



(RESEARCH ARTICLE)



## Study of mycoses diagnosed in patients living with HIV hospitalized in the infectious diseases department of the CHU YO of Ouagadougou

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### Abstract

**Objective:** To study the mycoses in HIV patients hospitalized in the infectious diseases department of the CHU YO (Yalgado Ouédraogo)

**Patients and method:** This was a retrospective study carried out in the SMIT of the CHU-YO over a period of ten years from January 1, 2010 to December 31, 2019.

**Results:** During the study period 145 cases of mycosis were diagnosed in patients living with HIV. The average age of the patients was 42±11 years. The sex ratio was 0.64. On admission, the majority of patients (71.54%) had an impaired general condition. All patients were severely immunocompromised (mean CD4 count=59 cells/mm<sup>3</sup>). Digestive candidiasis and neuromeningeal cryptococcosis were the most frequently diagnosed mycoses. Other comorbidities were dominated by digestive coccidiosis (Cryptosporidiosis, Isosporosis) and common germ pneumonia. All patients had received antifungal and antiretroviral treatment. The evolution was marked by a lethality of 25%.

**Conclusion:** The mycoses are relatively frequent and potentially serious during HIV infection. Their prognosis was even worse when the TCD4 lymphocyte count was low and when there were other associated comorbidities.

**Keywords:** Mycoses; HIV infections; AIDS

### 1. Introduction

The mycoses have got renewed interest in recent decades with the advent of HIV infection [1,3]. Despite the availability of highly potent antiretroviral treatment, they are still responsible for a high mortality rate, particularly in Africa [1,3,5,10]. Studies conducted in Abidjan, Morocco and Burkina Faso show a case-fatality rate that varies between 28% and 35% [7,8,9]. Our study aims to investigate mycoses diagnosed in HIV patients hospitalized in the Department of Infectious Diseases of the CHU YO.

### 2. Patients and method

Our study took place in the Infectious Diseases Department of the CHU Yalgado Ouédraogo. It was a retrospective cross-sectional study with a descriptive aim which took place over a period of ten (10) years from January 1, 2010 to December 31, 2019. All HIV-infected patients with mycosis hospitalized in the Department of Infectious and Tropical

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Diseases were included. Data were analyzed on a microcomputer with Epi Info software version 7.2.2. Word processing, tables and graphs were made with Microsoft office 2013 software.

### 3. Results and discussion

#### 3.1. Sociodemographic aspects

During the study period, 145 patients living with HIV and suffering from mycosis were identified. 61% of the patients were female versus 39% male, i.e. a sex ratio of 0.64. The average age of the patients was  $42.37 \pm 22$  years. Professionally, housewives dominated (31.70%), followed by civil servants (19.52%) and farmers (13.82%). The majority of patients resided in urban areas (70.48%).

#### 3.2. Clinical aspects

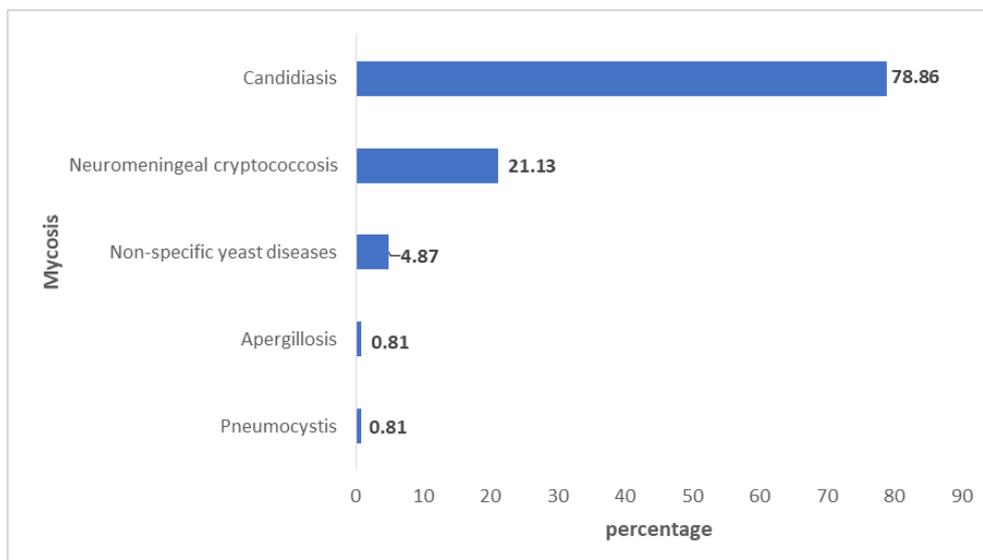
Clinically, Table 1 and Figure 1 show the signs presented by our patients and the mycoses diagnosed.

**Table 1** Distribution of patients according to the most common clinical signs encountered.

Clinical symptoms	Number	Frequency (%)
Alteration of the general condition	88	71,54
Fever	80	65,04
Diarrhea	56	45,22
Vomiting	45	36,5
Dysphagia	26	21,13
Headaches	24	19,51

Altered general condition, fever, digestive disorders (diarrhea, vomiting, dysphagia) were the most frequently encountered.

Figure 1 shows the prevalence of mycoses diagnosed during the study period.



**Figure 1** Dispatching of mycoses diagnosed in the department

### 3.3. Other associated infections

Comorbidities were dominated by coccidiosis (cryptosporidiosis, isosporosis), common germ pneumonia, and herpes infections as shown in Table 2.

