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Hysterosalpingographic Pattern of Infertile Women as Seen in Some Private Radiology Centres within Lagos Metropolis

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ABSTRACT

Background: Infertility is a global health issue that transcends every religious, cultural, and socio-political class. Hysterosalpingography (HSG) is a first-line modality for assessing infertility. However, HSG findings on infertility vary from place to place. There is a dearth of studies on HSG findings in many Nigerian private radiological centers. **Objectives:** This study is aimed at evaluating the HSG findings in patients with infertility in some private radiology centers within Lagos State and comparing these findings with studies from some tertiary centers within and outside Nigeria. **Materials and Methods**: This is a retrospective review of 229 consecutive patients carried out among infertile women who presented for HSG in 20 private diagnostic centers in Lagos within one year (February 2019 to January 2020). The collected data was analyzed using Statistical Product and Service Solutions (SPSS). **Results:** A total of 229 reports were reviewed, with an age range of 26–50 years. More than 65% were between the ages of 31 and 40 years. The most frequent uterine abnormality was a filling defect, while one case of a bicornuate uterus was seen. Normal tubal patency was seen in 50.65% of patients, while 49.35% had various forms of tubal abnormalities. Of these 113 patients, 73 (64.6%) had bilateral tubal blockages. More than 80% of the blockages were cornual, and loculated peritoneal contrast spillage was 45%. **Conclusion:** Adherence to strict procedural techniques by private diagnostic centers is essential to reducing false negative results. Also, fluoroscopy machines should be made available in our health facilities for adequate assessment of women with infertility.

Keywords: Infertility, Hysterosalpingography, Private radiology Centres.

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INTRODUCTION

Infertility is the inability of a couple to achieve pregnancy after a minimum of one year of regular unprotected sexual intercourse.[1, 2]. Infertility is a global public health problem where 80% of the cases have a known origin.[1, 3] However, infertility is more prevalent in low resource countries, particularly sub-Saharan Africa where infection-related tubal damage is common.[4]Hysterosalpingography, which is the process of instilling a radiopaque water-soluble contrast medium into the uterine cavity, is one of the most important techniques used in the investigation of infertility.[5, 6] It has an estimated sensitivity and specificity of 65 – 81% and 47 – 50%, respectively for tubal pathologies.[7, 8] Most of the studies on HSG are performed in tertiary medical centres,[6, 9-15] with little focus on those from the private radiologic centres . The aim of this research was therefore to study the findings of hysterosalpingography in some private x-ray centres within Lagos, and to possibly identify factors associated with abnormal HSG findings in these private centres.

MATERIALS AND METHODS

This was a one-year retrospective review of patients referred to some private X-Ray and Diagnostic Centers within Lagos for HSG evaluation of infertility from 1st February 2019 to 31st January 2020. This retrospective review meant, there was no contact with the patients or their families during the course of this study, but only with their radiology records. No discussions about the patients were made with any other physician, including the radiologists that reported the films. Data was entered into a standardized datasheet in form of tables. Only properly diagnosed patients with infertility were included in the study. Inconclusive examination results and diagnoses for infertility were excluded.

The included centres had to fulfil our protocol requirements: that all HSG examinations were performed after the patient's consent was obtained, and the procedure was performed in the first half of the menstrual cycle because of a thin endometrium which enables better image evaluation and also excludes early pregnancy. Also, all patients received 10mg of hyoscine butylbromide injection by the intramuscular route prior to the procedure in order to reduce or eliminate fallopian tubal muscle spasm and false occlusion. It was also assumed that approximately 20-40 mls of water-soluble contrast material (mainly urographin) was injected into the uterus following cannulation after all aseptic measures were taken. Series of images were obtained (anteroposterior and oblique radiographic views) as contrast flowed through the genital tract, up to the peritoneal phase.

The relevant clinical findings and results of HSGs were documented using a proforma, which was extracted, tabulated and analyzed using Statistical Package for the Social Sciences (SPSS Inc., IBM Chicago, IL, USA) version 13.

RESULTS

Two hundred and twenty-nine women from 22 private diagnostic centres within Lagos state were studied. Those within the 31-35 age group had the highest frequency of 75 patients (32.75%), closely followed by those within the 36-40 age group with 74 (32.31%). The group with the least frequency of occurrence were those within the 46-50 age group, which had only 6 (2.62%) patients(Table 1). Filling defects showed the highest frequency of 93 (35.36%), 17 (6.46%) had Asherman's disease while 12 (4.56%) had small uterine cavity. There was a single case (0.44%) of bicornuate uterus seen(Table 2).

