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Contribution of Hysterosalpingography (HSG) in Female Infertility in Kati

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Abstract **Original Research Article**

Introduction*:** Female infertility is a frequent reason for consultation and is therefore a real public health problem. The objective is to study the contribution of HSG in the etiological research of this infertility. ***Materials and Method*:** This is a bicentric study carried out in the Medical Imaging Department of the Pr Bocar Sidy SALL University Hospital and at the "Amitié" Medical Clinic (CMA) of Kati over a period of two years (from 01 January 2020 to 31 December 2021). The examinations were largely performed by radiologists in the first part of the cycle, after menstruation and outside of any infectious context. The variables studied were sociodemographic, clinical and radiographic data. The readings of the images were made by the radiologists. The GE PRESTILIX 1600X remote-controlled table was used for examinations in each centre. ***Results: At the end of our study, we collected 421 files: 223 cases at the CHU and 198 at the CMA. These examinations were requested by gynecologists in 70% of cases, the average age of our patients was 31.4 years and the 25-34 years age group was in the majority (50.4%). The most recovered clinical information was sterility with 40.6% (21.4% for secondary sterility and 19.2% for primary sterility) and desire for children (17.6%). Examinations were done by radiologists (47%) and medical assistants (40%). The result was normal in 58% of cases and pathological in 42% of cases; Among the pathologies, tubal abnormality was the majority (71.2%) dominated by tubal obstruction in 59.5% of cases, followed by hydrosalpinx in 35.7% of cases. Uterine pathologies were dominated by myomas (25.5%) followed by uterine synechia (21.6%). ***Conclusion*:** Female infertility is common, affecting young women. The HSG allowed us to detect certain lesions, largely tubal and uterine abnormalities. It is the examination of choice in the search for tubal abnormality in our country.

Keywords: Female Infertility-HSG-CMA, Kati University Hospital.

INTRODUCTION

Infertility is the inability to achieve pregnancy in a woman who is not on contraceptives and has normal sexual activity for a period of one year [1-3].

Some define it as the impossibility of achieving pregnancy after 24 months of regular, unprotected sex and by a couple of childbearing age [4].

For other authors, it takes a period of one to two years of unprotected sex [5]. According to the WHO, infertility affects 31% of women of childbearing age in developed countries, 37% in Africa, 34% in Asia, 25% in Latin America [6].

Hysterosalpingography (HSG) remains one of the examinations likely to assess the condition of the uterine cavity, to study the permeability and tubal morphology [7, 8]. It is important in the sterility assessment. It occurs in the first part of the cycle, after menstruation and outside any infectious context [9]. Given an increase in requests for Hysterosalpingography examinations in the department, we decided to initiate this work with the aim of researching the main etiologies.

MATERIALS AND METHOD

This is a prospective and descriptive study carried out in two centers (CHU Pr BSS of Kati

Medical Imaging Department, and the Amitié Medical Clinic of Kati) over a period of two years (from January 01, 2020 to December 31, 2021). The examinations were carried out in the first part of the cycle, after menstruation and outside any infectious context. The readings of the images were made by radiologists. The variables studied were sociodemographic, clinical and radiographic data. Included was any woman admitted to both centres during the study period for hysterosalpingography. Not included were those who came for hysterosalpingography but did not have a year of marriage and non-consenting. The GE PRESTILIX 1600X remote-controlled table was used for examinations in each centre. The diagnosis of pathology was made in front of any abnormal image observed on the uterus or fallopian tubes. Data was entered with Microsoft Word 2013 and analyzed by SPSS version 25.0 and Excel 2016. Ethical consideration: The collection of data was carried out after obtaining the informed consent of the persons concerned, with respect for the anonymity of the patients and the confidentiality of the information.

RESULTS

At the end of our study, we collected 421 files: 223 cases at the CHU and 198 cases at the clinic. These examinations were requested by gynecologists in 70% of cases, the average age of our patients was 31.4 years and the 25-34 years age group was in the majority (50.4%) (Table I). The most recovered clinical information was sterility with 40.6% (21.4% for secondary sterility and 19.2% for primary sterility) and desire for children (17.6%). Examinations were done by radiologists (47%) and medical assistants with 40% of cases (Table II). The result (Table III) was normal in 58% of cases and pathological in 42% of cases; Among pathologies, tubal abnormality was the majority (71.2%) dominated by proximal tubal obstruction in 38.9% of cases, followed by hydrosalpinx in 35% of cases. Uterine pathologies were dominated by myomas (25.5%) followed by uterine synechia (21.6%).

