

Analysis of 122 Cases of Hysterosalpingography on Women Infertile in Libreville (Gabon)

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Abstract

Objectives: To describe and analyse the lesions observed during hysterosalpingography in infertile married women.

Patients and methods: We conducted a cohort descriptive and analytical study with retrospective recruitment from 1st January to 31st December 2010 at Josephine Bongo maternity hospital. Married female patients who consulted for infertility were included in this study.

Results: We included 122 patients. Infertility accounted for 0.48% of consultations. The average age was 32.07 ± 7 years with dominant secondary infertility (82.8%); no visible means of support $64.28 \pm 3\%$ and average duration of infertility was 6.28 ± 3 years. The report of infection screening detected 78.65% of positive chlamydial serology. Tubal affections (81.45%) were the main lesions observed during hysterosalpingography. Among them, 61.71% concerned both ends of fallopian tubes (43.20% distal and 18.51% proximal).

Conclusion: Tubal affections are the main causes of infertility in women in Gabon. Genital infections are the major risk factors. Health care teams should be aware of the emergency treatment of female genital infections and a centre for medically assisted reproduction should be set up.

Keywords: Infertility; Chlamydia trachomatis; Hysterosalpingography; Gabon

Introduction

Infertility is defined as the absence of pregnancy in a couple of reproductive age till 24 months of regular and unprotected sexual intercourse. Several factors were identified: demographic, socioeconomic, psychological and medico-surgical factors [1]. Gabon distinguishes itself by a low birthrate (3.5%) [2] and a low demography (1,500,000 inhabitants in 2005) [3]. In our context, managing infertile couples is difficult and not organized. Difficulties lie in the low level of the social status of most of our patients which provides with a limited access to modern means for investigating infertility, in addition to which there is the scarcity of technical support centres. Conventional radiography and ultrasound are currently available. Thus we can easily perform a Hysterosalpingography (HSG) or a Pelvic Ultrasound (PU). HSG is a first line examination in our practice in this case. Every previous series carried out in Gabon and in the rest of sub-Saharan Africa showed the impact utero-tubal affections in the occurrence of infertility [4-6]. We report the results of a descriptive study of women in infertile couples Libreville. The aim of this study was to describe and analyse the lesions found during HSG (the most frequent, the most difficult to treat and the one that could be managed with surgical therapy), for a better therapeutic indication and the implementation of a centre of medically Assisted Reproduction Technology (ART).

Patients and Methods

This is a retrospective and descriptive study carried out at Josephine Bongo university maternity hospital. The duration of the study was spread over 1 year, from January 1st to December 31st, 2010. Patients living as a couple for 2 years or more and who had consulted for infertility were included. Management consisted of a complete clinical examination and a first-line paraclinical examination comprising of a Hysterosalpingography (HSG), a pelvic ultrasound, whenever a clinical point of care was available and an infection screening limited to a *Chlamydia trachomatis* Serology (CS) test and a C-Reactive Protein (CRP) test. The significant presence of immunoglobulin A was in

favour of a *Chlamydia trachomatis* active infection and the CRP test was considered positive when the rate was higher than 15 milligrams per litre. HSG was performed with antibiotic prophylaxis during the follicular phase comprising between the 8th and the 11th day using a iodinated hydrosoluble contrast medium (TELEBRIX HYSTERO®). All the results were interpreted by the radiologist. Data were recorded on a record form so as to study the following parameters: socio-demographic characteristics (age, marital status, and occupation), type and duration of infertility, history (parity, gestation, abortion, pelvic surgery, and sexually transmitted infections), clinical data and the results of the HSG, PU, CS and CRP tests. Only incomplete records were excluded from this study. Data were captured and analysed with Epi info version 6.0.4 software. Results were stated in average \pm for quantitative variables, and in percentage for qualitative variables. Descriptive univariate and comparative bivariate analysis were performed for quantitative variables using the *Chi² test*. $p < 0.05$ was considered a significant threshold.

Results

During the period of the study, we retained 122 cases, i.e. 0.48%; 21 patients (17.21%) consulted for primary infertility, and 101 (82.8%) for secondary infertility.

Age

The average age was 32.07 ± 4 years with 21 and 45 as extreme values. The most affected age group was that of 30-35 years (Table 1).

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Received December 05, 2012; **Accepted** January 16, 2013; **Published** January 24, 2013

Citation: SIMA OLE B, MAYI TSONGAS, BANG NTAMACK J, AMBOUNDAN, MEYE JF (2013) Analysis of 122 Cases of Hysterosalpingography on Women Infertile in Libreville (Gabon). Gynecol Obstet 3:140. doi:10.4172/2161-0932.1000140

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Social status

Forty eight patients (39.34%) were married, 74 (60.65%) were single and 78 (64%) had no visible means of support.

