

# What are the most common sexually transmitted bacteria in women with cervico-vaginitis nowadays?

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## Abstract

**Introduction:** Cervico-vaginitis is usually the initial infection which, when undiagnosed, can evolve to salpingitis with tubal infertility, ectopic pregnancy, and chronic pelvic pain as consequences. This study aimed at identifying the sociodemographic profile and clinical presentation of women diagnosed with cervico-vaginitis, as well as the microorganisms isolated. **Materials and Methods:** This cross-sectional, descriptive study was carried out between October 1, 2013, and March 31, 2014. Women diagnosed with cervico-vaginitis were recruited. The main variables recorded were maternal age, occupation, marital status, number of sexual partners, clinical presentation, and microorganisms identified. Data were analyzed using SPSS 20.0. **Results:** The mean maternal age was  $25.5 \pm 5.6$  years. Students were more represented (41.1%), 66% were single, and 69.6% had  $\geq 2$  sexual partners. The most frequent symptom was abnormal vaginal discharge (100%). The most frequent microorganisms isolated were genital tract mycoplasmas (67.9%) and *Chlamydia trachomatis* (55.3%). **Discussion:** Acute cervico-vaginitis is common among young, single women with multiple sexual partners. Genital tract mycoplasmas were the commonest germs isolated followed by *Chlamydia trachomatis*. **Conclusion:** Cervico-vaginitis is very common in our setting. Screening for genital tract mycoplasmas should be the first to be requested to women with cervico-vaginitis.

**Key words:** Acute cervico-vaginitis, clinical presentation, microorganisms isolated, patients' sociodemographic profile

## INTRODUCTION

Cervicitis may be associated with vaginitis.<sup>[1,2]</sup> The prevalence of cervico-vaginitis worldwide is not well known due to the scarcity of literature on the topic.<sup>[3]</sup> Hospital-based studies showed a prevalence of 23% and 24.9% in some countries.<sup>[4]</sup>

Cervico-vaginitis can be due to bacterial, viral, parasitic, or fungal infection.<sup>[1,5-8]</sup> Cervico-vaginitis may be symptomatic or subclinical.<sup>[9,10]</sup> Risk factors for cervico-vaginitis are multiple sexual partners, single status, and lower socioeconomic status.<sup>[3,11]</sup> Cervico-vaginitis can evolve toward salpingitis with tubal damage.<sup>[12]</sup>

## Aims and objectives

- To identify the sociodemographic profile of women having cervico-vaginitis
- To identify the microorganisms and the most common one responsible.

## MATERIALS AND METHODS

This cross-sectional descriptive study was conducted between October 1, 2013, and March 31, 2014. All women with cervico-vaginitis, whose clinical diagnosis was based on the presence of abnormal vaginal discharge

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or postcoital bleeding associated or not with dyspareunia, inflammation of cervix on speculum examination, were recruited. A cervico-vaginal swab was done and was immediately sent to the bacteriology department. In women with postcoital bleeding, a Pap smear with sometimes a cervical biopsy was done. Women who took antibiotics within the past 2 weeks and those with cervical malignancy were excluded.

Informed consent was obtained from each woman with cervico-vaginitis. As soon as the cervico-vaginal swab arrived in the bacteriology department, a wet mount examination was done in each case to look for *Trichomonas vaginalis* and *Candida* spp. under the binocular microscope, followed by Gram staining and finally culture on special media for the identification of special germs. *Neisseria gonorrhoeae* was cultured in a chocolate and vancomycin, colistin, nystatin containing medium, *Staphylococcus aureus* in Chapman medium, and *Streptococcus* on blood agar. The diagnosis of *Gardnerella vaginalis* was made by the presence of clue cells at Gram staining and by a fishy ammoniacal smell after adding a few drops of 10% potassium hydroxide to the specimen.

Genital tract mycoplasmas (*Mycoplasma hominis* and *Ureaplasma urealyticum*) were cultured in a *Mycoplasma*/Cultivation/Identification/Enumeration/Susceptibility Test kit (Freeze-Dried) (Encode). The test was positive if there were  $\geq 104$  colony-forming units/ml. Positive culture plates for mycoplasmas are shown in Figure 1. Direct immunofluorescence techniques were used for the identification under fluorescent microscope of *Chlamydia trachomatis*. Positive and negative test results for *C. trachomatis* are shown in Figure 2.