**Table 2** Dispatching of patients according to main comorbidities.

Comorbidities associated with mycosis	Number	Frequency (%)
Coccidiosis (cryptosporidiosis, isosporosis)	13	15,29
Common germ lung disease	12	14,11
Genital herpes	11	12,94
Acute gastroenteritis of undetermined etiology	9	10,58
Meningitis	9	10,58
Severe malaria	8	9,41
Tuberculosis	8	9,41
Bacterial urinary tract infection	7	8,23
Cerebral toxoplasmosis	7	8,23
Zona	4	4,70
Total	85	100

### 3.4. Paraclinical aspects

In 23% of the patients, fungal infection was the diagnostic circumstance for HIV infection. The average CD4 count of the patients was 59 cells/mm<sup>3</sup>.

Imaging contributed to the diagnosis in four patients. These were three cases of upper GI fibroscopy and one case of chest radiography. Chest radiography allowed the diagnosis of pneumocystis by demonstrating bilateral interstitial lung disease. The upper gastrointestinal fibroscopy showed in all three cases an oral and throat candidiasis with candidal esophagitis.

Direct examination after staining with India ink was the only technique used for the detection of *Cryptococcus neoformans*. Table 3 shows the germs isolated on mycological examination.

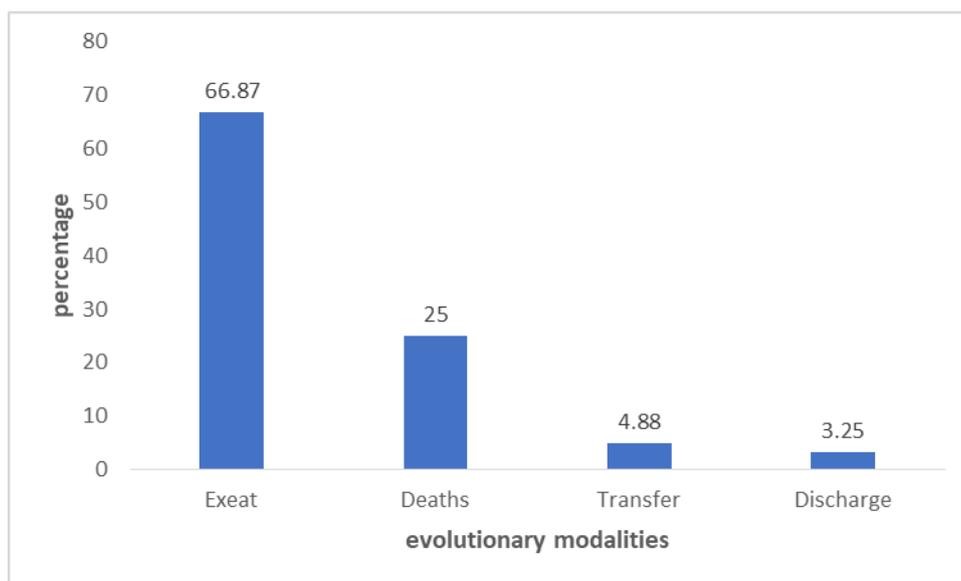
**Table 3** Distribution according to identified germs (n=49).

Identified germs	Number	Frequency (%)
<i>Cryptococcus neoformans</i>	22	44,90
<i>Candida albicans</i>	9	18,36
<i>Candida sp</i>	6	12,25
<i>Non-albicans Candida</i>	5	10,20
<i>Aspergillus niger</i>	1	2,04
<i>Other yeasts sp</i>	6	12,25
Total	49	100

*Cryptococcus neoformans* dominated cerebrospinal fluid (CSF) examination, while *Candida albicans* was the most frequently isolated organism in stool mycological examination.

### 3.5. Therapeutic and evolutionary characteristics

Twenty-eight patients were antiretroviral treatment naïve. Therapeutically, fluconazole was the most commonly used antifungal agent. The average length of hospitalization was 28 days. There were 36 deaths, representing a case fatality rate of 25%. Figure 2 shows the dispatching of the 145 patients according to outcome.



**Figure 2** Dispatching of patients according to the evolutionary modalities

## 4. Discussion

In our study there was a predominance of females and the mean age of the patients was  $42.37 \pm 22$  years. The same observation had been made in several European and African series [14,15,16,17]. Clinically, digestive candidiasis dominated. The same observation was made by Ndiaye in Senegal and by Bamba in Burkina Faso [6,17]. Systemic mycoses were dominated by neuromeningeal cryptococcosis, while superficial mycoses were dominated by oral candidiasis. Bamba in Burkina Faso and Gbangba Ngai in Central Africa had made the same observation in their studies [6,16,17]. Our patients were severely immunocompromised. We found that immunosuppression due to HIV infection was the main factor favoring the occurrence and severity of mycoses. Sanata had made the same observation in Burkina Faso [17]. The high case fatality observed in our study was also observed in most African studies [6,16,17].

## 5. Conclusion

This study found that the mycoses were relatively common and severe among HIV patients. They are still one of the circumstances for detection of HIV infection. Early detection and appropriate management of HIV infection can prevent these opportunistic fungal infections.

### Compliance with ethical standards

#### *Disclosure of conflict of interest*

All authors declare that they have no conflict of interest.

#### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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