaging the Fallopian tubes in particular. It also has a sensitivity of 44.4% for uterine pathology and 75% for the detection of intrauterine adhesion. In addition, this procedure was shown to have therapeutic value of the flushing effect (Lawan *et al.*, 2015). Indications for HSG may include infertility, recurrent miscarriages (which may be due to polyps, submucosal leiomyomas), following tubal surgery, assessment of the integrity of a Caesarean uterine scar, synechiae, Mullerian anomalies, hydrosalpinges, salpingitis isthmica nodosa (SIN), and peritubal or peritoneal adhesions (Steward and Price, 2016). The contraindications for performing the procedure include; possible pregnancy, history of allergy to the contrast agent, active pelvic inflammatory disease and recent dilatation and curettage. Some of the complications that might be associated with the procedure include; contrast reaction, bleeding, intravasation and infection.

A retrospective study was by Danfulani *et al.* (2014). on Hysterosalpingographic findings in women with infertility in Sokoto, North Western Nigeria. A sample size of 317 HSG was used, with age ranged from 17 to 48 years. A total of 139 (41.7%) patients had normal, HSG findings and the remaining 178 (58.3%) had abnormalities in the cervical canal, uterine cavity or Fallopian tubes. Tubal pathologies constituted the commonest pathologic finding 112 (33.6%) followed by uterine (25.5%) and cervical which is the least 45 (13.5%) patients. Another retrospective, cross-sectional study was conducted by Moi *et al.* (2017) on Radiographic findings in Hysterosalpingography (HSG) of women attending infertility clinic at the University of Uyo Teaching Hospital, Akwa-Ibom state. The findings of the study showed that, 245 patients reports were reviewed and uterine fibroid constituted the commonest pathologic finding 88(36%) followed by tubal blockage 44(18%), uterine adhesion 43(17.5%), hydrosalpinx 10(4%), Arcuate uterus 9(3.7%), biconuate uterus 6(2.4%) and the least is Isthmicanodosa 1(0.4%). In the standard practices, every facility should document patterns of findings of the procedures performed on patients that could serve as a guide for practitioners and for policy making by the management. But, empirical study shows patterns of findings in patients undergoing HSG in Aminu Kano Teaching Hospital has not been documented. The findings of the study will be expected to serve as a guide to the radiologist and gynecologist in the diagnosis and treatment of patients with gynecological disorders. The study aims at evaluating the patterns of findings in patients undergoing HSG in Aminu Kano Teaching Hospital.

MATERIALS AND METHODS

The study design was prospective and cross sectional in nature, conducted in the Radiology Department, Aminu Kano Teaching Hospital, from Nov, 2018 to May, 2019. The study involved 212 patients that came for HSG within the study period and agreed to participate as subjects. Informed consent was obtained from every subject that participated in the study. The demographic information and indication for performing the procedure for each subject were recorded before the commencement of the procedure. After the procedure the findings of each subject as reported by the radiologist were also recorded on the data capture sheet. The obtained data was analyzed using SPSS version 21. Both descriptive statistics was used in the data analysis. Frequency, mean, standard deviation and range were obtained using descriptive statistics, while the relationship between the age and findings was obtained using inferential statistics. Preset p-value was set at 0.05.

RESULTS

The age of the selected subjects ranged 18-45 years with a mean of 29.47 and standard deviation of ± 5.63 . One hundred and sixty five (77.8%) of the selected were residents of Kano, 5 (2.4%) were from Katsina, 3 (1.4%) were from Jigawa state and the remaining were from different states of the country.

