

## *Vulvo-Vaginal Candidiasis in the Laboratory of Parasitology - Mycology of UHC-JRA Antananarivo Madagascar*

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**Abstract** - Vulvo-vaginal candidiasis is a cosmopolitan infection caused by *Candida spp.* His diagnosis is mainly clinical, but the mycological examination confirms the species in question. The aim of this study is to determine the prevalence of vulvo-vaginal candidiasis in patients who came to the Parasitology-Mycology Laboratory of the University Hospital Center Joseph Ravoahangy Andrianavalona (UHC- JRA) in Antananarivo -Madagascar for a mycological examination of vaginal specimens.

This is a retrospective descriptive study carried out in the Parasitology-Mycology laboratory of the UHC-JRA in Antananarivo from 2005 to 2018. The sociodemographic, clinical and biological information were collected using a register of patients. The specimen were directly inoculated on Sabouraud Dextrose Media and identified by direct examination and filamentation test. We have no result of antifungals susceptibility test because of the lack of discs.

During the period of study, 1014 patients were collected. Among them, 132 patients had vulvo-vaginal candidiasis (13.02 %). The age between 21 to 30 years old was the most affected (35.6%) by this infection. The average age was 33.61 years old. Leucorrhoea was found in 33.33% of cases. This last was frequently whitish and most often whitish and scanty. *Candida albicans* is the prevalent germs in 56.82% and *Candida non albicans* is encountered in 27.96%.

Vulvo-vaginal candidiasis is still a major health problem because of its frequency and its impact on the health of population as premature delivery, abortion, maternofetal infection. The improvement of the technical platform allows to better pose the diagnosis and to identify the different species of *Candida spp.*

**Keywords** - Vulvo-Vaginal Candidiasis, Laboratory of Parasitology -Mycology, UHC-JRA.

### I. INTRODUCTION

Vulvo-vaginal candidiasis is an infectious vaginitis caused by *Candida*. It is the second most common infectious vaginitis and its contamination is almost exclusively endogenous. Mycotic vulvo-vaginitis is very common and 75% of women will have one before menopause [1, 2]. This type of infection is a very recurrent with one or more

episodes over a period of 12 months [3]. The recurrent forms affect significantly the women's quality of life and are a reason for repeated consultation. Among *Candida*, *Candida albicans* account for 75 to 85% of cases and *Candida glabrata* for 10 to 15% of cases [1, 2]. The aim of this study is to evaluate the prevalence of vulvo-vaginal candidiasis in patients seen at the Laboratory of Parasitology-Mycology of CHU-JRA (Antananarivo,

Madagascar) for a request for mycological examination of vaginal samples.

## II. MATERIALS AND METHODS

This is a descriptive retrospective study carried out at the Department of Parasitology and Mycology in the Paraclinical Training and Research Unit of the UHC-JRA during 13 years period, since June 2005 to December 2018.

All patients coming in the laboratory for cervicovaginal smear examination (CVF) with vaginal thrush were included. A result of mycological examination without susceptibility test was the only one criteria of inclusion. The selected files had to mention the age, the gender, the macroscopic aspect and the results of the mycological examination (direct examination, and culture).

Positive case was defined as all mycological findings showing the presence of *Candida* on direct examination with culture positive or negative. Then, the data was transcribed on the data sheets. Microsoft Office Excel 2010 was used for the data analysis. The statistical analysis consisted of a description of our sample according to the characteristics mentioned above.

### 1. Mycological sampling

In the laboratory, two sterile swabs were used for vaginal sampling. One swab was used for direct examination and the other for culture. The samples were taken by the biologist. Vaginal collections were collected. Other samples were taken from hospital department then they are transported to the laboratory within hours of sampling.

Mycological examination was performed before any antifungal treatment.

### 2. Direct examination

When the samples arrived at the laboratory, the next step was to deposit the samples taken on a slide with physiological saline solution. A slide was deposited on the slide before reading under a microscope (objective x 40). Bacterial vaginosis was also eliminated with 30% diluted potash.

### 3. Culture

Two types of culture media were used for vaginal sampling. There were two type of Sabouraud agar: one were supplemented with chloramphenicol with Actidione and the other without Actidione. These were incubated at + 37 ° C during 24 to 48 hours.