History

The average gestation was 2.36 ± 1 pregnancies with 0 and 9 as extreme values; the average parity was 1.08 ± 1 para with 0 and 5 parae as extremes. Among them, 21 (17.22%) were nulligravidae and 48 (39.34%) nulliparae (Table 1). On average the last child was 5.70 ± 5 years old with extremes of 0 and 21, and the average duration of infertility was 6.28 ± 3 with extremes of 2 and 21 years. Induced abortions were found in 79 (64.75%) cases, pelvic surgery was found in 22 (35.24%) cases and sexually transmitted infections in 70 (53.37%) cases.

Results of additional examinations

HSG was pathological in 81 (66.40%) of cases (Table 2). In this group, 35 (43.20%) cases of Bilateral Distal Tubal Occlusion (BDTO) and 15 (18.51%) cases of Bilateral Proximal Tubal Occlusion (BPTO) were found (Table 3). Diseases according to age, duration of infertility, gestation and parity found during the HSG are illustrated in table 4. Ultrasonography was contributory in 8 cases (6.55%). CRP test was found positive in 92 patients (75.41%), among which 87 (94.66%) had a positive chlamydial serology. *Chlamydial trachomatis* infection was found in 96 (78.69%) patients of which 69 (71.87%) versus 27 (28.13%) ($p < 0.001$) were found with a lesion during the HSG. This infection

Parameters	n	%
Age (year)		
• <25	18	14.75
• 26-29	25	20.49
• 30-35	55	45.08
• >35	24	18.68
Gestation		
• Nulligravidae (0)	21	17.22
• 1-3	68	55.73
• ≥ 4	23	18.85
Parity		
• Nulliparae (0)	48	39.34
• Pauciparae (1-3)	63	51.63
• Multiparae (≥ 4)	11	9.01
Total	122	100

Table 1: Distribution according to age, gestation and parity (n=122).

Examinations	Normal (n, %)	Abnormal (n, %)
PU	114/93.44	8/6.56
HSG	41/33.60	81/66.40
CS	26/21.35	96/78.65
CRP	30/24.59	92/75.41

PU: Pelvic Ultrasound; HSG: Hysterosalpingography; CS: Chlamydial Serology; CRP: C-reactive Protein

Table 2: Results of paraclinical examinations.

Type of lesion	(n)	(%)
OTBP	15	18.51
OTBD	35	43.20
OTGP	2	2.46
OTDP	14	17.28
Septate/synechiauteri	11	13.58
Myomas	4	4.94
Total	81	100

BPTO: Bilateral Proximal Tubal Occlusion; BDTO: Bilateral Distal Tubal Occlusion; LPTO: Left Proximal Tubal Occlusion; RPTO: Right Proximal Tubal Occlusion

Table 3: Main lesions found during HSG.

Studied parameters	Abnormalities found during HSG (n)	Percentage (%)
Age (years)		
• ≤ 25	04	4.94
• 26-29	18	22.22
• 30-35	39	48.24
• >35	10	12.34
Duration of infertility (years)		
• 2	11	13.58
• 3-5	20	24.69
• 6-10	23	28.39
• >10	27	33.33
Gestation		
• Nulligravidae	17	28.98
• 1-3	45	55.55
• >4	19	23.45
Parity		
• Nulliparae	29	35.80
• Pauciparae (1-3)	43	53.08
• Multiparae (>3)	09	11.11
Total	81	100

Table 4: Abnormalities found during HSG according to age, duration of infertility, gestation and parity.

	HSG		
CS	Abnormal (n)	Normal (n)	p
Positive (n, %)	69/71.87	27/28.13	0.001
Negative (n, %)	12/46.15	14/53.85	0.062

Table 5: Results of CS test and abnormalities found during HSG.

screening was found negative in 26 (21.35%) patients, and 14 (53.84%) versus 12 (46.15%) patients ($p < 0.062$) (Table 5) were not detected with any lesion during the HSG.