Table 1: Clinical history of the selected subjects

S/N	Clinical history	Frequency	Percentage (%)
1	Not indicated	89	42.0
2	Infertility for several years	63	29.7
3	Secondary amenorrhea	20	9.4
4	Multiple uterine fibroid	8	3.8
5	Post surgery	7	3.3
6	Uterine fibroid	7	3.3
7	Pelvic inflammatory disease	5	2.4
8	Menorrhagia	4	1.9
9	Dysmenorrhea & Oligomenorrhea	2	0.9
10	Intra-uterine adhesion	1	0.5
11	Pelvic mass	1	0.5
12	Cervical incompetence	1	0.5
13	Tubal blockage	1	0.5
14	Asherman's syndrome	1	0.5
15	Amenorrhea	1	0.5
16	Road traffic accident	1	0.5
	Total	212	100%

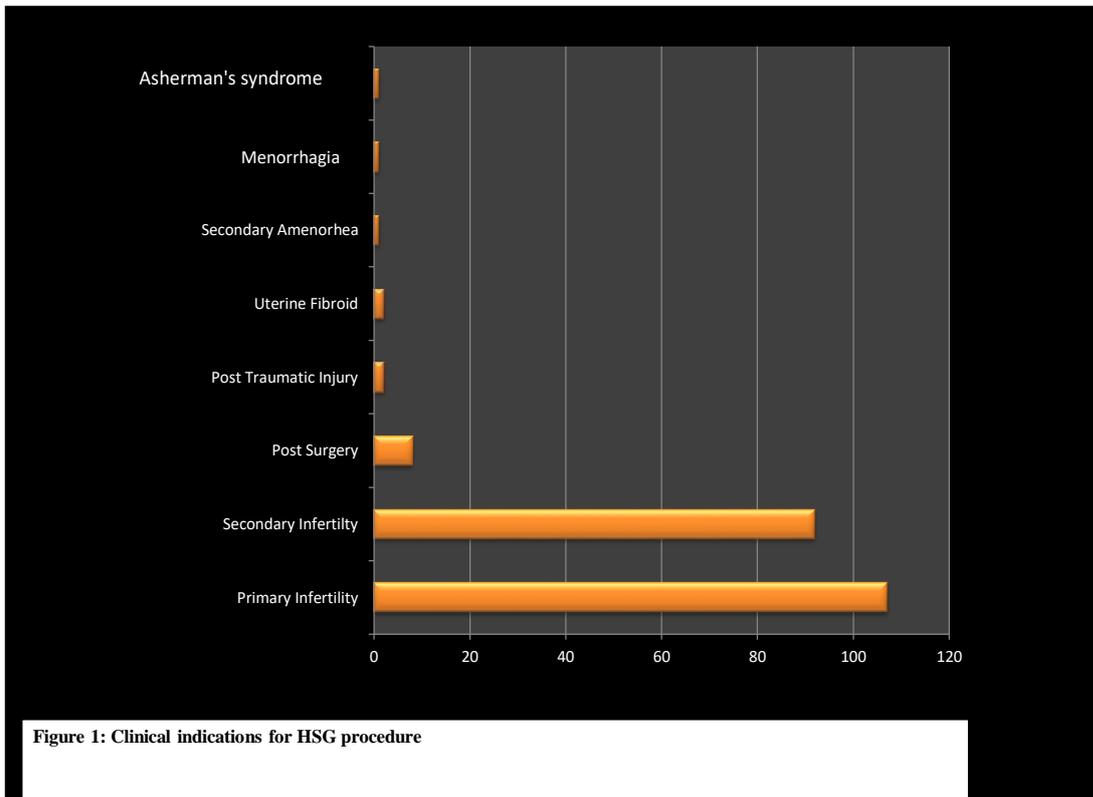


Table 2: Findings as reported by the Radiologist

S/N	Findings	Frequency	Percentage (%)
1	Bilateral patent tubes	133	62.4
2	Bilateral tubal blockage	19	8.9
3	Right patent tube and left tubal blockage	11	5.2
4	Left patent tube and right tubal blockage	7	3.3
5	Bilateral Hydrosalpinx without spillage	5	2.4
6	Right patent tube with Left Hydrosalpinx	3	1.4
7	Uterine Fibroid	3	1.4
8	Multiple Uterine Fibroid	3	1.4
9	Asherman’s Syndrome	3	1.4
10	Right patent tube, left tubal blockage & Uterine Fibroid	2	0.9
11	Left patent tube & Right Hydrosalpinx	2	0.9