For each case confirmed, the variables recorded 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 2 months), clinical presentation on admission, and microorganism(s) identified. In our study, we wanted to know the sociodemographic profile and clinical



**Figure 1: Positive test results for genital mycoplasmas; (a) test positive for *Ureaplasma urealyticum* and negative for *Mycoplasma hominis*, (b) test positive for both germs. The sensitivity to various antibiotics can also be observed**

presentation of women diagnosed with cervico-vaginitis, as well as the microorganisms isolated.

The necessary sample size was calculated as needing a minimum of 55 women. This study received approval from the national ethics committee. Data were analyzed using SPSS 20.0, (IBM, Armonk, NY, USA). The results are presented as mean  $\pm$  standard deviation for quantitative data and frequencies for qualitative data.

### Footnote

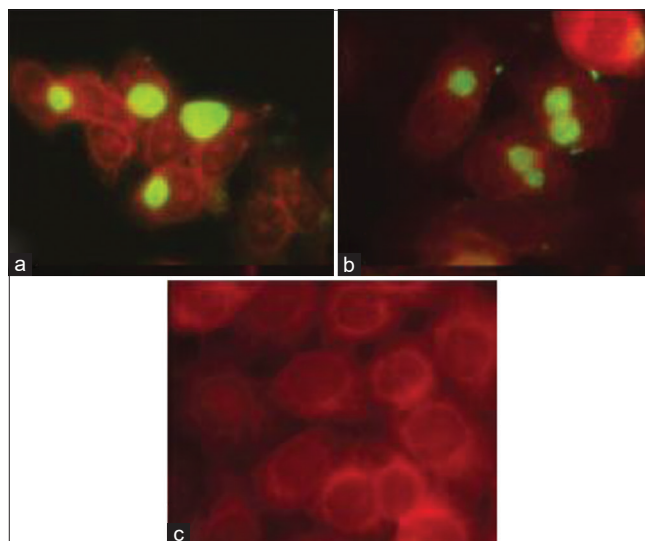
The sample size was calculated from the following formula for descriptive studies:  $N = P(1 - P) Z_{\alpha}^2 / D^2$  where  $Z_{\alpha} = 1.96$  corresponds to a confidence level of 0.05,  $D = 0.08$  is the degree of precision, and assuming that the prevalence of cervico-vaginitis ( $P$ ) might be around 10% in Yaoundé.

## RESULTS

We had a total of 92 patients with acute cervico-vaginitis out of 767 women who consulted for gynecologic problems giving a hospital-based prevalence of 12%. A total of 36 women were excluded (31 took antibiotics within the last 2 weeks while five presented with cervical malignancy). The 56 remaining women were subsequently involved in the study.

Maternal ages ranged from 15 to 42 years, with a mean of  $25.5 \pm 5.6$  years. Table 1 shows the distribution of maternal age. Concerning marital status, 37 women (66%) were single as against 19 (34%) married women.

Regarding occupation, students were more represented (23 or 41.1%), followed by homemakers (14 or 25%), then women working in the informal sector (11 or 19.6%). Civil



**Figure 2: Positive (a and b) and negative (c) direct immunofluorescence test results**

servants and jobless women represented 8.9% and 5.3%, respectively (5 and 3 women, respectively).

Analysis of educational level showed that 31 women (55.4%) reached secondary school, 11 (19.6%) have been to university, while 14 (25%) had primary school education.

Concerning the number of current sexual partners, 30.4% (17 women) had one sexual partner only while 44.6% (25 women) had two, 17.9% (10 women) three, and 7.1% (4 women) four partners or more.

The clinical presentation on admission revealed offensive vaginal discharges in 23 women (41.1%), nonoffensive in 26 women (46.4%), and purulent in seven women (12.5%). In eight women (13.6%), there was postcoital bleeding that was attributed to cervicitis.