Of the 229 patients seen, 116 had normal tubal patency, constituting 50.65%, while 113 (49.35%) had various forms of tubal abnormalities. Twenty-three (20.3%) patients had only right sided tubal blockage while twenty (17.7%) had left sided blockage only. However, 73(64.6%) patients had bilateral tubal blockage (Table 3). Of the types of tubal blockages, 75 (?%)patients had right-sided cornual occlusion while 78 (?%)were left-sided. Seven (?%7) and five (?%5) blockages were noted at the mid portion of the uterine tubes on the right and left respectively. Similarly, thirteen (?%13) and eleven (?%11) fimbrial blockages were seen on the right and left respectively. All put together, 153 (80.89%) patients

had cornual tubal blockage, representing 80.89% of all the patients with tubal abnormalities while middle tubal occlusion was 12 (6.35%), constituting the least (Table 4). Analysis of the spillage pattern showed 148 patients (54.21%) with free contrast spillage into the peritoneal cavity while 125 (45.79%) had contrast loculation (Table 5).

Table 1 shows the age distribution of patients

Age range (years)	Frequency	Percentage (%)
26 - 30	31	13.54
31 - 35	75	32.75
36 - 40	74	32.31
41 - 45	43	18.78
46 - 50	6	2.62
Total	**229**	**100**

Table 2: shows the observed uterine cavity abnormalities on HSG.

Abnormal finding	**Frequency**	**Percentage**
Filling defects	93	35.36
Enlarged/dilated cavity	54	20.54
Distorted cavity	39	14.83
Elongated cavity	9	14.45
Asherman's cavity	12	6.46
Small cavity	17	4.56
Deviated uterus	38	3.42
Bicornuate uterus	1	0.38
Total	**263**	**100**

Table 3: Shows the number of uterine tube occlusions per side

Right-sided occlusion only	23
Left-sided occlusion only	20
Bilateral occlusion	73

Table 4: shows the types of tubal occlusion

Right	Left	Grand total	Grand total
Cornual	75	78	153 (80.95%)
Middle	7	5	12 (6.35%)
Fimbrial	13	11	24 (12.70%)
	95	94	100%

Table 5: shows the types of peritoneal spillage

	Right	Left	Grand total
Free spillage	73	75	148 (54.21%)
Loculated spillage	64	61	125 (45.79%)

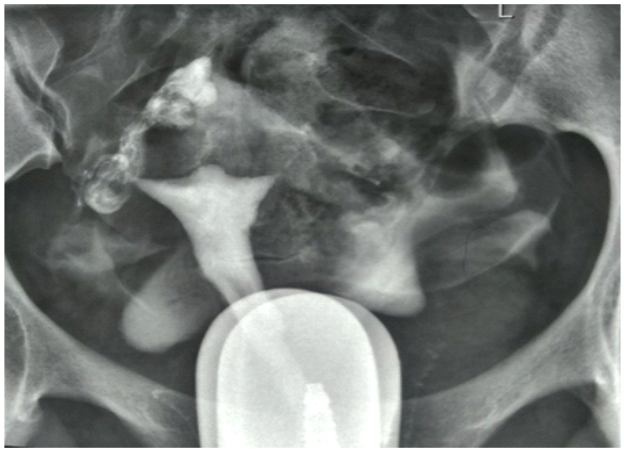

Fig. 1: *shows a normal HSG except for the central filling defect in the cervical canal, most probably from previous scarring.*

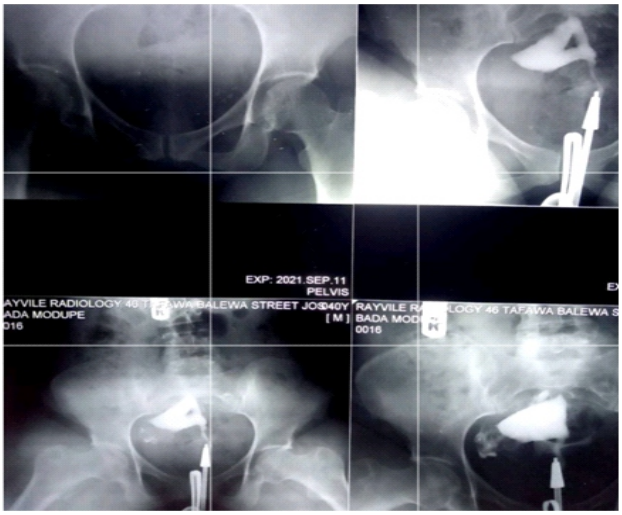

Fig. 2: *show four exposures. The right upper film shows the pre-contrast film. The left upper and right lower film shows air bubble within the uterine cavity but the left lower film shows that the bubble disappears as the procedure continues.*

DISCUSSION

Infertility affect a high proportion of the population, with one of every seven couples world-wide, thus, becoming a significant societal burden.[16]Hysterosalpingography remains one of the first radiologic procedures routinely performed in the initial evaluation of the infertile woman, despite its existence for more than a century.[17, 18]Our study revealed an age range of 26 to 50 years for the patients at presentation. This age range is different from the findings of Onwuchekwa et al who had 19-44 years in Port Harcourt[19] and Egbe et al in Duala who had a range of 19-46,[6]while Yusuf et al in Kano,[3]Danfulani et al in Sokoto,[20] and Bukar et al[10] in Maiduguri got ranges of 20-46 years. The similarities of the results of Yusuf et al, Danfulani et al and Bukar et al is because most females in Northern Nigeria normally marryearlier compared to those from the Southern part of the country where women marry slightly later.