12	Bilateral tubal blockage & Intra-Vasation	2	0.9
13	Bilateral Hydrosalpinx with Spillage	2	0.9
14	Bilateral patent tubes & Left Hydrosalpinx	1	0.5
15	Bilateral patent tubes with Filling Defect	1	0.5
16	Bilateral patent tubes with Uterine Didelphys	1	0.5
17	Bilateral patent tubes with Intra-Uterine Adhesion	1	0.5
18	Bilateral patent tubes with Arcuate Uterus	1	0.5
19	Right patent tube, left tubal blockage & Multiple Uterine Fibroid	1	0.5
20	Right patent tube & Right Hydrosalpinx	1	0.5
21	Left patent tube, right tubal blockage & Multiple Uterine Fibroid	1	0.5
22	Bilateral Tubal Blockage, Bilateral Hydrosalpinx without spillage & Uterine Fibroid	1	0.5
23	Bilateral Tubal Blockage & spillage & Uterine Fibroid	1	0.5
24	Right tubal blockage, Left Hydrosalpinx & Pelvic Adhesion	1	0.5
25	Left tubal blockage with Right Hydrosalpinx	1	0.5
26	Bilateral Hydrosalpinx without spillage with Arcuate Uterus	1	0.5
27	Filling Defect	1	0.5
28	Uterine Didelphys	1	0.5
29	Intra-Uterine Adhesion	1	0.5
30	Cervical Stenosis	1	0.5
Total		212	100%

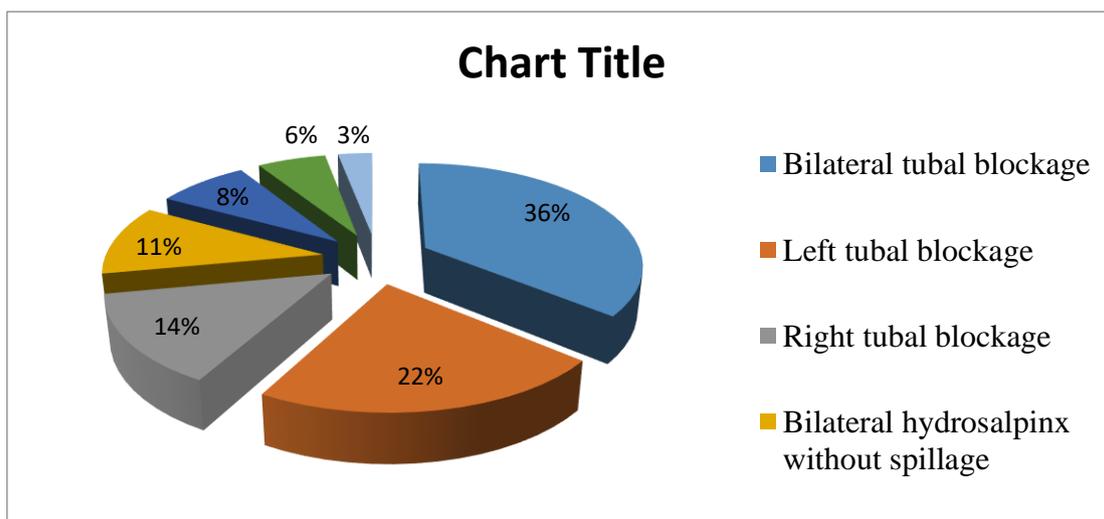


Figure 2: Distribution of tubal abnormalities 64 (30.1%)

