

CLINICAL AND RADIOLOGICAL FEATURES OF TUBERCULOSIS IN HIV PATIENTS

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Abstract: The clinical, immunological and radiological aspects of tuberculosis were analysed in 156 HIV-infected patients hospitalized within “Dr. Victor Babeș” Infectious and Tropical Diseases Hospital, between 2001 and 2009.

Cuvinte cheie: tuberculoză pulmonară, extrapulmonară, infecție HIV, CD4

Rezumat: Au fost analizate aspectele clinice, imunologice și radiologice ale tuberculozei la infecția HIV la 156 de pacienți internați în Spitalul de Boli Infecțioase și Tropicale “Dr. Victor Babeș”, București în perioada 2001-2009.

INTRODUCTION

Romania is recognized worldwide by the large number of children infected with HIV, the main route of infection transmission being the nosocomial one. In the recent years, we have been witnessing a modest but continuing increase of the number of HIV infected adults.

Tuberculosis was first described in the patients with AIDS in 1984, in the Haitians living in Florida and then in the USA addicts in 1986, but the epidemiological significance of the association of both infectious and contagious diseases, with a disjunction between infection and disease, drew the attention of the medical world only in the year 1988, due to tuberculosis recrudescence in the USA. Disseminated and extra-pulmonary tuberculosis have been considered criteria for defining the 4th stage of the HIV disease since 1987. Since 1993, pulmonary tuberculosis has also become one of the criteria for defining AIDS in adults.

Human immunodeficiency virus (HIV) has both a direct and an indirect effect on tuberculosis incidence. The direct effect is due to the increased number of cases among the HIV infected patients due to their increased susceptibility to this disease. The indirect effect consists in the increase of the transmission of Mycobacterium tuberculosis infection in the communities with high levels of HIV-TB dual infection. People with HIV-AIDS have an increased risk of tuberculosis disease, both as first infection and as exogenous re-infection or endogenous reactivation of latent tuberculosis. The diagnosis of the infection with Mycobacterium tuberculosis is difficult in the patients with HIV infection because of the low frequency of highlighting the germ on the smear, of the atypical aspects of lung radiography. There are several features of the radiological aspects of tuberculosis lesions in HIV positive patients:

- equal frequency distribution of lesions between the upper and lower lobes;
- higher proportion of mediastinal lymph nodes;
- increased proportion of determinations at serous (pleura) level;

- miliary and interstitial dissemination;
- classic form of cavitary tuberculosis and broncho-pneumonia disseminations occur rarely.

From the radiological point of view, the following is characteristic in HIV-AIDS association: the more advanced the degree of immunosuppression, the less suggestive the radiography is.

PURPOSE

The clinical, immunological and radiological aspects of tuberculosis were analysed in HIV-infected patients.

METHODS

Over a period of eight years (2001-2009), we retrospectively studied a total number of 156 adult patients, HIV positive, admitted within “Dr. Victor Babeș” Infectious and Tropical Diseases Hospital of Bucharest. For cases documentation, we used the general clinical observation sheet of each patient. In these patients, we observed the symptoms, the radiological aspect, bacteriological examination of sputum, bronchial aspirates, pleural fluid, pleural biopsy, CD4/CD8 ratio.

RESULTS AND DISCUSSIONS

The gender distribution of the studied patients was as follows: 102 (65%) men and 54 (35%) women, with an average age of 42.16 years \pm 16.08 years. Regarding the origin environment, 97 (62%) were from urban areas and 59 (38%) from rural areas.

By analyzing the sequence for detecting both comorbidities, 121 (77.56%) were initially HIV detected, in 25 patients (16.02%), tuberculosis was first detected, and in 10 patients (6.41%), detection was done simultaneously.

In table no. 1, we present the gender data distribution.

The clinical diagnosis of tuberculosis is often difficult, many of tuberculosis manifestations (non-specific and polymorphic) (fever, night sweats, loss of appetite, progressive

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weight deficit, cough, dyspnoea) may be attributed to both tuberculosis and HIV evolution.

We noticed the high polymorphic nature of the symptoms, in most of the cases the patient showing at least three associated symptoms.

In terms of tuberculosis location, 107 (68.5%) of the patients had pulmonary tuberculosis, 49 (31.4%) had extrapulmonary tuberculosis and 48 of them presented associated pulmonary and extrapulmonary tuberculosis.

Table no. 1. Patients' distribution according to the sequence for detecting HIV-TBC comorbidity

Sequence for detecting HIV-TBC comorbidity	Total		Men		Women	
	Nr.	%	Nr.	%	Nr.	%
Tuberculosis detection	25	16.02	19	76	6	24
HIV detection	121	77,56	74	61,15	47	38,87
TBC+HIV detection	10	6,41	9	90	1	10

We detail these data according to gender in figure no. 1.