### 4. Identification

After the incubation, all strains corresponding to *Candida spp* were identified using different tests. The identification was based on morphological and physiological characters as filamentation test or blastose test. This last was performed by adding a drop of yeast suspension in 500 µL of fresh human serum. The preparation was incubated at + 37 ° C for three hours then filamentation were or not observed to microscope.

## III. RESULTS

During the study, among 1014 patients, 132 vaginal samples tests (13, 02%) were positive to *Candida spp*.

About age, the 21 to 30 age group was the most affected with 35, 6% (n = 47) as shown in Figure 1. The extreme of age were 16 to 69 years. The average age was 33, 6 years old.

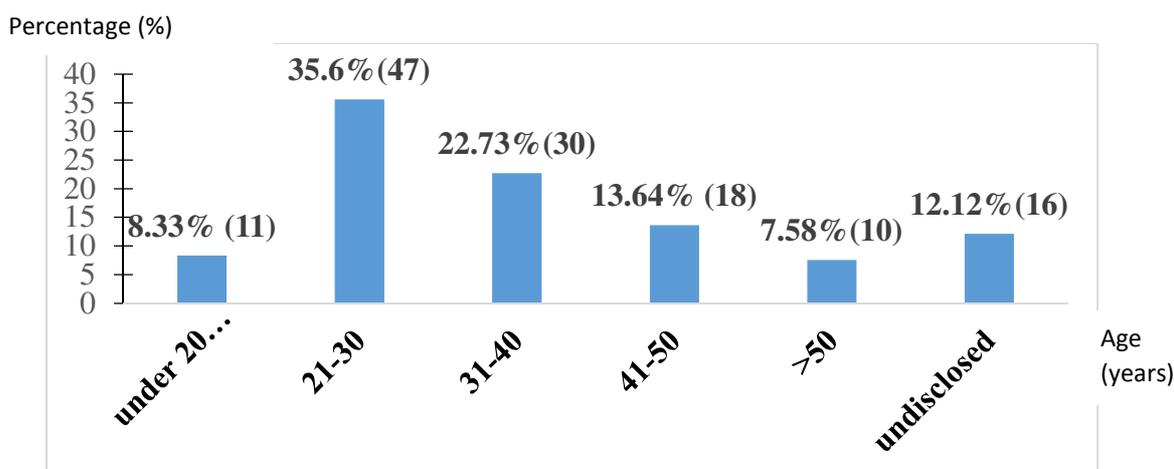


Figure 1: Distribution of vulvo-vaginal candidiasis by age

Leucorrhea is the main reason for examining vaginal secretions in 33, 33% (44/132) of cases. In 14, 39% (n = 19) of cases, it was asked for suspicion of vaginal infection and

in 12, 88% (n = 17) for systematic examination in pregnant women (Figure 2).

