

Current Aspects of Non-Pulmonary Tuberculosis at Brazzaville University Hospital: Prevalence and Associated Factors

Adoua doukaga T^{1,2}, Bendett Lebaho P², Bintsindou P², Ekat M², Angonga Pabota E² and Ossibi Ibara BR^{1,2}

¹Marien Ngouabi University, Faculty of Health Sciences, Brazzaville, Congo.

²Infectious Diseases Department, Brazzaville University Hospital, Congo.

*Correspondence:

Dr. Bienvenu Rolland Ossibi Ibara, Professor of Infectious Diseases, Marien Ngouabi University, Brazzaville, Congo, Tel: 00242 069303537, 055224226.

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ABSTRACT

Objective: Determine the prevalence of non-pulmonary tuberculosis in the Infectious Diseases department of the University Hospital of Brazzaville and look for associated factors.

Patients and Method: This was a prospective, descriptive and analytical study of non-pulmonary tuberculosis cases registered in the Infectious Diseases Department between January 2022 and October 2024, regardless of the serological status of patients who consented to the study.

Results: 115 cases of non-pulmonary tuberculosis were recorded in patients with an average age of 41 ± 4 (17-73), who were female (61%), single (79%), urban dwellers (100%) and HIV-infected (95%). The average consultation time was 43.7 ± 4 (4-30) days for fever (78%), physical asthenia (65%), pallor (44%), AEG (41%). The main non-lung localizations were lymph node (31%), pleural (26%), peritoneal (20%), bone (12%) and meningeal (11%). Associated opportunistic infections were Toxoplasmosis ($n=18$), neuromeningeal Cryptococcosis ($n=26$), chronic diarrhea ($n=17$). The mean CD4 count was 139.8 ± 13 (16-439)/mm³. Abdominal ultrasound showed adenopathy (38%). Ascites fluid had more than 30 proteins (20%). Images of geodes and bone demineralization were present (12%). Patients were started on EHRZ followed by ART (TDF+FTC+DTG 100mg) within 2 weeks. Immune restoration was observed in 5 patients. Progression was favorable in 65% of cases. Death occurred in 35% of cases. Neurological location ($p=0.001$), age ($p=0.0001$) and anemia ($p<0.006$) were associated with death.

Conclusion: Non-pulmonary tuberculosis remains common at Brazzaville University Hospital, in association with HIV infection. It is a pathology of immune restoration. Anemia remains the main complication of this co-infection. Prevention requires early detection and management of HIV infection.

Keywords

Tuberculosis, Non- pulmonary, Prevalence, CHU-Brazzaville.

respiratory route, and is associated with the low socio-economic status of the populations concerned [1,2].

Introduction

Non-pulmonary tuberculosis can be defined as the localization of the mycobacterium tuberculosis pathogen in tissues other than the lungs. It is an infectious disease transmitted mainly by the

Non-pulmonary tuberculosis poses a real public health problem in the HIV-immune-compromised population of Brazzaville University Hospital. Its morbidity and mortality are linked to formidable complications, including anemia and impaired

consciousness. The aim of this study is to contribute to improving the quality of management of this opportunistic infection, while determining its prevalence and identifying associated factors.

Patients and Method

This was a prospective, descriptive and analytical study of non-pulmonary tuberculosis cases registered in the Infectious Diseases Department between January 2022 and October 2024, regardless of the serological status of patients who consented to the study. Patients with or without HIV infection, receiving or not receiving high-level antiretroviral therapy active and having given a free and informed consent to participate in this study was included. The epidemiological variables (age, sex, level of education, marital status, HIV status as well as the notion of previous tuberculosis), clinical (Reason and time for consultation) diagnostic (topographic forms of tuberculosis, diagnostic procedures), therapeutic (time to start EHRZ-ARV treatment) and evolutionary (Duration of hospitalization, cure, relapses, deaths and causes of death) were studied.

The data was collected using a pre-designed survey form, and analyzed using the EPI software. Info 3.3.1 with the determination of qualitative and quantitative variables from statistical tests according to their applicability criteria. For all the tests used, the significance threshold was set at <0.05.

Operational Definitions

In some cases, non-pulmonary tuberculosis was diagnosed using a syndromic approach when KOCH bacilli could not be isolated. The presence of adenopathy on ultrasound and radiographic images helped in the diagnosis.

