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AGE SPECIFICITY AND COMMON PATHOLOGICAL FINDINGS IN HYSTEROSALPINGOGRAPHY PATIENTS WITH CASE OF INFERTILITY IN THE SOUTH-SOUTH REGION OF NIGERIA: A RETROSPECTIVE STUDY

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ABSTRACT

BACKGROUND: The rate of increase in infertility globally and in Nigeria is major concern. This may not be unconnected with impotency of the fallopian tube, the morphology of the uterine cavity as well as the endo-cervical canal. Observations have shown that infertility is the commonest reason for women seeking gynaecological consultation in Nigerian hospitals today. Hysterosalpingography is an effective imaging modality for diagnosis of pelvic pathologies.
OBJECTIVE: To identify common pathological findings in Hysterosalpingography patients with case of infertility.
MATERIALS AND METHOD: Retrospectively, 370 radiological reports from 9 diagnostic centres were assessed between November, 2022 - December, 2023. The data were categorized using Microsoft Excel and analysed using descriptive statistics. Chi-Square test of association with box plot was used for the proportion of findings across the states and between the common pathologies and age range.
RESULTS: Common pathological findings in HSG patients for infertility were unilateral and bilateral tubal blockage, unilateral and bilateral hydrosalpinxes, uterine fibroid, adhesions (uterine, cervical and tubal), uterine stenosis and Nabothian cyst. Unilateral tubal blockage 106 (28.6%) which prevailed across all the States was common and Nabothian cyst ranking the least 1 (0.3%). The Chi square test of association result reveals that Unilateral tubal blockage was significantly associated with all the age grouping, with the highest proportion present in the age grouping 32-37 years ($\chi^2 = 178.29$; $P < 0.05$), which also was the age group with the highest population in the region of study.
CONCLUSION: Hysterosalpingography plays a vital role in the investigation of women with infertility in the area of study being readily available amongst other diagnostic modalities for infertility in females.

KEYWORDS: Infertility, Hysterosalpingography, Pathology, Patient, Tubal blockage.

INTRODUCTION

Infertility is a global health issue which affects millions of people. The estimate is said to be about 17.5% of the world's population (WHO, 2023). It is a condition in which a couple is unable to conceive while having regular, unprotected sex, reasonably, after the duration of one year (WHO, 2019; Broght & Wyns, 2018).

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Infertility can also be referred to as the inability of an individual to contribute to conception or often used to refer to a female who cannot carry pregnancy to full term. In 1990, it was said to affect about 48.5 million people globally and in 2010, it was said to be about 52.6 million people globally, noting an increase (WHO, 2023; Broght 2018). In 2021, a more significant increase in the amount of people suffering from infertility was noted as the figure rose to about 72 million of the world's population (WHO, 2023; Cox et al.,, 2022) with a percentage of 10-20% located in Africa (Chimbatata & Malimba, 2016) and 15-30% in Nigeria (Asemota & Klastsy; Mohammed et al., 2019) as it is said to be one of the commonest reason for women seeking gynecological consultation (McLauren, 2004).

Infertility is a global public health concern that impacts negatively on its affected couple and can be very draining for couples in every sense being psychologically, economically and socially as it tends to also pose a stigma to the couple going through this experience and in most cases, causing a strain in marriages and overall, breaking many homes which is affected, as only a few really intentionally survive this phase (Bello, 2004). Infertility affects about 10 - 20% of couples in Africa and about 5 - 15% of couples in developed countries. (Maya et al., 2012) Infertility is said to have increased from 42.0 million in 1990 to 52.6 million in 2010 (Reis et al., 1998). Procreation is a major factor in marriage, especially in this part of the world and some people being still very much traditionally inclined, assumed the larger the number of children, the better despite the economic situation and also the larger world population.

In most cases of infertility, the woman bears the blame, mostly in Africa. But for more scientific research and literacy on the subject of infertility, people are exposed more to seek solution medically and are more enlightened to know that infertility can rest with either the female or the male partners and not just the female alone as many assume and in some cases, the male is the sole cause thereby making them more involved and available through the whole process of diagnosis and thereafter treatment (Cox et al.,2016; Reis et al., 1998).