Table I

Age group	Effective	Percentage
[15-24]	124	29,5
[25-34]	212	50,4
[35-44]	83	19,7
≥45	2	0.4
Prescriber		
Gynecologist	296	70,3
Midwife	20	4,8
General practitioner	69	16,4
Student	31	7,4
AS, Technician	5	1,2

Table II

Clinical Information	Effective	Percentage
Desire for a child	74	17,6
Secondary sterility	90	21,4
Primary sterility	81	19,2
Tubal permeability balance	59	14,0
Infertility assessment	72	17,1
Uterine emptiness	7	1,7
Subfertility assessment	21	5,0
Utero-annexal status	17	4,0
Examination Operator		
Imaging Technician	28	6,7
Imaging Medical Assistant	169	40,1
IMAGING	20	4,8
Radiologist	198	47,0
Student	6	1,4

Table III

Results	Effective	Percentage
Normal	244	58,0
Pathological	177	42,0
Tubal pathologies		

Results	Effective	Percentage
OTP	49	38,9
OTD	26	20,6
Hydrosalpinx	45	35,7
Tubal inflammation	2	1,6
Phimosis	4	3,2
Pathologies utérines		
Uterine synechia	11	21,6
Uterine myoma	13	25,5
Endometriosis	7	13,7
Bicornuate uterus	4	7,8
Cervico-isthmian gaping	8	15,7
Cervico-isthmic stenosis	8	15,7

DISCUSSION

Age

The most represented age group was [25-28] years with an average of 31.12 +/- 5.85 years. SANOGO M [10] and YEKPE A P *et al*., [11] found a similar result to ours with an average age of and 30.39 years 32.41 years; on the other hand DEMBELE N [12] and KOUAME N *et al*., [13] found a younger average age of 27.78 years and 26 years. These results show us that age differs between areas.

Prescriber

Most prescribers were gynecologists with 70.3% of cases. This is explained by the fact that gynaecologists are more solicited in the management of the infertility of the couple, especially women.

Clinical information

In our study, the dominant clinical information was sterility with 40.6% of which 21.4% for secondary sterility and 19.2% for primary sterility.

There is evidence in the literature in general and in sub-Saharan Africa in particular that Infertility workup is the most common clinical information and secondary infertility dominates primary infertility in many cases. This can be explained by the definition of the word infertility "absence of pregnancy after 12 to 24 months of complete, regular and contraceptive sexual intercourse in a heterosexual couple" [14]. Many studies have confirmed this high rate of infertility, as in: SANOGO M [10] which found 82% of cases of infertility including 33% of cases of primary infertility and 49% of cases of secondary infertility. BELLEY P E *et al*., [1] which obtained 82.2% of infertility cases including 57.4% of secondary infertility cases and 31.9% of primary infertility cases. N'DAKENA [15] found 75% secondary infertility to 25% primary infertility. N'GOAN [16] found 83.9% secondary infertility and 4.8% primary infertility and ZOROM B [17] found 91.9% infertility cases, including 70.8% for secondary infertility and 21.1% for primary infertility.

Examination Operator

Radiologists performed the most examinations with 47% of cases. This is explained by the fact that all the examinations of the clinic were carried out by a radiologist.

RESULTS

In our study, 58% of the results were normal and 42% were pathological. This result is different from that obtained by many African authors: BELLEY P E [1], DEMBELE N [11] and SANOGO M [10] who found respectively 56.8%; 62.7% and 77% of cases of pathological examinations.

Seat of pathologies:

Tubal pathologies

In our study, tubal abnormality was the most common with 71.2% of all pathologies.

This high rate of tubal pathology is confirmed by many authors in the literature but in terms of frequency we have a result:

- Higher than those of DEMBELE N [11] (63.4%) and ZOROM B [17] (57.6%).
- Similar to those of NEOSSI G M *et al*., [18] (66.6%), DIAKITE M [19] (69.56%), SANOU R [20] (72.49%) and DESRENTES [21] (72%).
- And lower than that of DIADHIOU [22] (81%).