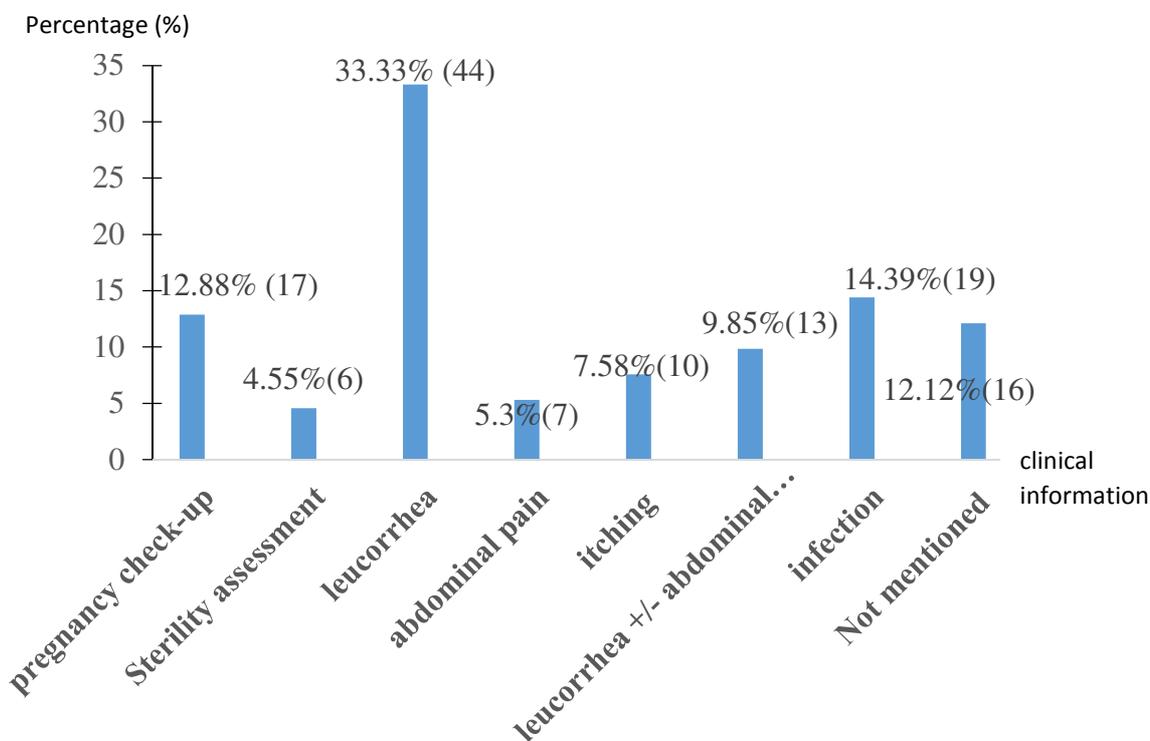


Figure 2: Distribution of vulvo-vaginal candidiasis by clinical information

Macroscopic examination were shown that the secretion were abundant in the majority .of cases (n = 83.3, %, n=106). Leucorrhoea was whitish in 39.39% (n =52), yellowish in 6.82% (n = 9), greenish in 4.55% (n =6) and curdled in 3.79% (n = 5) as shown in figure 3.

Direct examination revealed that the fungi were yeast-like in most cases with 65.91% (n = 85). Filamentation test

were negative in 7.58% (n =10) (Figure 4). Among the positive filamentation test performed to confirm *Candida albicans*, the study was found vulvo-vaginitis due to that germs in 57% (n =75). *Candida non albicans* was encountered in 20% (n = 27) (Figure 5).

