

## Original Research Article

# Lower Genital Infections: Which Germs Cause? At the Obstetrics Gynecology Service of the Reference Health Center of the Commune of Kalaban – Coro Circle of Kati Mali

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**Abstract:** Introduction This study was the first at the level of the obstetrics gynecology department of the Reference Health Center (CSRef) of Kalaban-coro Kati Mali. The objective was to determine the profile of the pathogenic germs identified and their proportion in case of imbalance of the vaginal flora in the genesis of lower genital infections in women at the level of our service. Methods: This was a descriptive study of the cross-sectional survey type which took place in the gynecology department of the Reference Health Center (CSRef) in the municipality of Kalaban – coro circle of Kati Koulikoro Mali. The study extended over a period of 12 months from February 2015 to January 2016 and involved patients seen in outpatient gynecology at our Center. The size of our sample consisted of 90 patients who agreed to participate in our study. The data was collected through a previously established survey form. Word processing was processed on World 2007 software and data entry and analysis were performed on SPSS 23.0 fr software. The statistical test used was the Chi2 considered significant when  $P < 0.05$ . **Results:** The frequency of genital infections was 10.01%. The most represented age group was 20 to 35 years old with 61.1%. The main germs identified were respectively: Candida albicans, Escherichia coli, Klebsiella and Gram-negative Bacilli with 16.7%, 15.7%, 13.4% and 11.1% respectively. Conclusion: At the end of this study, we found that the most frequent germs of lower genital infections were mainly represented by: Candida albicans, Escherichia coli, Klebsiella and Gram-negative bacilli.

**Keywords:** Lower genital infection, microbiological profile, vaginal sample intake.

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## INTRODUCTION

Infections of the lower genital tract (vulvitis, vaginitis, cervicitis) constitute a group of conditions which, due to their health and economic impact, pose a public health problem [6, 7]. These lower genital infections are manifested by vaginal discharge which may eventually be smelly and may be accompanied by redness of the vulva or itching. There are essentially three groups of lower vaginal infections, candidiasis which are fungal infections, bacterial vaginosis and other infections with trichomonas vaginalis or another germ responsible for sexually transmitted infections [10, 11].

Leucorrhoea corresponds to vaginal discharge related to a genital infection. The pathogens most frequently encountered in lower genital infections (ie, confined to the vulva, vagina and cervix) are yeasts, trichomonas and common germs. The diagnosis is based on the anamnesis, the clinical examination with the speculum and possibly bacteriological samples [12]. According to the World Health Organization (WHO), Sub-Saharan Africa is one of the regions most affected by sexually transmitted infections (STIs) [14]. The aim of this study was to establish the microbiological profile of the germs involved in these infections and their prevalence.

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## METHODS

The study took place in the obstetrics gynecology department of the reference health center of the municipality of Kalaban – Coro Kati Bamako. The health district of Kalaban – Coro covered an area of 25,425 km<sup>2</sup>, located on the right bank of the Niger Bamako River. The health district of Kalaban-coro had 5 communes (Baguinéda, Kalaban Coro, Mountougoula, N'Gouraba and Sanankoroba) all rural which included 95 villages. The Gyneco-obstetrics department had an operating theatre, a large hospitalization room, two single hospitalization rooms, a large toilet room, a labor room, a master midwife room, a guard of midwives, a prenatal consultation room, a consultation office for each obstetrician-gynecologist, a post-natal consultation and family planning room. The staff of the Gyneco-obstetrics department of the Kalaban-coro reference health center included: three specialists in obstetrics gynecology, an anesthetist medical assistant, fifteen midwives, ten nurses, four doing internal duties, a floor technician, three drivers. To this permanent staff were added students from socio-sanitary schools and students from the faculty of medicine, pharmacy and odontostomatology from different classes as part of their training courses. Emergency consultations and surgical emergencies were taken urgently every day 24 hours a day. Our study was descriptive of the cross-sectional survey type and covered a period of 12 months from February 1, 2015 to January 31, 2016. The study involved all women who had an outpatient consultation in our service.