Infertility is either said to be primary or secondary. Primary infertility is when there has been no form of conception at all, while secondary infertility is when there has been a form of conception before regardless of if it led to live birth or not and now the issue of inability to conceive again (profile of infertility in a teaching hospital in Northwest of Nigeria) ((Cox et al.,2016: Maya et al., 2012).

There are some factors which influence infertility. In males, such factors include obesity, varicocele, ejaculatory duct obstruction, prostatic cysts, amongst others. In females, these factors can be broadly categorized into the following: Uterine factors such as -infections, congenital anomalies, cervical stenosis, etc.

Tubal factors such as – Infections, tubal litigation, tubal blockage and other tubal abnormalities and cervical factors also. Other factors that can influence infertility in females include Age (as the fertility rate of a woman naturally declines with age, mostly from the age of 40). Obesity is also a factor that can influence infertility in females as well as lifestyle. Among all these factors, tubal blockage accounts for about 35 - 40% of patients presenting with cases of infertility (Vlohos & Choussein, 2012).

In treating couples faced with the issue of infertility, Hysterosalpingography (HSG) plays an essential role for the females as it is often requested as the first line investigation (Imaoka 2003). HSG is a special radiological examination that is being carried out on the female patient to evaluate the patency of the fallopian tube with the use of contrast media. HSG is a safe, invasive procedure which is very useful in evaluating the fallopian tube and the morphology of the uterine cavity and endo-cervical canal (Maya et al., 2012). Asides infertility which HSG Examination is commonly known for, there are also other indications for HSG such as Amenorrhea, leiomyomas, recurrent abortion, surgical changes, amongst others but for the purpose of this research, our focus was mainly on HSG as pertains to infertility only.

Although in most developed countries of the world, other imaging modalities such as Magnetic Resonance Imaging (MRI) which is a non-invasive, non-ionizing procedure and require less subjectivity even though, it is more expensive and takes more time with contra indications of implants and certain metallic objects (Balen, 2000) and also Laparoscopy and Hysteroscopy which are more invasive and expensive are being used in the diagnosis of the cause(s) of infertility (Ugboaja et al., 2019; Eduwem.et al., 2026). But here in Nigeria, due to its large availability and affordability, HSG is still very much the first line of investigation other than any other modality for patient presenting with case of infertility (Ugboaja et al., 2019), even though it has some disadvantages, such as the risk of exposure to ionising radiation and patient discomfort.

There is paucity of records of common pathological findings on infertility in south-south of Nigeria. Hence, the need for the study. This study focused on the reports for Hysterosalpingography patients presenting with indication of infertility only, in 5 hospitals and 4 diagnostic centers spread across the south-south region of Nigeria from November, 2022 - October, 2023 with the aim of investigating the common pathological findings. This is to further identify and document the common cause of infertility in the various states of the region, to show the similarities and differences in the common findings across the States, to determine the pattern of HSG findings in infertile women and to show the age distribution of women commonly affected with infertility in the region of the study.

MATERIALS AND METHOD

This study was a retrospective, non-experimental, descriptive research design. A non- probability convenience sampling technique was used to select 370 patients' medical records. This was performed retrospectively by reviewing the data obtained for a period of 12 months on women presenting with infertility registered in the different selected hospitals in the South-South region of Nigeria. Data were collected using a checklist to elicit information such as; Patient's age, Clinical information, Date of examination and Radiological findings. The data was then categorized using Microsoft Excel for analysis. Data were analysed using descriptive and inferential statistics. Chi-Square test of association with box plot was used for the proportion of findings across the states and between the common pathologies and age range.

RESULTS

Table 1: Table of maximum and minimum age

	n	Minimum	Maximum	Mean	Std. Deviation
Age	370	23	45	34.52	4.569
	370				

The age ranged between 23 and 45 years with a mean value of 34.52.

Findings	Frequency	Percent
Bilateral hydrosalpinx	10	2.6
BTB	70	18.1
Cervical adhesion	40	10.4
Cervical stenosis	12	3.1
Nabothian cyst	1	.3
Tubal adhesion	11	2.8
Unilateral hydrosalpinx	32	8.3
Unilateral tubal blockage	107	27.5
Uterine adhesion	41	10.6
Uterine fibroid	47	12.3
Total	370	100

Unilateral tubal blockage ranked the highest (27.5%), while Nabothian cyst was least in the spectrum of findings (0.3%). Bilateral tubal blockage (BTB) was present in 18.1% (70) of women in this study, as uterine fibroid accounted for 12.3% (47) of cases.

