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Research Article

Acute pelvic inflammatory disease in a sub-Saharan country: a cross sectional descriptive study

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ABSTRACT

Background: Acute Pelvic Inflammatory Disease (PID) can lead to tubal damage resulting in tubal infertility, ectopic pregnancy and chronic pelvic pain. This study aimed at identifying the sociodemographic profile and clinical presentation of women diagnosed with acute PID, as well as the microorganisms isolated.
Methods: This cross-sectional descriptive study was carried out between October 1st, 2013 and March 31st, 2014 in the University Teaching Hospital and the Central Hospital, both of Yaoundé (Cameroon). Seventy women diagnosed with acute PID were recruited. The main variables recorded were: maternal age, occupation, marital status, number of current sexual partners, the clinical presentation at admission and the microorganisms identified. Data were analyzed using SPSS 20.0.
Results: Mean maternal age was 29.0 ± 7.7 years. Students were more represented (37.1%), 58.6% were single, 64.3% had ≥2 sexual partners. The most frequent signs and symptoms were abnormal vaginal discharge (100%), adnexal tenderness (97.1%), cervical motion tenderness (94.3%) and fever ≥38.3°C (82.9%). No microorganism was isolated in 20% of cases, especially among women who underwent intra-uterine procedures. Among the cases where microorganisms were isolated, the most frequent germs were genital tract mycoplasmas (54.3%) and Chlamydia trachomatis (37.1%).
Conclusions: Acute PID is common among young, single women with multiple sexual partners, who should be regularly screened for the various sexually transmissible infections. The micro-organisms frequently responsible for acute PID were genital tract mycoplasmas, whose identification should be included among the routine tests done to women with acute PID. Cases of acute PID due to intra-uterine procedures reminds us that adequate asepsis should be observed during these procedures.

Keywords: Acute pelvic inflammatory disease, Patients' sociodemographic profile, Clinical presentation, Microorganisms isolated

INTRODUCTION

Pelvic Inflammatory Disease (PID) is defined as the inflammation of the upper genital tract including the uterus, fallopian tubes, the ovaries and the pelvic peritoneum.[1,2] The incidence of acute PID has decreased in many countries,[3] though its true prevalence is not well known because the majority of cases are subclinical.[1,3] According to authors, its incidence varies between 0.28% and 1.67% worldwide.[4-6] In Africa, especially in sub-Saharan countries, the incidence is not well known and might be higher than these rates mentioned above.

The inflammation observed in PID results from infection, mostly bacterial.[1] The micro-organisms responsible can be sexually transmitted (Chlamydia trachomatis, Neisseria gonorrhoea),[7,8] or not (Streptococcus sp.,

Enterococcus faecalis, Echerichia coli, Klebsiella, Staphylococcus sp.).[2,9] It is estimated that around 10% of women infected by Chlamydia trachomatis subsequently develop PID.[8] More recently, genital tract mycoplasmas, especially Mycoplasma genitalium, have been implicated as a cause of acute PID.[10,11] Most often, many germs are simultaneously involved.[9,10] The other germs invade the tissues when the most virulent germ has either begun to destroy tissues or shift vaginal flora to an aerobic state as is the case for bacterial vaginosis.

Risk factors for PID are multiple sexual partners, single status, lower socioeconomic status, young age (<30 years), intra uterine contraceptive device, endometrial biopsy, curettage, hysteroscopy and hysterosalpingography.[4,12]

Complications of acute PID include the evolution towards tubal damage resulting in tubal infertility, ectopic pregnancy and chronic pelvic pain.[1,13-15] Although the incidence of PID has decreased in some countries, the incidence of infertility has not, due to the fact that the majority of cases are subclinical.[3] Consequently, acute PID should be diagnosed and treated early enough to avoid the above mentioned complications.

Knowing the sociodemographic profile of women as well as the common germs involved in acute PID might help us better know the group that should be targeted, in order to reduce the complications associated with this disease, given that some cases of acute PID are subclinical.

In our country, no study has been carried out on acute PID, hence, this one aimed at identifying the sociodemographic profile and clinical presentation of women with acute PID, as well as the germs responsible.

METHODS

This cross sectional descriptive study was conducted between October 1st, 2013 and March 31st, 2014 in the gynecologic units of the University Teaching Hospital and the Central Hospital, both of Yaoundé (Cameroon).