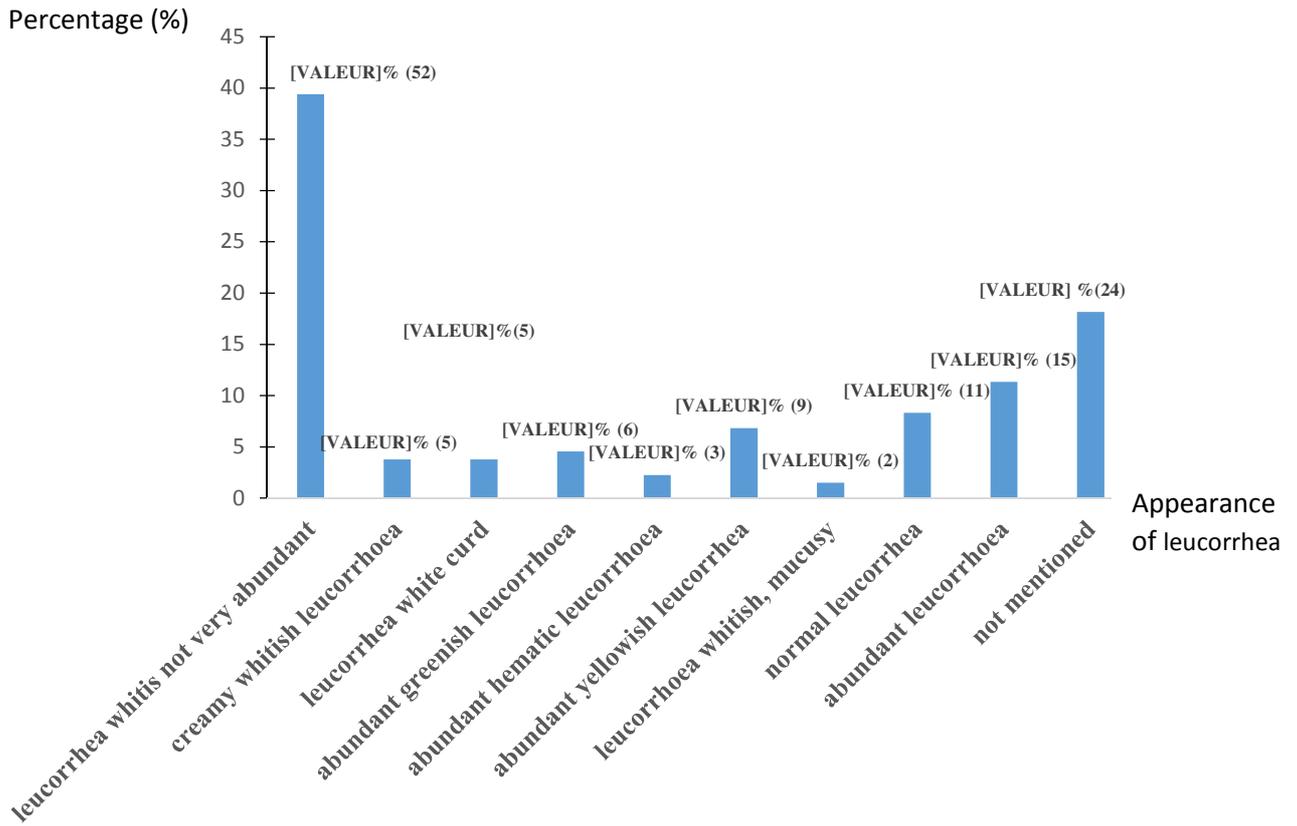


Figure 3: Distribution of vulvo-vaginal candidiasis by appearance of leucorrhoea

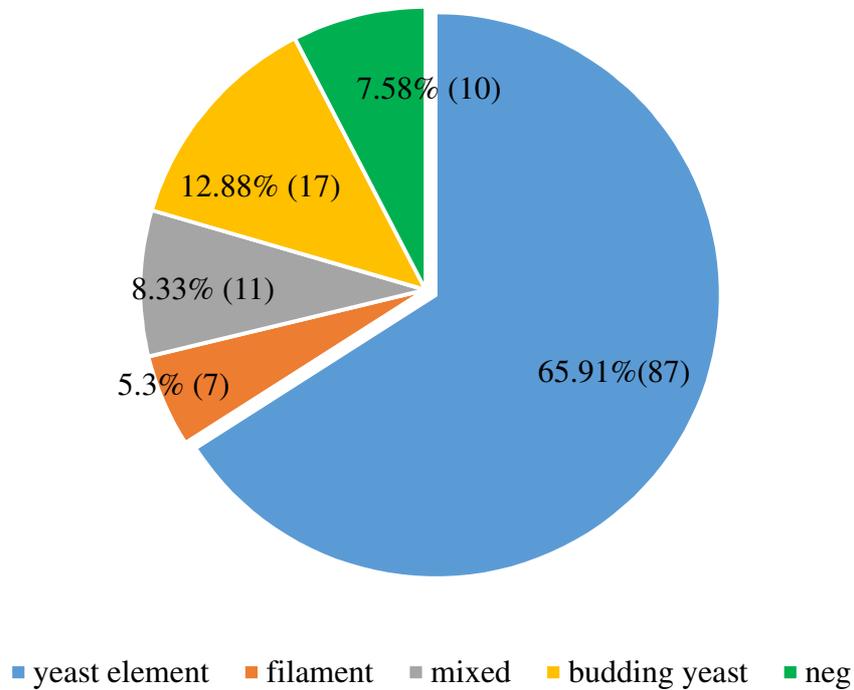


Figure 4: Distribution of vulvo-vaginal candidiasis by the result of direct examination