Tubal abnormality:

Tubal obstruction

Among tubal abnormalities, tubal obstruction was the most common with 59.5% of cases including 38.9% proximal obstruction and 20.6% distal tubal obstruction. This high rate of tubal obstruction has been proven in the share of studies: KONATE K [23] with 52% of cases of tubal obstruction; TOURE A *et al*., [24] with 55% of cases; Sanogo M [10] and DIAKITE M [18] with respectively 70.45% and 69.56% of cases of tubal obstructions.

Hydrosalpinx accounted for 35.7% of cases. This result is similar to that of DEMBELE N [11] and SANOGO M [10] with respectively 36.6% and 29.55%.

However, our result is higher than those of TOURE A *et al*., [24] and NEOSSI G M *et al*., [18] which found respectively 10% and 8.33%. This difference can be explained by the fact that their samples are inferior to ours.

Uterine abnormality

In our study, uterine pathology accounted for 28.8% of lesions. This result is consistent with that of YEKPE A P *et al*., [13] (28.1%); lower than those of BELLY P E *et al*., [1], GANDJI *et al*., [25] and SANOGO M [10] which obtained respectively 39.9%, 37.6% and 42.86% of cases of uterine lesions.

Uterine myomas predominated with 25.5% of cases. This high rate of uterine myomas among uterine pathologies is confirmed by many authors in the literature. Thus:

- KOUAME N *et al*., [12] with 23.8% of cases; NEOSSI G M *et al*., [26] with 26.66% of cases had a similar result.
- Others obtained a lower result than ours: NEOSSI G M et all [18] with 12.5% of cases and DEMBELE N [11] with 2.8%.
- On the other hand SANOGO M [10] (45.46%); YEKPE A P *et al*., [13] (50%); TOURE A *et al*., [24] (38%) obtained a higher result than ours.

Uterine synechiae accounted for 21.6% of uterine lesion cases.

In the literature the results are variable: our result is:

- Similar to that of CISSE *et al*., [27] (21.7%); SANOGO M [10] (21.21%); GANDJI S *et al*., [25] (22.8%); BELLEY P *et al*., [1] (22.8%).
- Higher than that of DEMBELE N [11] (4.2%), M. EL GUEDDARRI *et al*., [28] (12.2%), KOUAME N *et al*., [12] (13.3%).
- Lower than that of TOURE A *et al*., [24] (27.6%) and YEKPE A P *et al*., [13] (36.9%).

Cervico-isthmian gaping and cervico-isthmic stenosis each accounted for 15.68%.

This result is higher than that of Mr EL GUEDDARRI *et al*., [28]; DEMBELE N [11]; YEKPE A P *et al*., [13]; SANOGO M [10] who found respectively 1.2%; 1,4% ; 2.6% and 6.66% of cases of cervico-isthmic gaping.

We present these iconographies to illustrate our results which are mostly normal but also a wide range of pathologies testifying to the various and varied etiologies.

ICONOGRAPHY

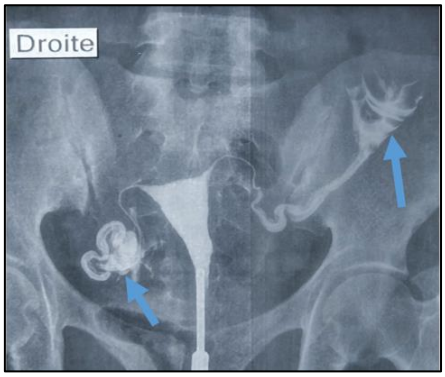

Figure 1: HSG face image in the repletion phase: normal hysterosalpingography with bilateral tubal permeability and peritoneal mixing of contrast (arrows)