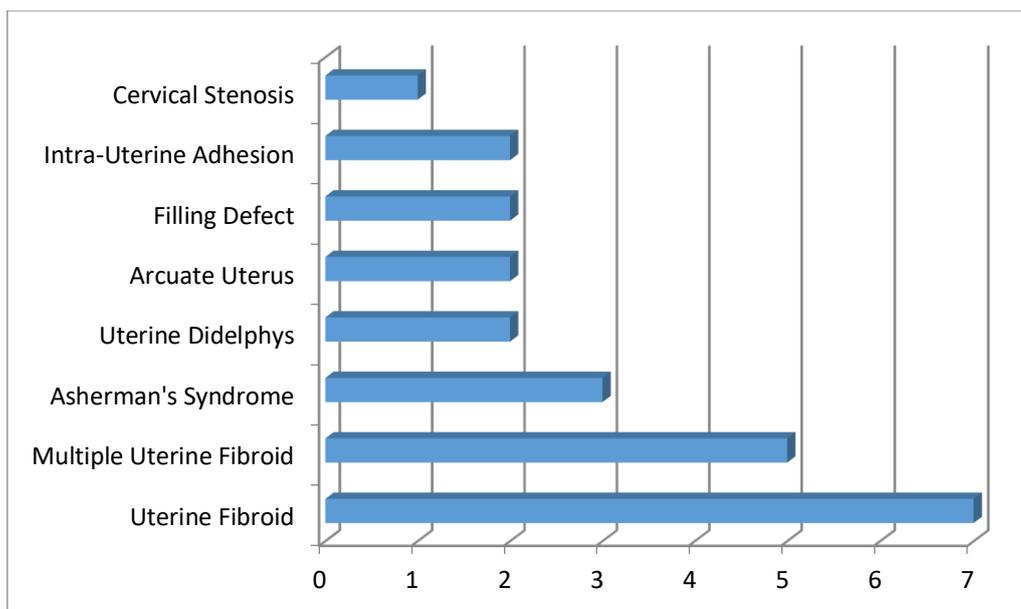


Figure 3: Distribution of uterine abnormalities 21(9.9%)



Plate I: Hysterosalpingogram showing left hydrosalpinx without spillage, and right patent tube

Not for diagnosis



Plate II: Hysterosalpingogram showing bilateral hydrosalpinx with forced spillage, and cervical stenosis

Not for diagnosis



Plate III: Hysterosalpingogram showing bilateral patent tube.



Plate IV: Hysterosalpingogram showing non demonstration of Fallopian tubes due to bilateral tubal blockage. There is also filling defect in uterine body suggestive of uterine fibroid

DISCUSSION

Despite advancement in imaging technology, hysterosalpingography remains a goal standard imaging tool in evaluation of the uterus and Fallopian tubes in particular with a sensitivity of 44.4% for uterine pathology and 75% for the detection of intrauterine adhesion (Lawan *et al.* 2015). The findings of the current study show that, the age of the selected subjects ranged from 18-45 years, with a mean of 29.47 ± 5.63 . The lower limit of the age range might be as a result of a tradition of the study population in which women are getting married in their early age of reproductive period. This is similar to the findings reported by Danfulani *et al.* (2014) who found an age ranged from 17 - 48 years, mean of 32.5, SD of ± 5.5 , also previous studies by Lawal *et al.* (2015); Abubakar *et al.* (2016) showed 17 - 40 years, mean of 27.37 ± 1.4 and 16 - 57 years, mean of 28 respectively. The similarity is probably as a result of being in the same geopolitical region and the study population of the current study and previous studies shares similar traditions. But the findings of the current study are contrary to the findings of the study conducted by Olufunso *et al.* (2016) who found 23 - 50 years with a mean of 34.5 ± 5.53 as age range because of difference in tradition and to some extent religion and environmental factors. The findings of the current study reported primary infertility as the highest clinical indication 107 (50.2%) for HSG in the selected hospitals followed by secondary infertility 93 (43.7%) as shown in figure 1. This is similar to the findings of the studies conducted by Farrokh *et al.* (2015) which shows 12 (60%) of secondary infertility and 8 (40%) of primary infertility. Contrary to current findings is the study by Lawan *et al.* (2015) who found 133 (60.5%) of secondary infertility and 87 (39.5%) of primary infertility also Danfulani *et al.* (2014); Olatunji *et al.* (2017); Olufunso *et al.* (2016); Oguntoyinbo and Aboyeji, (2013); Onwuchekwa and Oriji, (2017) reported similar results. Other indications such as fibroids, secondary amenorrhea, Asherman's syndrome, post - surgery is found to be less prevalent as also shown in figure 1. The findings of the current study reported that 89 (42%) cases had no clinical history as shown in table 1. This is against the guidelines for standard that clearly suggested that, all radiology request cards should be adequately and legibly completed, and the clinical history must be clearly stated. Clinical history serves as a strong guide for radiologist interpreting the images for the diagnosis of pathological conditions (Auwal *et al.*, 2019). The findings of the current study also show that infertility for several years was more frequent clinical history 63 (29.7%). Subjects with indicated clinical history. Secondary Amenorrhea 20 (9.4%) was found

to be second most frequent indicated A clinical history, then followed by multiple uterine fibroid 8 (3.8%), post-surgery 7 (3.3%) and uterine fibroid 7(3.3%) as shown in table 1.