Results

Non-pulmonary tuberculosis accounted for % of admissions during the study period, average age of 41 ± 4 years [17-73], female (61%)

and male (39%), with secondary education (n=53; 53%), single (79%), urban dwellers (100%) and HIV-infected (95%), with a low socioeconomic level (71%). HIV infection was discovered during hospitalization (n=75; 92.6%). The average consultation time was 43.7 ± 4 (4-30) days for fever (78%), physical asthenia (65%), pallor (44%), AEG (41%). The main non-lung localizations were lymph node (31%), pleural (26%), peritoneal (20%), bone (12%) and meningeal (11%) (Figure 1). Associated opportunistic infections were Toxoplasmosis (n=18), neuromeningeal Cryptococcosis (n=26), chronic diarrhea (n=17). Mean CD4 counts were 165.2 ± 56.8 [2-644]. Abdominal ultrasound found ADP (31%) and ascites (20%) while the chest X-ray objectified opacity occupying the entire hemi-thorax erasing the ipsilateral dome, with a repression of the mediastinum testifying to a pleurisy of great abundance. EHRZ treatment was administered in 100% of cases and ART introduced within an average of 30.9 ± 7.7 days. It was principal payment of the TDF+FTC+DTG 100mg (100%) of cases. The mean hospital stay was 17.8 ± 14 [1-90] days. The overall lethality was 35%. Age (p=0.0001), meningeal syndrome (p=0.001) coma (p=0.02) and anemia(p<0,006) were related to the occurrence of death (Table 1).

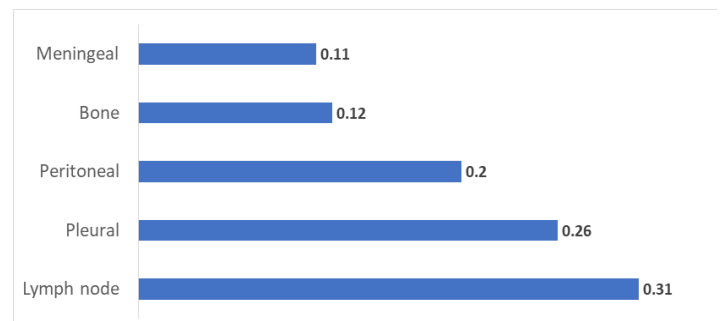


Figure 1: Different clinical forms of non-tuberculosis pulmonary.

Table 1: Associated factors.

Associated factors	EVOLUTION				GOLD	95% CI	p value
	Death (n=40)		Cured (n=75)				
	Workforce	Percentage	Workforce	Percentage			
Age range							
<20 years	0	0.0	6	8	0.0		0.0001
Anémia							
yes	36	90	15	20	0.2	0.09-0.8	<0,006
Reason for hospitalisation							
Diarrhea	20	58,6	2	2,7	6.9	1.4-32.8	0.006
Physical signs							
Coma	24	47.1	12	25.5	2.5	1.1-6.1	0.02
Meningeal syndrom	12	30	1	1,3	9.8	1.1-81.1	0.001
EHRZ treatment	32	80	83	111	0.1	0.04-0.6	0.006

Discussion

Our study has some biases related to its partly retrospective nature. Some information does not have could not be found in medical records and hospital registers. In addition, the weakness of the technical platform did not make it possible to confirm the diagnosis of extra-pulmonary tuberculosis in certain cases. All these difficulties have already been encountered by most African authors [2,3] However, this study has lifted the veil on the situation of extra-pulmonary tuberculosis at the Brazzaville University Hospital.

The prevalence of cases of Non-pulmonary tuberculosis is high in the infectious diseases department of the Brazzaville University Hospital compared to that reported in some countries of the sub-region [2-4]. Extra-pulmonary and disseminated forms of tuberculosis interest 56.2% of patients in Madagascar, whereas they accounted for 53% of tuberculosis cases in Nairobi and 57% in North Carolina [5,6]. The average age of patients with extra-pulmonary tuberculosis was 44 years and the age group between 30 and 49 years was the most represented. This is a category of the most active population, living in conditions of promiscuity. These are mostly female patients in connection with the feminization of HIV infection. These data are consistent with those reported in the African literature [4,7].

The unemployed represented the category of the population most affected, followed by traders. Our study finds a proportion of 43% of patients with tuberculosis who do not have a job. This result suggests that poverty influences on tuberculosis whatever the clinical form in sub-Saharan Africa [1,8].