All women diagnosed with acute PID were recruited. Diagnosis of acute PID was clinical and based on the CDC 2002 criteria: presence of uterine/adnexal tenderness associated with cervical motion tenderness in absence of other identifiable causes, with or without other symptoms like abnormal vaginal discharge or temperature ≥38.3°C.

When patients were received, an informed consent form was obtained from each of them, the symptoms were recorded, the temperature was taken at the axilla and added with 0.5°C, the abdomen and pelvis were examined, followed by speculum and bimanual vaginal examination. When the clinical diagnosis of acute PID was done, a cervicovaginal swab was performed, then, culture and specific tests for the identification of Neisseria gonorrhoea, staphylococcus, streptococcus, mycoplasmas, and other germs were performed. A direct immunofluorescent test was done for the diagnosis of chlamydia trachomatis.

In our study, we wanted to know the socio-demographic and clinical presentation of women diagnosed with acute PID, as well as the microorganisms cultured. For each case of confirmed acute PID, the variables recorded anonymously and with confidentiality by the principal investigator on a pre-established questionnaire were: maternal age, occupation, educational level, marital status, number of current sexual partners (within the last two months), the gynecologic procedure performed within the last month, the clinical presentation on admission and the microorganism(s) identified.

Our minimal sample size of 67 patients was calculated using the following formula for descriptive studies $N=P(1-P)\ Z\alpha^2/D^2$ where $Z\alpha=1.96$ corresponds to a confidence level of 0.05, D=0.05 is the degree of precision and assuming that the prevalence of acute PID (P) might be around 4.5% in Yaoundé.

This research has adhered to the STROBE guidelines for observational studies. This study received approval from the ethics committees of the University Teaching Hospital and of the Central Hospital, all in Yaoundé (Cameroon).

Data were analyzed using SPSS 20.0. The results are presented as mean ± Standard Deviation (SD) for quantitative data and frequencies for qualitative data.

RESULTS

We had a total of 70 patients with acute PID out of 1344 women who consulted for gynecologic problems giving a hospital based prevalence of PID of 5.2% (or 52/1000).

Maternal ages ranged from 15 to 48 years with a mean of 29.0 ± 7.7 years. Table 1 shows distribution of maternal age. Concerning marital status, 41 women (58.6 %) were single as against 29 married women (41.4%).

Table 1: Distribution of maternal age.

Maternal age (years)	Number	%
<20	5	7.1
20-24	19	27.2
25-29	17	24.3
30-34	12	17.1
35-39	7	10
≥40	10	14.3
Total	70	100

Regarding occupation, students were more represented (26 or 37.1%), followed by housewives (20 or 28.6%)

then women working in the informal sector (14 or 20%). Civil servants and jobless women represented 7.1% each (5 cases). Analysis of educational level showed that 38 women (54.3%) reached secondary school, 18 (25.7%) have been to University while 14 (20%) had primary school education. Concerning the number of current sexual partners, 35.7% (25 women) had only one sexual partner while 40.0% (28 women) had two sexual partners, 18.6% (13 women) three sexual partners, and 4 women (5.7%) four partners or more.

Surgical procedures done within one month before the development of acute PID that might have favoured the development of the disease were present in 20 women (28.6%) and included dilatation and curettage or aspiration (12 cases), hysterosalpingography (7 cases) and hysteroscopy (one case).

The clinical presentation on admission revealed that many patients had more than one symptom. A temperature ≥38.3°C was present in 58 women (82.9%), there was cervical motion tenderness in 66 women (94.3%) and adnexal and/or uterine tenderness in 68 cases (97.1%) (Table 2).

Table 2: Clinical presentation at admission.

Signs and symptoms	Number	%
Abnormal vaginal discharge	70	100
Adnexal/uterine tenderness	68	97.1
Cervical motion tenderness	66	94.3
Fever (≥38.3°C)	58	82.9
Fatigue	37	52.9
Headache	22	31.4
Diarrhoea	19	27.1
Vomiting	13	18.6

Laboratory tests isolated no micro-organism in 14 women (20%). All these women underwent intra-uterine procedures. At least one micro-organism was cultured in 56 women (80%), including six women who had intra-uterine manipulations. Among these 56 women, 44 (78.6%) had polymicrobial infection (≥2 germs isolated). The results revealed that genital tract mycoplasmas were the most encountered micro-organisms (Table 3).