Among the 56 women, laboratory tests isolated two or more microorganisms in 44 women (78.6%) and one microorganism in 12 women (11.4%). Among the latter, 7/12 (58.3%) women had genital tract mycoplasmas, two (16.7%) women had *C. trachomatis*, and two (16.7%) *T. vaginalis*, while *N. gonorrhoeae* was observed in one woman only (8.3%). The results revealed that, among all women, genital tract mycoplasmas were the most encountered microorganisms (67.9%) [Table 2]. Regarding polymicrobial infections ( $\geq 2$  germs isolated), the association *Mycoplasma* and *Chlamydia* were usually encountered (18 cases/44 or 40.9%) followed by mycoplasmas and *G. vaginalis* (six cases/44 or 13.6%). *G. vaginalis*, *S. aureus*, and *Streptococcus* sp., when isolated, were found in association with other microorganisms.

## DISCUSSION

Our prevalence of cervico-vaginitis in women consulting for gynecological problems (12%) was lower than that of 24.9% observed in Peru among female sex workers.<sup>[4]</sup> Our incidence might even be higher than what was found, given that not all women go to hospitals when they are sick.<sup>[3]</sup> This low rate in our series might be explained also by the fact that our women came from the general population and not from female sex workers as was the case in the study in Peru.<sup>[4]</sup> Nevertheless, some women in our study have to depend on their partner(s), given the high rate of poverty in our country. That might be a reason for which the majority of them (69.6%) had  $\geq 2$  sexual partners.

The mean maternal age observed in our series (25.5 years) was slightly higher than that of 22.2 years observed in Croatia.<sup>[11]</sup> The age group between 20 and 29 years was more represented in our series (66%), certainly because

**Table 1: Distribution of mother's age**

Maternal age (years)	n (%)
<20	6 (10.7)
20-24	20 (35.7)
25-29	17 (30.3)
30-34	8 (14.3)
35-39	3 (5.4)
$\geq 40$	2 (3.6)
Total	56 (100)

**Table 2: Distribution of microorganisms isolated\***

Microorganisms isolated	Number of women (%)
Genital tract <i>Mycoplasma</i> **	38 (67.9)
<i>Chlamydia trachomatis</i>	31 (55.3)
<i>Gardnerella vaginalis</i>	9 (17.3)
<i>Trichomonas vaginalis</i>	8 (15.4)
<i>Streptococcus</i> sp.	4 (7.7)
<i>Staphylococcus aureus</i>	2 (3.8)
<i>Neisseria gonorrhoeae</i>	1 (1.9)

\*Some patients had two or more microorganisms isolated; \*\**Mycoplasma hominis* and/or *Ureaplasma urealyticum*

this consisted of students, who were more affected by cervico-vaginitis (41.1%).

Cervico-vaginitis was more encountered among single women (58.6%). Single women are more predisposed to have many sexual partners, especially if they have little or no income. This is contrary to what was observed in Iran where married homemakers were more infected with *T. vaginalis*.<sup>[13]</sup>

The majority of patients in our series had secondary school education (55.4%), in contrast with the results of other authors in Iran where 58.3% of women had primary school education.<sup>[13]</sup> This can be explained in our study by the fact that students were more represented.

The most frequent clinical presentation (46.4% with nonoffensive vaginal discharge) shows that cervico-vaginitis might almost go unnoticed, as already found in Iran by some authors.<sup>[14]</sup> Therefore, women with no or only few symptoms should also be screened for sexually transmissible infections.

In our series, the microorganisms responsible for acute cervico-vaginitis were frequently sexually transmissible with the most frequent being genital tract mycoplasmas (67.9%), in contrast with other series in Palestine and Croatia where the most frequent microorganism was *C. trachomatis*.<sup>[11]</sup> In our study, the differentiation between genital mycoplasmas and *C. trachomatis* was easy given that different techniques were used to identify them. Genital tract mycoplasmas were thought not to be pathogenic, but recent studies found that they can be responsible for urethritis in men

and cervico-vaginitis, proctitis, and pelvic inflammatory disease in women.<sup>[7,8]</sup> In our settings, many women with cervicitis and their partners with urethritis observe the disappearance of their complaints when genital mycoplasmas are identified and treated. This shows that screening for genital mycoplasmas should be as frequent as screening for *Chlamydia* since some negative cases for chlamydia might be positive for genital tract mycoplasmas. Diagnostic kits for genital tract mycoplasmas should be made available in developing countries.