Furthermore, the findings of the current study reported 133(62.4%) as normal study as shown in table 2, this study agrees with the findings of the study conducted by Abubakar *et al.* (2016) who found a normal study in (106) 41.2%. But contrary to the findings of the study conducted by Danfulani *et al.* (2014) who found 139 (41.7%) cases as normal study, also previous studies conducted by Olatunji *et al.* (2017); Olufunso *et al.* (2016); Oguntoyinbo and Aboyeji, (2012), Onwuchekwa and Oriji, (2017); Hailemariam *et al.* (2015). Hence, in the current study, tubal abnormality was found to be the most prevalent pathology which involves 64 (30.1%) cases as shown in figure 2, and it is similar to what was reported by Abubakar *et al.* (2016); Olufunso *et al.* (2016) who found 88 (30.1%) and 89 (66.4%) respectively. However, it is contrary to the findings reported by Moi *et al.* (2017) who found 44 (18.4%) cases with tubal abnormality. Bilateral tubal blockage was found to be more predominant among the tubal abnormalities 23 (35.9%) in this study as shown in figure 2, which agrees with the finding reported by Olufunso *et al.* (2016) with 34 (25.4%). But, the findings are contrary to what was reported by Danfulani *et al.* (2014); Olatunji *et al.* (2017) in which right tubal blockage is more predominant 19 (5.7%) and 33 (15%) respectively. Left tubal blockage 14(21.9%) was found to be the second most frequent as shown in figure 2, similar to the finding of Olufunso *et al.* (2016) 16(11.9%); Lawan *et al.* (2015) 23(12.7%) and this contrary to the findings reported by Abubakar *et al.* (2016) in which right tubal occlusion was found to the second most frequent tubal abnormality. Both right tubal blockage and bilateral hydrosalpinx account for (14% of 64) mean while right hydrosalpinx and left hydrosalpinx were seen in 4 (6.3%) and 5 (7.8 %) of 64 patients with tubal abnormality as shown in figure 2.

The uterine abnormality finding was found to have the least predominance 25(11.7%) as shown in figure 3, similar to the findings of Abubakar *et al.* (2016); Olufunso *et al.* (2016); Farrokh *et al.* (2015). This study shows uterine fibroid is more frequent (28%) followed by multiple uterine fibroid (20%) as shown in figure 3. The possible reason for this is that, as uterine fibroid is age related and influenced by either early or late pregnancy conception. This study shows women of this region tend to be married at younger stage or early reproductive period and hence, reduce the chance of fibroid formation. Contrary to the present study is the findings of previous studies by Moi *et al.* (2017) who found 88(36%) cases with uterine fibroid, also Danfulani *et al.* (2014), Onwuchekwa and Oriji, (2017); Olatunji *et al.* (2017) showed high predominance of uterine fibroid. Cervical abnormality 1 (0.5%) was found to have less predominance in the current study in comparison with the cervical finding by Danfulani *et al.* (2014) who found a high frequency of cervical abnormality 51 (15.3%). Congenital uterine abnormality was seen in 4(1.8%) cases which is somewhat similar to what was found by Danfulani *et al.* (2014) 3(0.9%) cases in Sokoto; Abubakar *et al.* (2016) 4(1.5%) cases in teaching hospitals of north east, however, higher prevalence compared to current study and mentioned previous studies is the study finding by Moi *et al.* (2017) who document 15(7.1%) cases with congenital abnormality.

CONCLUSION

The current study shows that, most women with the HSG request in Kano metropolis are referred due to infertility. Also, the study shows a relatively high diagnostic yield of HSG in the detection of both uterine and tubal abnormalities. However, tubal abnormality was found to be the predominant pathology.

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