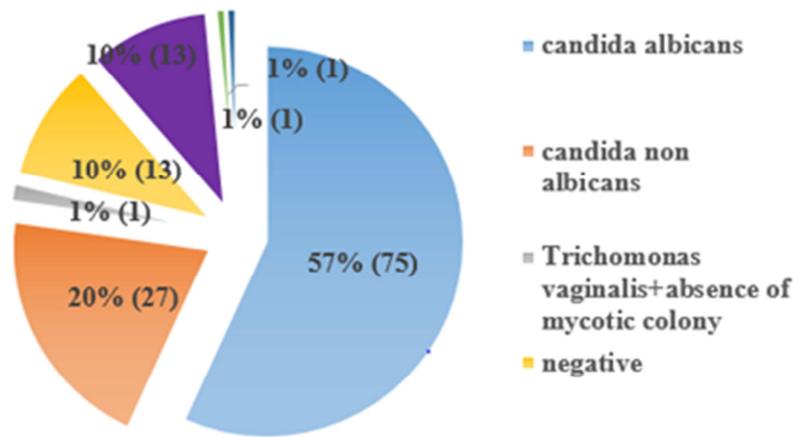


Figure 5: Distribution of vulvo-vaginal candidiasis by the result of mycological examination

#### IV. DISCUSSION

This is a retrospective study, it was impossible to establish the risk factors of vulvovaginal candidiasis. However, the prevalence of this infection in pregnant women in this study wasn't very important. Over a period of 13 years, our findings about vulvo-vaginal candidiasis (13.02%) were much lower than those found by other authors such as 18 to 38.9% [4, 5]. This result can be explained by the methodology of recruitment. In Senegal [6], 32.6% of pregnant women was vulvo-vaginal candidiasis and in Cameroon, they found 35.52% [7].

*Candida albicans* was the prevalent fungi (57%) isolated from vaginal secretion in this study. Several authors have reported the prevalence of *Candida albicans* with a higher proportion between 70 and 80% [6, 8, and 9]. Comparison of this result is difficult because of the difference in population study and methodology. Many factors may have influenced the prevalence of vulvo-vaginal candidiasis and should be taken into consideration. Vaginal examination is made in the laboratory but not the sampling. The duration of transport could have some influence on the result. All conditions of sample transport to the laboratory must be respected according to the recommendations concerning the transport of biological samples. The methods of identification are insufficient and old that could be the source of an error. About the identification, *C. glabrata* or *krusei* which are also vaginal saprophytes with a natural resistance to fluconazole, were suspected. Three positive cultures were encountered in three cases which are negative

in the direct examination. For the interpretation, direct examination must be associated with culture. Despite the presence of leucorrhoea, in 13 cases, no pathogen was isolated.

About age, in this study, vulvo-vaginal candidiasis was frequent in young people. This finding is similar to that found in Dakar [6]. In the one hand, these results could be explained by the fact that there is a peak of sexual activity in this group of age. In the other hand, hormonal activity estrogenic is increasing in this period that promotes the acidity of the vaginal environment and caused a favorable environment of *Candida spp.*

Generally, leucorrhoea is the prior symptom in this infection and lead to vaginal examination. In other studies, higher proportions about 74.8% in Benin [10] and 45.97% in Dakar [6] confirmed this fact.

In this study, prevalence of vulvovaginal candidiasis was 12.88% in pregnant women. In other studies, they found 20 to 50% [6,11]. The explanation must be that during pregnancy there is also a hormonal imbalance and lower vaginal pH allowing the implantation and multiplication of *Candida*. The study about vaginal acidity of the Cameroonian study revealed that *Candida spp* was isolated from patients who had vaginal pH less than 3.5 in 68.09% and no *Candida spp* was isolated from patients who have a higher vaginal pH. at 4.5 [6].

There's other reason of vaginal examination like infertility assessment where the prevalence of candidiasis

was not negligible (4.55%) that could be caused that. Further study is needed to verify this hypothesis.

The appearance of the leucorrhea is often whitish and scanty and only 3.79% leucorrhea curdled. In the literature, the blotchy leucorrhea has a higher proportion in Dakar (17.62%) [6] and in Cameroon (60,28%) [7].

*Candida albicans* (57%) was identified by filamentation test. The identification of candida spp (10%) was not made thus constituting the main limitation of this study. The identification of these species would have made it possible to characterize these strains and could not be identified. *Candida non albicans* could not be identified in this study because of lack of identification test.