Discussion

Josephine Bongo Maternity Hospital is located in the periphery of Libreville (Owendo). Owendo is located in a maritime industrial development area. It houses the faculty of medicine and its population is estimated at 50,000 inhabitants. Very few women consulted for infertility and we included only 122 patients in this study, i.e. 0.48%. This figure is far from being the reality of infertility in our country. Infertility is very significant in Gabon. Zinsou et al. [5] found 47% in 1980 and Meyé et al. found 40% [4] in 2007. In all probability, fertility decreased due to the improvement of women's health status in Gabon. In France, prevalence of infertility is estimated at 15% [1]. Our figure is negligible because our institution mainly receives gestants. The epidemiological and clinical features of the patients included in our series do not differ from those of other series studied in the sub-region [6,7]. The average age is 32 years, without means of support, usually with secondary (82.28% in our series) and tubal (66.40%) infertility. Therefore, HSG was obvious to us and became a first-line examination in the evaluation of female infertility. It provides with information on the integrity of the uterine cavity, tubal permeability and the existence of peritubal adhesions [8,9]. Tubal affections were the most frequently found lesions (81.48%). This figure is very high. It is similar to that Zinsou found (86.9%) in 1980 and slightly higher than the one Meyé found (71.7%) in 2005 [4,5]. Other African studies published identical figures (6.7). These findings are far from being the same in Western countries. In France, tubal indications (10%) in *In vitro* Fertilization (IVF) are constantly decreasing (less than 40% in 2002 versus 49.3% in 1998) and are currently ranking behind male indications (40%) and ovulation disorders (20%) [1]. Tubal affections are variously distributed according to age, duration of infertility, gestation, parity and whether there is a *Chlamydia trachomatis* infection or not. As far

as age is concerned, tubal diseases were more regularly found in the 26-35 years group. It was lesser in the minima of the age extremes. This would certainly be linked to importance of sexual activity and the number of partners. The duration of infertility was difficult to determine. We determined it from the date of the last pregnancy in secondary infertility cases. The occurrence of tubal diseases was proportional to the duration of infertility. For us, gestation and parity did not seem to be determinant in the occurrence of tubal pathology. Diseases were found in both nulligravidae and multiparae and similarly as far as parity was concerned. These findings suggest that there is a notion of exposure and duration of exposure to a factor responsible for tubal infertility. In our series, the *Chlamydia trachomatis* infection appeared to be determinant in the occurrence these abnormalities. Our results confirm those found in previous studies carried out in Gabon [4,5,10]. This disease-especially its silent form-which is systematically screened was found in 78.65% of the cases. This figure is the same as the one Meyé et al. found (78 %) in 2007 [4] and those found in other African studies [6,7]. Many studies [8,9,11] on female infertile patients confirmed the significance of this disease for the selection of tubal affections' high risk groups. Moreover, the *Chlamydia* serodiagnosis was found positive in more than 65% of tubal stenosis and ectopic pregnancy cases [8,11]. In our series, the abnormality found during the HSG was closely associated with a *Chlamydia* infection ($p < 0.001$). The infectious origin of secondary infertility in our regions is so important that other causes are screened only for second line investigation. Bilateral distal tubal occlusion was the tubal abnormality mostly found in our series. It includes hydrosalpinx, tubal phimosis and agglutinations of tubal fringes. This lesion can be managed with surgical therapy especially laparoscopy. Although they are complementary to HSG, laparoscopy and hysteroscopy are difficult to access and expensive modes of investigation in our context. The recent acquisition of new technical support centres may provide with an easy management of these diseases. However the duration of infertility (on the average 6.28 ± 3.4 years) and the high number of infectious episodes in our series make us believe that these findings are advanced scores for tubal lesions. The management of this type of lesions proves to be difficult. A major atrophy of the mucosa and a sclerohypertrophy of the wall are undesirable features for the prognosis and a contraindication for restorative tubal surgery [11]. HSG is very convenient in countries underequipped. It is a non-invasive and reproducible examination which only risk is infection. It makes it possible to establish the indication for an ART straightaway. Moreover, it has another benefit. A Cochrane database meta-analysis performed in 2007 showed that this examination increases the rate of spontaneous pregnancies through its "flushing" effect on fallopian tubes and helps prevent 30% of first-line laparoscopy for infertility investigation [12]. This is an effective examination for the exploration of the uterine cavity [13]. We have not found in the literature series praising the superiority of hysteroscopy in comparison to HSG in terms of sensitivity and specificity in this case. As far as tubal abnormalities are concerned, its diagnostic effectiveness was addressed in many publications [13-15]. HSG proved to be effective with a sensitivity between 81% and 84% but less specific (61 and 74.5% depending on the series) especially for proximal occlusions. Selective salpingography, hysterosonography and laparoscopy may improve this relative lack of specificity [13,15]. These examinations are difficult to perform in our context.

Conclusion

The epidemiological profile of the female in a childless couple did not evolve significantly in our country. It features a young woman without visible means of support. Mostly it is a secondary infertility of infectious origin. HSG is a significant support for the diagnosis

of anatomic lesions. It is reproducible and non-invasive. It has been recommended for years as first-line intervention for the management of infertile couples in our practice and for health care teams aware of emergency treatment of female genital infections. Concerning the importance of tubal affections, a subsidized centre of medically assisted reproduction technology must be implemented in our country.

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