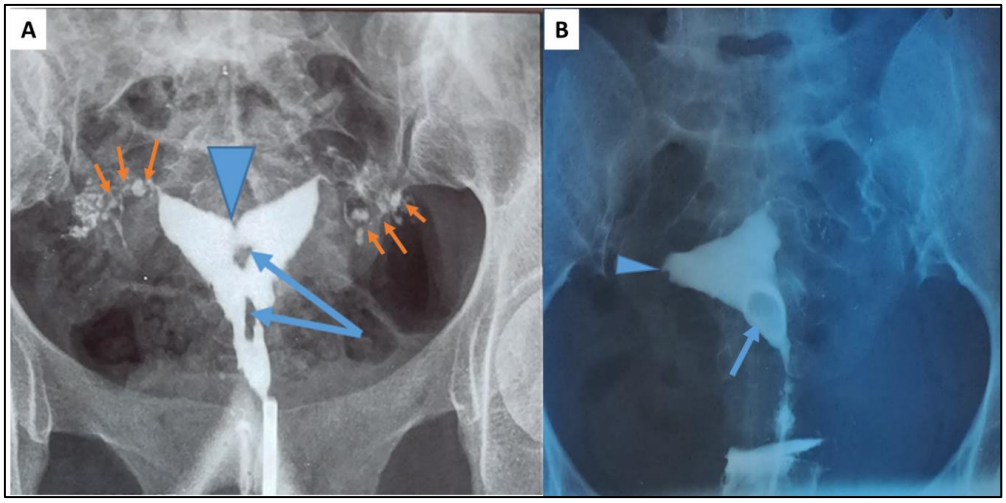

Figure 2: HSG, frontal image in the repletion phase: A: Uterine synechia achieving a double lacunar image, irregular fundic and isthmian (blue arrow) on a uterus with arched bottom (arrowhead) associated with inflammation of the tubes achieving a succession of images of dilation and tubal narrowing (orange arrows) without significant peritoneal mixing; B: Image of

isthmo-fundic subtraction (arrow), rounded, with sharp and regular contours evoking uterine myoma associated with a right proximal tubal obstruction (arrowhead)

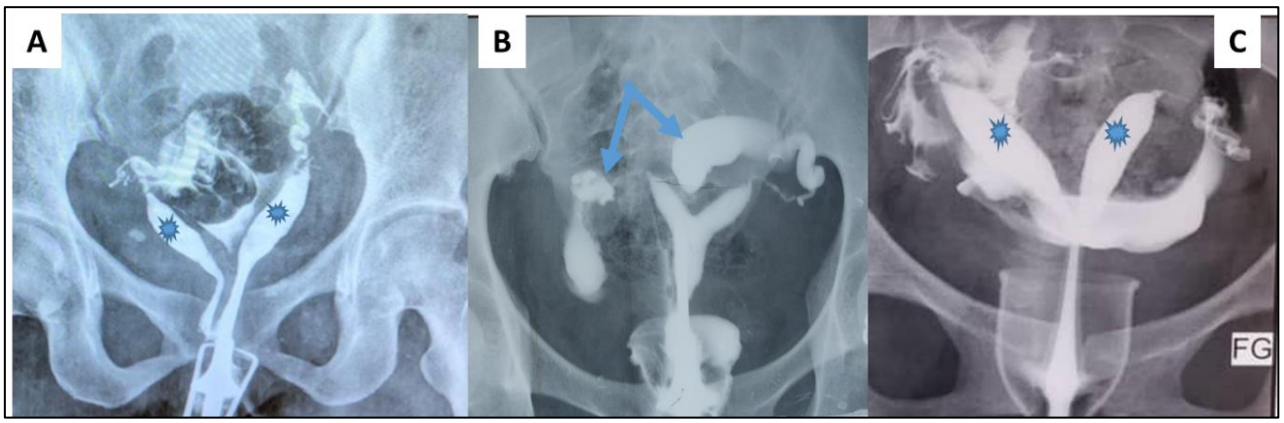

Figure 3: HSG frontal images in the repletion phase: A: Bicervical bicornuate uterus (star) with bilateral tubal patency; B: Didelphus uterus with bilateral hydrosalpinx (arrow); B: Unicervical bicornuate uterus (star) with bilateral tubal permeability

CONCLUSION

Female infertility is common in our environment affecting mainly young subjects. The causes are varied and the HSG allowed us to detect many lesions, largely tubal but also uterine abnormalities. It is the examination of choice in the search for tubal abnormality in our country. It is necessary to couple it with other means of imaging especially ultrasound in ovarian lesions.

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