Figure no. 1. Clinical symptomatology upon hospitalization

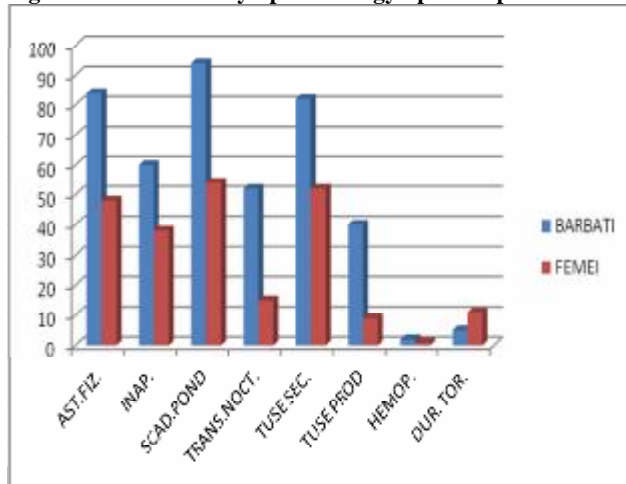
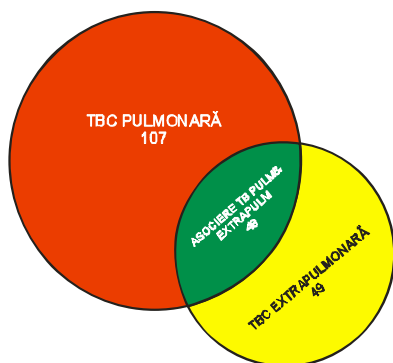


Figure no. 2. Patients' distribution according to tuberculosis location



The distribution of the radiological forms of pulmonary tuberculosis was as follows: 26 cases (24.29%) - caseous hollow forms, 23 patients (21.49%) - forms with cvasinormal radiological aspect, 20 (18.69%) mediastinal adenopathies, equal proportions of 16 cases (14.95%) - ulcerated infiltrative and miliary forms, and 6 patients (5.61%) with nodular infiltration. We mention that in the patients whose radiological image was normal or showed only increased

peribronhovascular image in sputum, Bk strains were isolated on the direct bacteriological exam or by cultures.

Regarding the lesion extension, 72 patients (46.15%) had bilateral pulmonary lesions and 41 patients (26.28%) had unilateral bacillary lesions, the rest of 43 patients (27.56%), showing no pulmonary radiological changes.

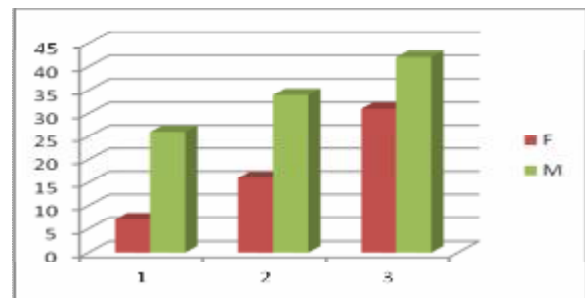
A third of the patients had extrapulmonary forms of tuberculosis: pleurisy (56.12%), peripheral bacillary lymph nodes (27.55%), meningitis (9.18%), bacillary peritonitis (4.08%), pericarditis (2.04%). A young woman presented polyserositis (pericarditis, peritonitis, pleurisy).

Immunologically speaking, the distribution of the patients was as follows: 33 patients (21%) with $CD4 > 500 \text{ mm}^3$ (1), 49 patients (31%) with $CD4$ ranging between $499-200 \text{ mm}^3$ (2) and 74 patients (48%) with $CD4 < 200 \text{ mm}^3$ (3). We also present these data in terms of gender distribution. (Table no. 2, figure no. 3)

Table no. 2. Patients' distribution according to the immune status

Gender	CD4/CD8							
	1	%	2	%	3	%	Total	%
W	7	4	16	10	31	20	54	34
M	26	17	34	21	42	30	102	65
Total	33	21	49	31	74	48	156	100

Figure no. 3. Graphic representation of the data of table no. 2



CONCLUSIONS

1. The radiological aspects of pulmonary tuberculosis may be modified or even absent depending on the degree of individual immunosuppression. In HIV infected patients, the location at the level of the upper lung lobes and caverns is rarely, the most common locations being the hilar adenopathy, disseminated forms (miliary) and pleurisy.
2. $CD4 < 200 \text{ mm}^3$ is associated with mediastinal, hilar adenopathy; $CD4 \geq 200 \text{ mm}^3$ is associated with pleural effusion or infiltrative nodular forms, $CD4 < 100^3$ is associated with miliary tuberculosis.
3. Increasing the level of immunosuppression leads to disseminated forms of tuberculosis and extrapulmonary tuberculosis.
4. In the TB-HIV coinfecting patients, there is a lesion extension, the bilateral pulmonary lesions predominating.

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