## V. CONCLUSION

Candidiasis is superficial mycosis due to saprophytic yeasts of the genus *Candida*, commensals on the mucous membranes. It affects a large number of young women of childbearing age and is a reason for frequent consultation in gynecology. *Candida albicans* is the most encountered fungi in vulvovaginal candidiasis. Despite the small number of patients, this study has shown how prevalent is this infection among pregnant women. The identification of the yeast in question in vulvovaginal candidiasis must be expanded. It is very important to perform identification and an antifongogram because of the resistance to antifungals. Systemic examination of vaginal samples during pregnancy is essential to diagnose this infection, which can cause fetal and pregnancy damage.

## REFERENCES

- [1] Delcroit M, Cheront C. Les infections vaginales. In: Infection gynécologiques. Masson 1994; chap.12:164-79.
- [2] Anane S, Kaouech E, Zouari B et al. Vulvovaginal candidiasis: risk factors and clinical and mycological characteristics. J Mycologie Med 2010; 20:36-41.
- [3] Sobel JD, Faro S, Force RW et al. Vulvovaginal candidiasis: epidemiologic, diagnostic and therapeutic considerations. Am J Obstet Gynecol 1998; 178:203-11.
- [4] Diallo G.A, Diallo A.B, Toupane M.T, Badiane M, Mara C, Diop NDiaye H et coll. Caractéristiques de la vaginose bactérienne à Dakar : exploitation des résultats d'analyses cytot bactériologiques de sécrétions vaginales de 23067 patientes vues au laboratoire de bactériologie de l'hôpital Aristide Le Dantec de 2002 à 2008. International Conférence on AIDS and STIs in Africa (ICASA), Dakar décembre 2008
- [5] Seck M.C, B Faye, Ndiaye M, Sow A, Lô G, Biadiane A et al. Prévalence de *Trichomonas vaginalis* et de *Candida albicans* chez les femmes au laboratoire de l'Hôpital militaire de Ouakam, Dakar (Sénégal). Med Afr Noir, 2015 ; 62,1 : 32-37
- [6] Sylla K, Sow D, Lakhe N.A, Tine R.C, Dia M, Lelo S, Ahamada H.M, Faye B, Dieng T, Dieng. Rev. Cames sante Vol.5, N° 2, Décembre 2017. Candidoses vulvo - vaginales au laboratoire de Parasitologie -Mycologie du Centre Hospitalier Universitaire de Fann , Dakar (Sénégal )
- [7] Kechial FA, Dohbit JS, Kouotou1, Iwewe1 XY, Dzoyem JP, Mbopuwou1 NM, Monamele CG, Moyou SR. Profil Épidémiologique et Étiologique de la Candidose Vulvo-Vaginale chez la Femme Enceinte à Yaoundé (Cameroun). Epidemiologic and mycological pattern of vulvo-vaginal candidiasis in pregnancy in Yaounde . Health Sci. Dis: Vol 16 (4) October – November - December 2015
- [8] Anane S, Kaouech, Zouari, Belhadj, Kallel K,Chaker E. Les candidoses vulvovaginales : facteurs de risque et particularités cliniques et mycologiques. J Mycol Med 2010; 20:36-41
- [9] Grigoriou O, Stavroula Baka S, Makrakis E, Hassiakos D, Kapparos Kouskouni E. Prevalence of clinical vaginal candidiasis in a university hospital and possible risk factors. Eur J Obstet Gynecol Reprod Biol 2006; 126:121–125
- [10] Ogouyèmi-Hounto A, Adisso S, Djamel J, Sanni R, Amangbegnon R, Biokou-Bankole B, et coll. Place des candidoses vulvo-vaginales au cours des infections génitales basses et facteurs de risque associés chez les femmes au Bénin. J Mycol Med 2014 ; 24 :100-105
- [11] Vroumsia T., Moussa D., Bouba G., Ebang M.D., Ebot A.C., Eneke T., et al. Prevalence of Vulvovaginal Candidiasis amongst pregnant women in Maroua (Cameroon) and the sensitivity of *Candida albicans* to extracts of six locally used antifungal plants. Int. Res J. Microbiol. 2013, 4(3), 89-97.