



## Relapse of Pulmonary Tuberculosis: Case of the Anti-Tuberculosis Center of Bujumbura.

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### **Abstract**

**Aim:** *To determine the prevalence of tuberculosis relapses and their risk factors at the anti-tuberculosis center of Bujumbura*

**Patients and Methods:** *This are a prospective study carried out over a period of fourteen months at the anti-tuberculosis center in Bujumbura. Our study population consisted of 41 patients. Included in the study were any recurrent pulmonary tuberculosis cases with a positive smear or positive culture on Lowenstein-Jensen's medium followed by the antituberculosis center of Bujumbura during the study period.*

**Results:** *Out of a number of 629 tuberculosis patients followed up at the antituberculosis center of Bujumbura during the period of our study, 41 patients were recorded as cases of relapse, ie a frequency of 6.5%. The average age was 38.5 with extremes of 23 and 62. The male sex was the most affected at 61% with a sex ratio of 1.56. The 31-40 years age group was dominant with 46.3% of patients. Fifty-four percent of the patients followed at the antituberculosis center of Bujumbura came from outlying popular areas. The factors favoring the occurrence of tuberculosis relapses are dominated by chronic alcoholism and HIV infection at 71% and 68%, respectively.*

**Conclusion:** *The frequency of relapse of pulmonary tuberculosis varies depending on risk factors, in particular, co-infection with HIV, chronic alcoholism and poor socio-economic conditions. The monitoring of these patients with these comorbidities must be regular for better prevention, diagnosis and early treatment of relapse cases.*

**Keywords:** *Relapse, frequency, pulmonary tuberculosis, Risk factors.*

### **Introduction**

Tuberculosis (TB) is a real public health problem in the world and especially in sub-Saharan African countries, of which Burundi is one. According to the WHO report of 2016, 10.4 million new cases of tuberculosis were recorded worldwide and 1.7 million died from it [1]. In populations at high risk of infection (>200 cases/100,000 population per year), re-infection with a new strain is the mechanism most involved in TB relapse and accounts for up to 77% of relapse cases. In contrast, in populations at low or intermediate risk of infection, reactivation predominates and accounts for 4% to 33% of relapses [13]. In Côte d'Ivoire, Damoua, in his study on the prevalence of tuberculosis relapses at the University Hospital of Bouaké, found a prevalence of relapse cases of 5.7%. In Burundi, an increasing number of

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cases of all forms of tuberculosis have been recorded since the onset of the HIV epidemic. In 2016, the NTP recorded 7662 cases of all forms of tuberculosis, including 4343 cases of contagious pulmonary tuberculosis. Of these, 242 cases, or 5%, were relapsed cases [2].

We proposed to carry out a prospective study in the Bujumbura anti-tuberculosis centre (CATB), an important centre for the management of tuberculosis in Burundi, in order to determine the frequency of relapses and their predisposing factors.

### Patients and methods

We conducted a descriptive study over a period of fourteen months (from 1 October 2016 to 30 November 2017). It focused on outpatients at the consultation department of the Bujumbura TB centre (CATB). The inclusion criteria were: any case of relapsed pulmonary TB with positive bacilloscopy or positive culture on Lowenstein-Jensen medium followed up at the CATB during the study period. The variables studied were age, sex and factors favouring relapse. The data were collected on a data collection form. The data were entered and analysed using Epi Info7 software.

### Result

Out of a total of 629 tuberculosis patients surveyed at the CATB during the period of our study, 41 patients were recorded as having relapsed, a frequency of 6.5%. The average age was 38.5 with extremes of 23 and 62 years. The male sex was the most affected at 61% with a sex ratio of 1.56. The age range of 31-40 years was dominant with 46.3% of patients. Fifty-four percent of the patients followed at the CATB came from the peripheral working class areas. The factors favouring the occurrence of tuberculosis relapses were dominated by chronic alcoholism and HIV infection (71% and 68% respectively). Table I shows the distribution of patients by age group.

Age group	Number	Percentage
21-30 years	4	9,7
31-40 years	19	46,3
41-50 years	11	26,8
51 and more	7	17,2
Total	41	100

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

The majority, 83% of the patients in our series are between 20 and 50 years old

Risk factors	Number	Percentage
Tuberculosis contage	26	63,41
Poorly controlled diabetes mellitus	14	34,14

HIV	28	68,29
Chronic alcoholism	29	70,73
Tabagism	11	26,82

**Table II:** Distribution by risk factors for relapse.

68% of the relapse cases were HIV positive and 71% had chronic alcoholism.

## Discussion

Out of a total of 629 tuberculosis patients surveyed at the CATB during the period of our study, we report 41 cases of pulmonary tuberculosis relapse, i.e., a frequency of 6.5%. A rate of 9.48% of tuberculosis relapse was noted from September 1995 to December 2007 in patients, all male, in the study carried out by H. Raci et al, in Tunisia [7].

In our study, tuberculosis relapse affects young adults preferentially [Table I]: the average age is 38.5 years with extremes of 23 and 62 years. Our results are also close to those of Thiam et al. in Senegal, who found in 2002 that the 15-44 age group is affected in a proportion of 80% [3]. In France, Vaylet et al. found in 2004 that the age group over 65 years is predominant with 74% of relapsed cases [4]. According to a study by Williamson et al. in the United States, tuberculosis involvement is more frequent in young people in African countries and in older people in developed countries [5]. In our study, we found a male predominance with a sex ratio of 1.56. Male predominance among TB patients is also found in developed countries: H. Davidson et al. found a male predominance with a sex ratio of 3.11 in favour of men [6]. This male predominance could be explained by risk factors for TB such as chronic alcoholism or smoking, which are more often found in men.

In general, the recurrence of pulmonary tuberculosis is favoured by risk factors including HIV infection, malnutrition, chronic alcoholism, poorly controlled diabetes mellitus and smoking.

A study conducted by the WHO Regional Office for Europe in 2009 showed that an HIV-positive person who is also infected with Koch's bacillus has a much higher risk of recontracting tuberculosis than a person infected with the bacillus and who is HIV-negative [8]. In our study, we found that 68% of the relapsed cases were also HIV-infected and 63% of them had a history of tuberculosis infection [Table II].

Another study conducted in Abidjan in 2002, on relapsed pulmonary TB in a TB/HIV context, showed that 72% of TB patients were HIV positive [9]. According to the 2014 WHO report, among 9.6 million people who developed TB disease in 2004, 1.7 died and 80% of these deaths occurred in regions of sub-Saharan Africa where TB-HIV co-infection is high [10].

Chronic alcohol intoxication has long been considered an etiological factor in active pulmonary TB. Causal relationships have been demonstrated between excessive alcohol consumption and the incidence of infectious diseases such as pulmonary tuberculosis [11].

In our study, we found cases of chronic alcoholism with a proportion of 71% [Table II]. Ndayizeye in Burundi in his study on relapse of pulmonary tuberculosis found that chronic alcoholism is a risk factor for tuberculosis relapse in a proportion of 57% [12].

### **Conclusion**

Tuberculosis relapse is a reactivation and then a multiplication of a mycobacterium responsible for a previous tuberculosis that was treated and cured. It is favoured by a drop in immune defences, the main risk factors of which are HIV infection, chronic alcoholism, malnutrition, poorly balanced diabetes mellitus and smoking, as demonstrated in several studies. The follow-up of these patients with these comorbidities must be regular for better prevention, early diagnosis and treatment of relapses.

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