**Sampling:** The study took place in several phases: a phase of development of the thesis protocol with proposal of an investigation sheet which was corrected and approved by the thesis director, an investigation phase during which the filling of the form was based on the inclusion criteria of the study at the end of a phase of development of the database. Thus the size of our sample was 90 eligible patients. The inclusion criteria concerned patients treated in our department for lower genital infection for whom a germ had been found on cytobacteriological examination of the vaginal sample and who had systematically carried out a cytobacteriological examination of the urine. The non-inclusion criteria related to any patient seen in our

department presenting at least one symptom of lower genital infection in whom no pathogenic germ had been identified on the cytobacteriological examination of the vaginal sample associated with the cytobacteriological examination of the urine but also patients who had not agreed to participate in the survey. The variables studied were: Sociodemographic profile (Age, profession, ethnicity, marital status, residence, level of education, spouse's profession), Reason for consultation, Predisposing factors, Medical history, surgical history (on the vulva, vagina or cervix), medical history gynecological, obstetrical history, state of pregnancy or not, frequency of intimate hygiene, disorders of sexual life, nature of underwear, products used for intimate hygiene, current treatment, frequency of sexual intercourse, number of sexual partners, Examination clinical (Characteristics of leucorrhoea, inspection of the vulva, speculum examination), Para-clinical examinations (Germs found in the vaginal sample, result of the Cytobacteriological Examination of the urine (ECBU)). The data were collected from an investigation form and the files of all the patients who consulted the gynecology-obstetrics unit in whom at least one germ had been found on vaginal swab. Word processing was performed on Word 2007 software and data entry and analysis on SPSS 23.0 fr software. The statistical test used was the Chi<sup>2</sup> considered significant when  $P < 0.05$ .

For ethical considerations, informed consent from study participants was obtained verbally. The anonymity of the patients was kept for the disclosure of the results. Participation in the study had no financial or material compensation for this study.

## RESULTS

During the period of our study from February 1, 2015 to January 31, 2016, we counted 90 cases of lower genital infections out of a total of 899 patients seen in outpatient clinics, i.e. a frequency of 10.01%. The 20-35 age group was the most represented with 61.1% and the average age was 20 years. Housewives, uneducated and married women were the most represented with respectively: 44.4%, 44.4% and 93.4%. On the other hand, female civil servants were the most numerous in our study with 52.2% of cases.

**Table -1: Distribution of patients according to socio-demographic characteristics**

Age group	Number	Percentage
≤ 19 years old	10	11,1
20 to 35 years old	55	61,1
> 35 years old	25	27,8
Total	90	100,0
Profession		
Housewife	40	44,4
Official	24	26,7
student	17	18,9
Trader	4	4,4

Age group	Number	Percentage
Others*	5	5,6
Marital status		
Married	84	93,4
Single	3	3,3
Divorcee	3	3,3
Educational level		
No schooling	40	44,4
Secondary	21	23,3
Superior	15	16,7
Fundamental	14	15,6
Total	90	100%

\*Housekeeper, seamstress

\* The drivers, tailor...

The main reasons for gynecological consultation were represented by pelvic pain (pelvic pain), the desire for a child (infertility) and vaginal

discharge (leucorrhoea) with respectively 24.4%, 21.1% and 17.8% of cases.

**Table-2: Distribution of patients by reason for outpatient consultation**

Reason for consultation	Number	Percentage
Pelvic pain	22	24,4
Desire for a child	19	21,1
Leucorrhoea	16	17,8
Dyspareunia	9	10,1
Dysuria	3	3,3
Vulvar pruritus	3	3,3
Prenatal consultation	2	2,2
Pollakiuria	1	1,1
Urinary burning	1	1,1
Infertility	1	1,1
Others*	13	14,5
Total	90	100,0

In about 8/10 of the cases or 83.4% of our patients had no medical history, on the other hand 11.1% of them were diabetic.

**Table-3: Distribution of patients according to medical history**

Medical history	Number	Percentage
Any	75	83,4
Diabetes	10	11,1
High blood pressure	2	2,2
sickle cell disease	2	2,2
HIV infection	1	1,1
Total	90	100,0

In 2/3 of the cases, i.e. 70% of our patients had only one sexual partner

**Table-4: Distribution of patients according to the number of sexual partners**

Number of sexual partners	Number	Percentage
A partner	63	70,0
Two to three partners	25	27,8
No partner	2	2,2
Total	90	100,0

More than half of the patients practiced both intimate vulvar toilets and vaginal douches

**Table-5: Distribution of patients according to the quality of personal hygiene**

Quality of intimate hygiene performed	Number	Percentage
Mixed	50	55,6
Vulvar	30	33,3
intravaginal	10	11,1
Total	90	100,0