Singles were the most represented social stratum in 79% of cases. Almost all of these patients resided in the city. These are agglomerations high population density, favorable to the transmission of *Mycobacterium tuberculosis* as reported in the literature [2,3,9]. In the vast majority of cases, HIV1 infection was discovered during hospitalization. Tuberculosis remains one of our days the first opportunistic infection in the subject infected with HIV and this association is not a new fact since it has already been observed in several African series [1,3,9-11]. The average consultation time was 41.6 days with extremes ranging from 1 to 210 days. These long delays in consultation are classic in African settings [3,5,7]. Indeed, the denial of the disease specific to the populations studied and the low socio-economic level largely justify this delay in consultation insofar as patients sometimes consult above all traditionally before resorting to a health structure only belatedly. Meningeal syndrome in a context of psychomotor agitation, signs of neurological deficit hemiplegia and ascites were the most common physical examination signs in patients.

Lymph node and pulmonary tuberculosis followed by pleural localization were the main clinical forms encountered in patients and in 29% of cases, the lymph node form was associated with pulmonary localization. In accordance with data from the literature, lymph node involvement was more observed, associated

with pulmonary localization in patients immunocompromised by HIV without statistically significant difference ($p=0.1$) [11,12]. In Madagascar, in a hospital environment, peripheral lymph node involvement was the most represented form in 53.1%, followed by osteo-articular forms as reported by Ralisata and collaborators [5].

Neuromeningeal cryptococcosis and cerebral toxoplasmosis were the main opportunistic infections associated with extra pulmonary tuberculosis in patients. Advanced immunosuppression has as its corollary the appearance of these opportunistic infections which must always be systematically sought in any HIV-positive patient presenting with a PET scan. The intradermal reaction to tuberculin came back negative in 68.4% of cases. It was more negative in patients immunocompromised by HIV versus immunocompetent patients. In Dakar in a series of pleural tuberculosis in 2010, this rate was 42.5%. These rates were higher than that reported in Spain by Valdés [8]. In Senegal, the negativity rate was 65.4% in HIV-positive patients versus 29% in HIV-negative patients. These results are explained by the decrease in cellular immunity at the origin of anergy in patients living with HIV. The tuberculin skin test therefore has no of interest in severely immunocompromised individuals. During tuberculosis, normocytic anemia is most often reported. We found an average hemoglobin level of 7.4g/dl. This often-inflammatory anemia is usually described during tuberculosis-HIV co-infection thus making the prognosis unfortunate as already reported in Congo and Mali [7]. GeneXpert in the pathological product was performed in 61 patients and came back positive in 23% of cases. In no case no pathogen resistance to rifampicin was detected. The sensitivity and specificity of GeneXpert in the diagnosis of pulmonary and extra-pulmonary tuberculosis have been evaluated in several studies with nevertheless variable results [13,14]. However, in 38% of cases a negative result was noted. This variation in the sensitivity and specificity of the GX test depending on the type of sample could be explained by the fact that the mycobacterial load, which varies according to the different compartments of the body be the main determinant of the positivity of the test. When abdominal ultrasound was available, deep paraortic or coelio-mesenteric lymphadenopathy was found in 28 cases. Peritoneal tuberculosis await was found in 17 patients. This diagnosis had been suspected by the cyto-biochemical analysis of the exudative liquid of ascites and confirmed by the results of the therapeutic trial. The contribution of ultrasound in the diagnosis of tuberculosis peritoneal ascites is recognized in the African context [15]. Laparoscopy with demonstration of peritoneal granulations constituting the most common endoscopic sign was not performed in our study. The treatment of tuberculosis in ours patients obeyed the recommendations issued by the WHO and the national tuberculosis control program of Congo [1,16] in 81% of cases. In negligible proportions, anti-tuberculosis treatment was not instituted, this in connection with the rapid and fatal progression observed in some patients. The overall lethality was 51%, high compared to that seen elsewhere. Age less than 20 years, being single and neurological location had a statistical link significantly with the occurrence of death in patients.

The low standard of living of patients for whom the cost of co-infection management is out of reach, delayed diagnosis, advanced immunosuppression, working conditions characterized by limitation of diagnostic and therapeutic means would largely explain this high mortality rate found.

Conclusion

Non-pulmonary tuberculosis remains common at Brazzaville University Hospital, in association with HIV infection. It is a pathology of immune restoration. Anemia remains the main complication of this co-infection. Prevention requires early detection and management of HIV infection.

The prevention of this condition remains the only cost-effective measure and involves raising the socio-economic level of populations, screening and early management of HIV infection.

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