Those within the 31-35 age bracket had the highest frequency of 75 patients (32.75%), followed closely by those within the 36-40 age group with 74 (32.31%). This is at variance with the results of Danfulani and Bukar which had women within the 26-30 age bracket with the highest frequency of presentation[10, 20]. At least, 65% of those who presented for HSG were between the ages of 31 and 40 years. This is similar to the finding by Jimah et al in Ghana who found that 61% of their patients were within 30-39 years age group.[21] This is within the fertile age group of females, hence the age of presentation. The group with the least frequency of occurrence were those within the 46-50 age group, with only 6 patients, representing 2.62%. Filling defects showed the highest frequency of 93 (35.36%); 17 (6.46%) had Asherman's disease while 12 (4.56%) had small uterine cavity. This differs from Jimah who's predominant uterine finding was capacious uterus (33.3%)[21] while uterine synaechia was the commonest finding by Bukar et al[10] There was a single case of bicornuate uterus seen, representing 0.44% of the total number. Danfulani reported 0.9% of bicornuate uterus in Sokoto[20] while Akinola reported 0.8%.[9]

Of the 229 women studied,113 (49.35%) had various forms of tubal abnormalities. Lawan et al in Zaria[22] and Yusuf et al[3] in Kano had 55.0% and 55.6% of normal findings while Akinola[9] et al in Lagos had 38.2%. This value is lower than those found in patients seen, 116 in northern Nigeria, because of higher pelvic inflammatory disease in Lagos.[9]There were 23 right sided tubal blockages only, while 20 had left sided blockage only. However, 73 patients had bilateral tubal blockage, representing 64.6% of these patients. This bilateral tubal occlusion was higher than that of Eleje et al who found 35.6% of cases with bilateral tubal occlusion[23] and 24.2% by Jimah et al in central Ghana.[21]However, Aziz et al from Pakistan showed only 10%, while Nwankwo in Port Harcourt had only 4% of cases with bilateral tubal occlusion.[24, 25]Mgbor's results in Enugu revealed that there was 8.8% of right sided tubal occlusion and 7.6% cases on the left.[26] while that of Jimah et al was 17.7% on the right and 16.1% on the left.[21] Our study showed that the percentage of right-sided tubal occlusion is slightly higher than the left. These findings are the same with those of Mgbor and Jimah.[21, 26] But Itanyi et al's result in Abuja showed that the occlusion on the two sides was equal.[27] This slightly higher frequency of right-sided blockage over the left is attributed to previous appendicitis/appendicectomy and its surgical complications.[26]Of the types of tubal blockages, 153 (80.89%) cornual occlusions were seen while 12 (6.65%) blockages were noted in the mid-portions of the uterine tubes and 24 (12.76%) were fimbrial occlusions. Toufiga's experience in Khartoum showed 16% of cornual occlusion and 23% of fimbrial occlusion.[28] Analysis of the spillage pattern showed 148 patients (54.21%) with free contrast spillage into the peritoneal cavity while 125 (45.79%) had contrast loculation. Akinola et al in Lagos showed 10% of cornual occlusion and 5.5% of loculated spillage while Jima in Ghana showed loculated spillage of 16.1%.[9, 21].The high contrast loculation in Lagos is attributed to high incidence of sexually transmitted diseases.[9]

The study showed a uniform range of age group who presented for HSG investigation in both the private and

tertiary health centres within and outside Nigeria. When private health institutions were compared to the tertiary health institutions, the later had a higher frequency of normal patent tubes.This was probably due to availability of more qualified personnel, more available instruments in the later, and stricter adherence to procedural techniques by thetertiary health institutions when compared to the private health sector. This same reason may also explain why bilateral tubal blockage was higher in this study when compared to the tertiaryhealthcentres. Another reason why tubal blockage and fimbrial contrast loculation are higher in this study than in Enugu, Sokoto and Maiduguri is probably due to higher levels of pelvic inflammatory disease among Lagos study population.[29,30]

CONCLUSION

Hysterosalpingography remains very important in the investigation of infertilitywith tubal occlusion still high in both private and tertiary radiologic diagnostic centres, particularly, in the Lagos area. Adherence to strict procedural techniques by private diagnostic centres is very essential in order to reduce false negative result outcome. Also, fluoroscopy machines should be made available in our health facilities for adequate assessment of the women with infertility. This will probably change the spectrum of abnormalities we see presently.

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