Table 3: Distribution of micro-organisms isolated*.

Micro-organisms isolated	Number	%
Genital tract mycoplasmas**	38	54.3
Chlamydia trachomatis	26	37.1
Gardnerella vaginalis	10	14.3
Trichomonas vaginalis	8	11.4
Streptococcus sp	4	5.7
Staphylococcus aureus	2	2.9
Neisseria gonorrhoea	1	1.4

*Some patients had more than one microorganisms isolated
**Mycoplasma hominis and Ureaplasma urealyticum

DISCUSSION

Our prevalence of PID (5.2% of attendances) is higher than those of 1.12% noticed among US armed forces[1] and 0.28%-1.67% found in UK.[4,6] Our incidence might even been higher than what was found, given that not all women go to hospitals when they are sick. This high rate in our series might be explained by the fact that some women have to depend on their partner(s), given the high rate of underemployment and poverty in our country. That might be a reason for which the majority of them (64.3%) had many sexual partners.

The mean maternal age observed in our series (29.0 years) was close to that of 30 years noticed in Nigeria.[2] The age group between 20 and 29 years was more represented in our series (51.5%), certainly because this consisted of students, who were more affected by acute PID (37.1%). This is different from what was observed in USA where armed forces were more affected.[16]

PID was more encountered among single women (58.6%). This has also been observed elsewhere.[17] Single women are more predisposed to have many sexual partners, especially if they had little or no income such as students. Some studies found that Black women were more affected by acute PID.[16,18]

The majority of patients in our series had secondary school education (54.3%). This can be explained by the fact that students were more represented. Our study showed that 28.6% (20 cases) of PID were favoured by intra-uterine manipulations, as observed elsewhere.[19] Therefore, asepsis should be well observed during intra-uterine procedures.

In six of our 20 cases who underwent intra-uterine manipulations, a microorganism was isolated. The same researchers proposed that screening for Chlamydia and Neisseria gonorrhoea should be done prior to intra-uterine procedures.[19]

The most frequent symptoms were abnormal vaginal discharge (100%) and spontaneous pelvic pain (64.3%). But on palpation, 97.1% of women had adnexal and/or uterine tenderness. Some authors found that the most common sign was pelvic pain (88.9%). They also found that 77.8% of their patients had at least one of the three minimal requirements for the diagnosis of PID.[20]

On physical examination, the other more frequent signs were cervical motion tenderness (94.3%) and fever (82.9%). In other series, cervical motion tenderness was present in 75% and adnexal tenderness in 34% of patients.[21] In two of our patients (2.9%), there was neither adnexal/uterine tenderness nor fever, but only slight cervical motion tenderness. Hence, practitioners should carefully examine women in order to diagnose subclinical acute PID.

In our series, the most frequently encountered germs were genital tract mycoplasmas (54.3%), in contrast with other series where the most frequent germ was Chlamydia trachomatis.[21] Genital tract mycoplasmas were thought not to be pathologic, but recent studies found that they can be responsible for urethritis in men, cervicitis and PID in women.[10,11] In our settings, many women with pelvic infection have their complaints subsided when genital tract mycoplasmas are identified and treated. This shows that screening for genital tract mycoplasmas should be as frequent as screening for chlamydia since some negative cases for chlamydia might be positive for genital tract mycoplasmas. Bacterial vaginosis has also been implicated in acute PID.[22]

The fact that no microorganism was isolated in 20% of our patients might show that either the microorganisms were no more present on the cervix, though the abnormal vaginal discharge present in all women, or the disease resulted from genital tract contamination during intra-uterine procedures.

Prompt and correct treatment should be carried out even among less symptomatic women to prevent the known complications of PID.

Some limitations of our study are that we were not very sure of the veracity of some answers given by women, although there was confidentiality and anonymity. For instance, the women might not have mentioned their correct number of sexual partners.

This study showed that acute PID is common in our environment, especially among young single women with multiple sexual partners. These women should be targeted and regularly screened for the various sexually transmissible infections. The micro-organisms frequently responsible for acute PID in our series were genital tract mycoplasmas. Therefore, screening for these germs should be included among the routine tests done to women diagnosed with acute PID. Cases of acute PID due to intra-uterine procedures reminds us that adequate asepsis should be observed during these procedures.

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