

## Epidemiological and sociodemographic analysis of pulmonary tuberculosis/HIV co-infection in Bujumbura hospital. Retrospective and descriptive study of 84 cases.

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### Abstract:

#### Objective:

To establish the epidemiological and socio-demographic aspects of pulmonary tuberculosis in HIV immunocompromised subjects.

#### Patients and methods:

This are a retrospective and descriptive study conducted from January 1, 2017 to December 31, 2017 in the internal medicine department of the Prince Regent Charles Hospital (HPRC) in Bujumbura town hall. The study population consisted of HIV-immunocompromised patients with pulmonary tuberculosis who were hospitalised at HPRC during the study period.

#### Results:

During the study period, a total of 12029 patients were enrolled, of whom 84 cases had TB/HIV co-infection, a frequency of 0.7%. The mean age was 43.13 years with extremes ranging from 16 to 72 years. The most common age group was 15-49 years (66.67%) with a M/F sex ratio of 1.1. Among the 84 patients, marriage was found in 52 cases (61.90%). Patients with a profession were in the majority with 55.94%. The majority of our patients resided in Bujumbura town hall representing 78.57% of cases.

#### Conclusion:

HIV infection is the main cause of the increase in the incidence of pulmonary tuberculosis in the world. The latter remains the most frequent and the first opportunistic infection in immunocompromised patients, qualifying them as a cursed couple. Both sexes are equally affected, with a slight male predominance. Both epidemics affect the 15-49-year-old age group, the most sexually and economically active.

**Keywords:** HIV; pulmonary tuberculosis; co-infection; Bujumbura.

### Introduction:

Tuberculosis (TB) is a contagious, endemic disease with predominantly human-to-human transmission caused by Mycobacterium tuberculosis complex (MT), which includes Mycobacterium tuberculosis hominis, Mycobacterium bovis and Mycobacterium africanum. Pulmonary involvement is the most common site and is the usual source of transmission [1]. Tuberculosis remains a major public health problem. According to the WHO, in 2016, there were 10.4 million new cases of TB worldwide and 1.7 million deaths [1]. After a primary infection, the vast majority of infected individuals remain in a tuberculosis-infected state and only 10% of those infected with the tubercle bacillus will develop tuberculosis disease [2]. If immunosuppression occurs, the risk of developing disease is high. This risk is estimated at 10% per year in case of TB and HIV co-infection [3]. Both epidemics affect the sexually and economically active age group of 15-44 years: increased transmission of HIV; work absenteeism or early death of co-infected patients fresh out of university [4]. Reciprocal worsening of the two diseases: transition from tuberculosis infection to tuberculosis disease; higher plasma viremia in seropositive tuberculosis patients compared to non-tuberculosis seropositive patients [4]. The aim of our study was to investigate the epidemiological and sociodemographic aspects of pulmonary



tuberculosis/HIV co-infection in a hospital setting in Bujumbura.

### Methodology:

This was a retrospective and descriptive study conducted from 1 January 2017 to 31 December 2017 in the internal medicine department of the Prince Regent Charles Hospital (PRCH) in Bujumbura. Patients hospitalised in this department for pulmonary tuberculosis/HIV co-infection were included in the study. The information collected concerned sociodemographic, bacteriological and serological aspects. It was entered and analysed using Microsoft and epi-info 7 software.

### Results:

During the study period, 12029 patients were collected, of which 84 cases had TB/HIV co-infection, a frequency of 0.7%. The mean age was 43.13 years with extremes ranging from 16 to 72 years. The most common age group was 15-49 years (66.67%) with a M/F sex ratio of 1.1. Among the 84 patients, marriage was found in 52 cases (61.90%). Patients with a profession were in the majority with 55.94%. The majority of our patients resided in Bujumbura town hall, representing 78.57% of cases.

Age	Effective	Percentage
15-20	5	5,95
20-29	12	14,29
30-39	18	21,43
40-49	21	25,00
50-59	19	22,62
60-69	7	8,33
70-79	2	2,38
Total	84	100,00

**Table 1:** Distribution of patients by age group.

Patients	Effective	Percentage
Co-infected HIV/TB	84	0,7
Non-Co-infected HIV/TB	11945	99,3
Total hospitalised	12029	100,00

**Table 2:** Frequency of TB/HIV Co-infection

### Discussion:

The prevalence of TB/HIV co-infection was estimated in 2009 to be between 11 and 13% worldwide and 80% of co-infection cases were found in Africa [5]. In our series the frequency was 0.7% among all patients who were hospitalised. Other authors have found the following results: Sobhani et al in their study in India found a prevalence of 52% [6]; Okome Nkoumou M. et al in Gabon found a prevalence of 53% [7]; Nobre et al in Brazil found a prevalence of 26.3% [8]; Hsin-Yun et al in Taiwan found a prevalence of 13.6% [9]. We note that the prevalence of TB/HIV co-infection was different in the series consulted, but the results in our series show a very different spread from those of other authors. This could be explained by the different study population of the authors but also by the study period, which was long for some and short for others. In our series, the mean age of the patients was 43.13 years, with extremes ranging from 16 to 72 years. The most represented age group was between 15 and 49

years, which represented 66.67%. Other authors have found similar results: The mean age of 40 years or 73.67% in Belhadj Khadidja and Drif Somia in Morocco in 2016 [10]; Soki Kirira in his study at Kamenge University Hospital had found the mean age of 37 years with extremes ranging from 17 years to 57 years [11]; Minta et al in their study at Point G University Hospital in Bamako had found the mean age of 38 years with extremes ranging from 15 -57 years [12]. This confirms once again that HIV/AIDS infection affects a young population. Both sexes were equally affected with a slight male predominance of 52.38% and a M/F sex ratio of 1.1. This male predominance is also observed in other literature data: Bicart-see [13] found 20% of females versus 80% of males; Daucourt [14] found 14% of females versus 86% of males; and Delcey [15] found 35.13% of females versus 64.86% of males. In our series, 61.90% of patients were married; 15.48% single; 9.52% divorced and 11.90% widowed. Our result could be explained by the fact that the majority of our patients were in the age group where most of the girls or boys are married. Similar results were found in several studies including: Soki Kirira at CHUK, who found that 44.1% of patients were married, 25% were widowed; 17.6% were single and 13.2% were divorced [11]; Dao et al in their study at the CHU du point G in Bamako found that 65.5% of patients were married [16]; Tiemele Kouande E. in his study found that 73.9% of patients were married [17].

### Conclusion:

HIV infection is the primary cause of the increase in the incidence of pulmonary tuberculosis in the world, which remains the most frequent and the first opportunistic infection in immunocompromised patients, qualifying them as a cursed couple. Both sexes are equally affected, with a slight male predominance. Both epidemics affect the 15-49-year-old age group, the most sexually and economically active. Strengthening health education and the fight against the HIV/AIDS pandemic will certainly make it possible to reduce this incidence and limit their complications.

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