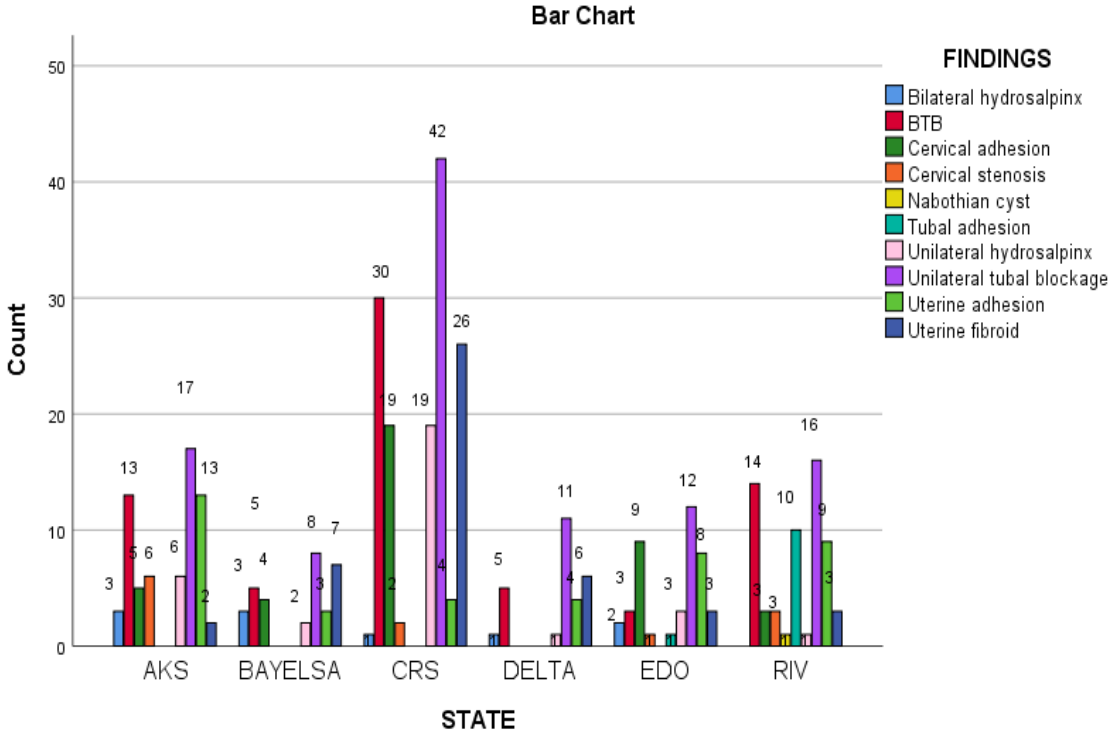

Figure 1: A bar chart showing the ranking of findings in each South-South State

Unilateral tubal blockage ranked highest across the states in the South South region of Nigeria (40.2%), Bilateral tubal blockage (BTB) and uterine fibroid were present in 30 and 7 cases in Cross-River State (CRS) respectively. Unilateral tubal blockage was significantly more across the regions than other findings ($X^2 = 130.45$; $p < 0.05$).