In our series, there were usually two or more microorganisms found (78.6%). This shows that laboratory tests should be carried out to identify the various microorganisms responsible, contrary to the syndromic approach that requires treatment according to symptoms in developing countries.<sup>[15]</sup>

Prompt and correct treatment should be carried out even among less symptomatic women to prevent the known possible complications of cervico-vaginitis, since Italian studies showed that infection can be asymptomatic or pauci-symptomatic.<sup>[14]</sup>

Some limitations of our study are that we could not verify the veracity of some answers given by women. For instance, the women might not have mentioned the correct number of their sexual partners. Moreover, our percentages might have changed if some women were not excluded, especially those who took antibiotics within the past 2 weeks. Finally, we could not diagnose *Mycoplasma genitalium* in our environment given that its diagnostic tests are very expensive.

## CONCLUSION

This study showed that cervico-vaginitis is very common in our environment, especially among young single women with multiple sexual partners. The most common microorganisms responsible were genital tract mycoplasmas whose screening should be the first to be requested to women with cervico-vaginitis.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Edwards T, Burke P, Smalley H, Hobbs G. *Trichomonas vaginalis*: Clinical relevance, pathogenicity and diagnosis. *Crit Rev Microbiol* 2016;42:406-17.
2. Taylor SN, Lensing S, Schwebke J, Lillis R, Mena LA, Nelson AL, et al. Prevalence and treatment outcome of cervicitis of unknown etiology. *Sex Transm Dis* 2013;40:379-85.
3. Puckree T, Mkhize M, Mgobhozi Z, Lin J. African traditional healers: What health care professionals need to know. *Int J Rehabil Res* 2002;25:247-51.
4. Pollett S, Calderon M, Heitzinger K, Solari V, Montano SM, Zunt J. Prevalence and predictors of cervicitis in female sex workers in Peru: An observational study. *BMC Infect Dis* 2013;13:195.
5. Zhu X, Zhang W, Fei J, Zhou J. Cervical syphilitic lesions mimicking cervical cancer: A rare case report. *Int J Infect Dis* 2015;31:1-3.
6. Abou M, Dällenbach P. Cervico-vaginitis and vulvovaginitis may be associated with *Cytomegalovirus*. *BMJ Case Rep* 2013;2013. pii: bcr2013008884.
7. Dehon PM, McGowin CL. *Mycoplasma genitalium* infection is associated with microscopic signs of cervical inflammation in liquid cytology specimens. *J Clin Microbiol* 2014;52:2398-405.
8. Horner P, Blee K, Adams E. Time to manage *Mycoplasma genitalium* as an STI: But not with azithromycin 1g! *Curr Opin Infect Dis* 2014;27:68-74.
9. Tarney CM, Han J. Postcoital bleeding: A review on etiology, diagnosis, and management. *Obstet Gynecol Int* 2014;2014:1-8.
10. Wiesenfeld HC, Hillier SL, Meyn LA, Amortegui AJ, Sweet RL. Subclinical pelvic inflammatory disease and infertility. *Obstet Gynecol* 2012;120:37-43.
11. Ujević B, Habek JC, Habek D. Prevalence of infection with *Neisseria gonorrhoeae* or *Chlamydia trachomatis* in acute mucopurulent cervicitis. *Arh Hig Rada Toksikol* 2009;60:197-203.
12. Abrao MS, Muzii L, Marana R. Anatomical causes of female infertility and their management. *Int J Gynaecol Obstet* 2013;123 Suppl 2:S18-24.
13. Arbabi M, Fakhrieh Z, Delavari M, Abdoli A. Prevalence of *Trichomonas vaginalis* infection in Kashan city, Iran (2012-2013). *Iran J Reprod Med* 2014;12:507-12.
14. Latino MA, Lanza A, Bello L, Leotta E, Peretto M, Spagnolo E, et al. Cervico-vaginal infections. Study of a population in the Turin area. *Minerva Ginecol* 2002;54:309-16.
15. Arzouni JP, Bouilloux JP, de Moüy D, Bicart-See A, Charbit C, Doeschler T, et al. Genital infections in women, in community practice. Comparison of two studies, 1987 and 2002. *Med Mal Infect* 2004;34:92-6.