Patients using household soap for vaginal cleansing were the most represented with 75.6% of cases

**Table-6: Distribution of patients according to the type of personal hygiene product**

Type of personal care product	Number	Percentage
household soap	68	75,6
Antiseptic solution for external use	10	11,1
Mixed use antiseptic solution	7	7,8
single water	5	5,5
Total	90	100,0

About 9/10 of our patients or 93.3% of case of whitish vaginal discharge

**Table-7: Distribution of patients according to the color of leucorrhoea.**

Leukorrhoea color	Number	Percentage
Whitish	84	93,4
Yellowish	4	4,4
Greyish	2	2,2
Total	90	100,0

Several germs were highlighted on cytobacteriological examination of the vaginal sample but the most represented were *Candida albicans*,

*Escherichia coli* *Klebsiella* and GRAM negative bacilli with respectively: 16.7%, 15.7%, 13.4% and 11.1% of cases.

**Table-8: Distribution of patients according to the result of the vaginal swab**

Pathogens	Number	Percentage
<i>Candida albicans</i>	15	16,7
<i>Escherichia coli</i>	14	15,7
<i>Klebsiella</i>	12	13,4
Gram-negative bacilli	10	11,1
<i>Gardnerella vaginalis</i>	8	8,9
<i>Enterococcus faecalis</i>	6	6,7
<i>Aeromonas hydrophila</i>	4	4,4
<i>Mycoplasma</i>	4	4,4
GRAM positive cocci	3	3,3
<i>Trichomonas vaginalis</i>	2	2,2
<i>Serratia liquefacens</i>	2	2,2
<i>Candida albicans</i> + <i>Escherichia coli</i>	2	2,2
Gonococci	1	1,1
<i>Candida albicans</i> + <i>Staphylococcus aureus</i>	1	1,1
<i>Pseudomonas aeruginosa</i>	1	1,1
<i>Enterococcus faecalis</i> + <i>Escherichia coli</i> + <i>Aeromonas hydrophila</i>	1	1,1
<i>Staphylococcus aureus</i>	1	1,1
<i>Ureaplasma Urealyticum</i> + <i>Candida albicans</i>	1	1,1
<i>Gardnerella vaginalis</i> + <i>Escherichia coli</i>	1	1,1
<i>Chlamydia</i>	1	1,1
Total	90	100,0

Half of the patients suspected a urinary tract infection associated with lower vaginal infection

**Table-9: Distribution of patients according to the result of the cyto bacteriological examination of the urine**

ECBU Result	Number	Percentage
Sterile	45	50,0
Not sterile	45	50,0
Total	90	100,0

## DISCUSSION

We had recorded 899 new consultations in the outpatient room at the time of the study period extending from February 1, 2015 to January 31, 2016, i.e. 12 months. A total of 90 cases of lower genital infections were recorded, i.e. a frequency of 10.01%. Other authors had found higher proportions of ours, they were IDRIS Sinclair [6], TOWAS [7] and Traore O [9] respectively: 12.6%, 13.5% and 30.77%. These very high rates compared to that of our study could be explained by the fact that the diagnosis of lower genital infection was more syndromic than with or without the result of a vaginal swab.

The most represented age group was 20 to 35 years old with 61.1% of casent. Our result was similar to the results of other authors such as: IDRIS SINCLAIR F [6], found that the age group from 19 to 34 years was the most represented with 76.64%, TRAORE O [9] in turn had found a frequency of 47% between 20 and 34 years old. This could be explained by the fact that in this age group, sexual activity would be active. All socio-professional strata are represented in our study, among which housewives predominated with a frequency of 44.4%. The same observation was made by IDRIS SINCLAIR F[6] with 38.8%, TRAORE O[9] with 60.5%, SOUMARE D[10] with 69.9%. The lack of decision-making power to attend health facilities added to the lack of schooling could explain the late use of health care. In our study, the proportion of married women was the most represented, 93.4% against 3.3% of single people. Our result was superposable to those of IDRIS SINCLAIR. F[6] 88.2% married women against 10.6% single; TRAORE O[9] 70% married women versus 30% single SOUMARE.D[10] 75.2% married women versus 22.3% single. The percentage of women living in a monogamous regime 72.6% was more represented compared to that of women living in a polygamous regime 27.4%. This result contrasts with that of other authors: IDRIS SINCLAIR F[6] 64.7% monogamies against 24.7% polygamies. TRAORE O [9] 72.8% monogamies against 27.4% polygamies, SOUMARE D [10] 55.9% monogamy versus 44.1% polygamy. The variable number of sexual partners was not taken into account in our study, which would be one of our limitations. But that said, the explanation could a priori be the high number of monogamous couples in our

society, otherwise the literature recognizes the greatest frequency of genital infections in multiple sexual partners.