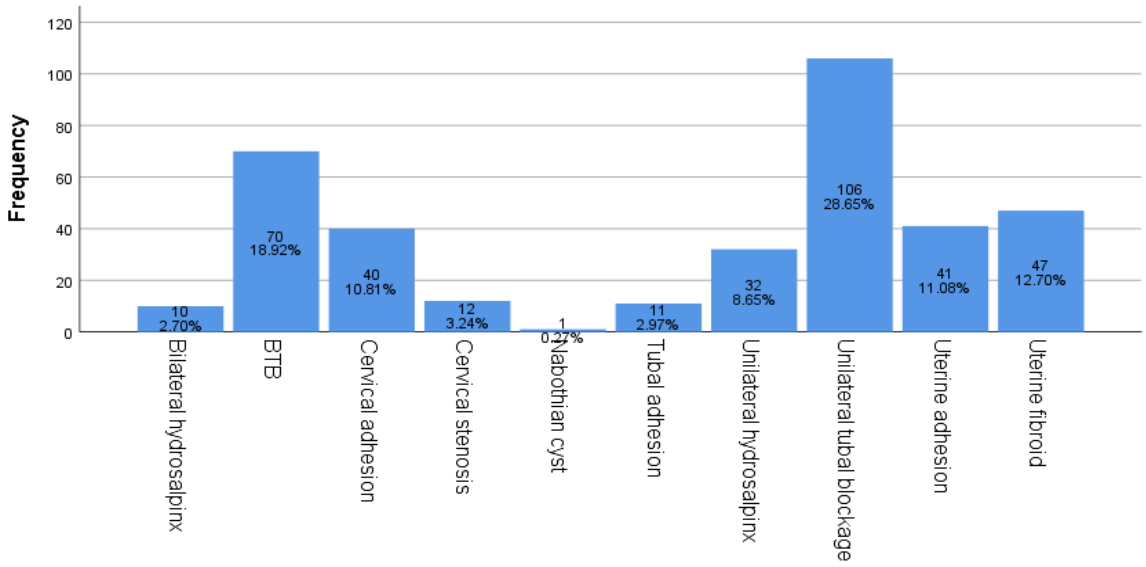

Figure 2: A bar chart showing the frequency of HSG findings among women in the region of study.

Figure 2 above shows that unilateral tubal blockage (28.65%) to be the most common pathological findings (106) in most infertility cases in South-south. BTB (18.92%) was seen to be the second common pathological finding (70) followed by Uterine fibroid (12.70%.), which was 47.

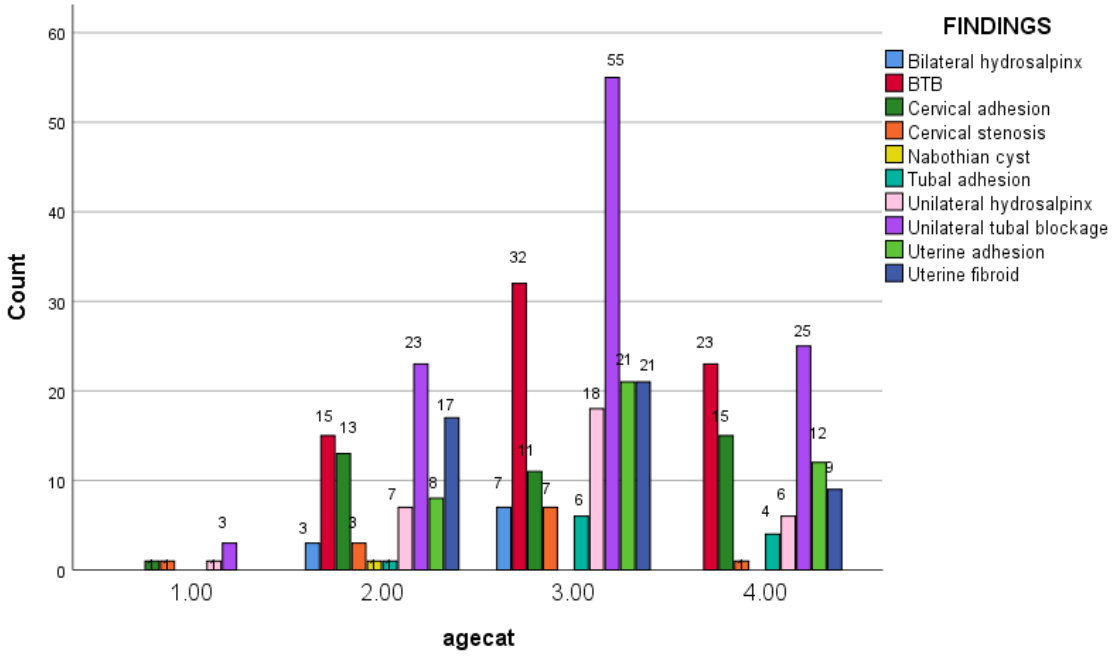

Figure 3: A bar chart showing the age range in relation to the radiological findings

Figure 3 above shows a correlation of age with the clinical findings; where 1.00 represents age group 23-25,2.00 represents age group 26-31,3.00 represents age group 32-37 and lastly,4.00, which represents age group 38-45.