Patients who had a secondary, higher or fundamental level of education were the most represented with 23.3%, 16.7% and 15.6% respectively. This could be explained by the increasing literacy rate in our society, which could facilitate the use of health care.

Pelvic pain, desire for pregnancy, leucorrhoea were the most frequent reasons for consultation encountered in patients who presented with lower genital infections with respective frequencies of 24.4%, 21.1% and 17.8%. IDRIS SINCLAIR F[6] found as the most frequent reasons for consultation in decreasing order the desire for pregnancy, pelvic pain leucorrhoea TOWAS[7] found as the most frequent reasons for consultation in decreasing order leucorrhea, vulvar pruritus, dyspareunia and pelvic pain. A history of diabetes was found in 11.1% of the patients in our study IDRIS SINCLAIR F[6] found 25.9% of a history of urogenital infection in a similar study carried out at the CSRéf of the commune II of Bamako TRAORE O[9] found a 40.5% history of lower genital infection in a similar study carried out in Ségou, Mali. The age at first sexual intercourse and the use of condoms were not treated in view of the reservation expressed by the patients questioned. According to the Demographic Health Survey (EDS) IV of Mali, the age of first sexual intercourse was 17 years old. 63.3% of patients with lower genital infections had a frequency of 2 to 3 sexual intercourse per week for the last three months. This could be explained by the high rate of married patients. Intimate toilets were performed after intercourse in 45.6% of patients and 75.6% used neutral soaps. Despite the 47.8% of patients who exclusively used traditional fillings, 37.8% used modern fillings and 14.4% alternated between modern and traditional fillings. Given the markedly increasing literacy of women in our country, we noticed that feminine hygiene is still derisory in society. The whitish appearance of leucorrhoea was the most represented with a frequency of 93.4% followed by the yellowish color 4.4%, IDRIS SINCLAIR F[6] in the same study found a frequency of 69.3% for the whitish color and 20% for the greyish color TRAORE O[9] in a similar study found a frequency of 53% for the whitish color and 15% for the greyish color. 54.4% of odorless leucorrhea was noted. Compared to the various pathogenic agents found in vaginal samples in the etiology of vaginitis, the publications are numerous and the results vary from one author to another. The association of infectious agents was found in 5.6% of patients in our study. IDRIS SINCLAIR F [6] found a frequency of 31.2%, TRAORE O [9] found a frequency of 40% and DIARRA D [8] 41% these high rates explain the difficulties of treatment on the basis of leucorrhoea. For the in our study, 16.7% of the women



examined had *Candida albicans* infection and Diarra D [8] found similar frequencies respectively 58.78% and 56.5%. *Candida albicans* was the most common germ in all socio-professional classes; it was also found in majority in all age groups in their study, SAMAKE S [11] also reported 15.5%. This result is lower than that found in our study. For pyogenic germs: in our study, 40% of the women examined had an infection with pyogenic germs, mainly *Escherichia coli*. IDRIS SINCLAIRF [6] had reported a frequency of 8.9%, TOWA S [7] found a frequency of 14% of pyogenic germs with a predominance of *S aureus* of 5.9% followed by *E coli* of 5%. For *Trichomonas vaginalis*: in our study, 2.2% of the women examined had a *Trichomonas vaginalis* infection. GUINDOA [12] found 12.9% *Trichomonas vaginalis* infections.

For gonorrhoea: during our study, we found 1.1% of *Neisseria Gonorrhoea* infections, TRAORE O [9] 2%. For *Gardnerella vaginalis*: in our study, 8.9% of the women examined had a *Gardnerella vaginalis* infection. TOWA S [7] reported a frequency of 41.7%, SOUMARE D [10] also reported a frequency of 7%. *Mycoplasma* and *Chlamydia*: were found with a frequency of 4.4% and 1.1% respectively during our study.

## CONCLUSION

Lower genital infections are a common reason for gynecological outpatients. The most frequent germs in our study were *Candida albicans*, *Escherichia coli*, *Klebsiella* and Gram-negative bacilli.

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