From Chi square test of association, the result reveals that Unilateral tubal blockage was significantly associated with all the age grouping, with the highest proportion present in the age grouping 32-37 years ($\chi^2 = 178.29$; $P < 0.05$), which also was the age group with the highest population in the region of study.

DISCUSSION

The mean age (34.2) with a standard deviation of 4.569 in table 1 indicates that most of the sample with infertility were in their 30s, specifically age group 32-37 and the standard deviation indicating a low variability, in the age data set of study. This is in tandem with Eduwen *et al.* and Moi *et al.* with women in their 20s presenting infertility (Eduwem, 2016: Moi et al., 2017). This shows a difference in comparison with a study done in the North Eastern part of Nigeria, where the most population were women in their 20s with the minimum age being 16years (Abubakar et al., 2016). Socio-cultural differences in the two regions such as early marriages in the North and lifestyle can account for this disparity.

Across the six States in the study area, Rivers State recorded unilateral tubal blockage, bilateral tubal blockage (BTB) and tubal adhesion indicating tubal abnormalities as the most common. While Cervical adhesion, Cervical stenosis and uterine fibroid were the least occurring HSG pathology for infertile patients. This corroborates with a similar study Rivers State where hydrosalpinx was most occurring, uterine fibroid, and adhesions including tubal blockage were recorded (Nwankwo & Akani , 2005).

In Akwa-Ibom State, unilateral tubal blockage was common, Bilateral tubal blockage, uterine adhesion, unilateral hydrosalpinxes and cervical stenosis, cervical adhesion, bilateral hydrosalpinxes and uterine fibroid were found. This is different from a study were uterine fibroid was the most occurring at the time with tubal blockage ranking the second most common and adhesions (Moi, et al., 2017). In Edo State, unilateral tubal blockage, cervical adhesion, uterine adhesion, bilateral tubal blockage, unilateral hydrosalpinxes and uterine fibroid were found each with bilateral hydrosalpinxes as the least occurring.

In Cross-River State, unilateral tubal blockage, bilateral tubal blockage, uterine fibroid, unilateral hydrosalpinxes, cervical adhesion, uterine adhesion and cervical stenosis were found. This finding contradicts a previous study in Calabar were uterine abnormalities was most occurring with uterine fibroid topping the list of uterine abnormalities and tubal abnormalities as the next most common, with tubal blockage topping the list of the tubal abnormalities (Eduwem et al., 2017).

In Bayelsa State, unilateral tubal blockage, uterine fibroid, bilateral tubal blockage, cervical adhesion, bilateral hydrosalpinxes, uterine adhesion, and unilateral hydrosalpinxes were recorded. In Delta State, unilateral tubal blockage, uterine fibroid, bilateral tubal blockage, and uterine adhesion were found. This agrees with a similar study in Niger Delta region were tubal abnormalities were common pathology in HSG patients who come with the case of infertility (Kirdi et al., 2015).

An evaluation of these common pathologies found in all the States across the south-south region of Nigeria, revealed a similarity in result. This is in accordance some local literatures (Abubakar et al., 2016; Aduayi et al., 2016) which were conducted in the North East and South West of Nigeria and tubal abnormalities recorded 106(28.6%). Many international studies also revealed similar results (Botwe et al., 2015; Elsie & Rosemary 2004). This finding was common in age group 32-37 years whose cause could be as a result of lifestyle peculiar to the locality, pelvic inflammatory disease, endometriosis, past abdominal surgeries, poorly/ untreated infections and sexually transmitted diseases such as chlamydia, gonorrhoea, etc (Aduanyi et al. 2016). These cervical abnormalities could also be as a result of infections, poorly treated infections, endometriosis, poorly managed spontaneous abortion, unsafe abortion, diathermy excision of cervical lesion, instrumentation and parturition, amongst other possible reasons (Elsie & Rosemary 2004).

CONCLUSION

The most common pathological findings in South-South region of Nigeria is unilateral tubal blockage, occurring mostly in age group occurred within the age group 32-37years.

It is recommended that further analytical study can be done on specific factors like lifestyle, food, and common disorder that affects the reproductive system of the women.

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CONFLICTING INTEREST

The authors have no competing interest.

ETHICS

Verbal and written consent was sought and obtained from University of Calabar Teaching Hospital Research Ethics Committee.

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