

“Extra-Pulmonary Tuberculosis in HIV & non HIV patients in a tertiary care Hospital, Mumbai.”

Mrs.Sujata N Dharmshale¹, Dr.Renu S Bharadwaj², Mrs.Aruna H Gohil³, Dr.Abhay S Chowdhary⁴

Abstract:

Introduction: The importance of Extra-pulmonary Tuberculosis (EPTB) among all forms of Tuberculosis has not yet been ascertained in developing countries due to difficulty in diagnosis and lack of culture facilities. The incidence of Extra-Pulmonary Tuberculosis is increasing with the advent of the HIV epidemic.

Material & Methods: All clinical samples from suspected EPTB were processed by conventional diagnostic methods. Blood sample from these patients collected and subjected for HIV testing.

Results & Conclusions: The incidence of EPTB among HIV positive patients was detected to be 47.5%. As compared to these patients not infected with HIV showed an incidence of 35.86%. Predominate mycobacterial isolate was MTB i.e. 72, 91.13%. The commonest site of occurrence of EPTB was abscess 40% and 11.51% respectively in HIV positive & negative patients.

Introduction: Tuberculosis can involve any organ system in the body. While pulmonary tuberculosis is most common presentation, extra-pulmonary tuberculosis (EPTB) is also an important clinical problem. EPTB is a milder form of disease in terms of infectivity as compared to pulmonary tuberculosis. However, whereas the specimen can be easily obtained for the detection of disease in lung, diagnosis of EPTB is often difficult requiring invasive and expensive serological / radiological investigation¹. The category-wise drug treatment is similar for the two forms of diseases. However an assessment of end point of cure is a problem with EPTB. With the global rise of human

immunodeficiency viral (HIV) infection, Extra pulmonary presentations of Tuberculosis have been reported to range from 30 to 70% cases in various studies especially in patients with advanced immuno-suppression²

The present study is based on a retrospective study of the incidence of EPTB in HIV infected and non infected patients of in and around Mumbai.

Material & Methods: From Jan 2005 to December 2006, 1093 samples (671 pulmonary and 422 extra-pulmonary) were received from clinically diagnosed Tuberculosis in the Department of Microbiology, Grant Medical College, Mumbai. Samples were received for Mycobacterial culture from patients attending the out patients (OPD) and admitted in various wards as in patients (IPD) in J J Hospital Mumbai. These were examined for microscopy by Ziehl Neelsen (Z.N.) stain, then cultured on Lowenstein Jensen medium and incubated at 37°C for eight weeks and observed for mycobacterial colonies at weekly interval. The mycobacterial isolates were identified as

¹ Lecturer, Department of Microbiology,
B J Medical College & Sassoon General Hospital, Pune.

² Dean & Prof & Head
Department of Microbiology,
B J Medical College & Sassoon General Hospital, Pune.

³ Lab. Technician, Grant Medical College, Mumbai.

⁴ Director of Hafkin Institute, Parel, Mumbai.

Mycobacterium tuberculosis (MTB) / Non-tuberculosis Mycobacteria (NTM) on the basis of Z.N stain, colony morphology, growth rate, pigment production, niacin production, nitrate reductase test & p- nitro benzoic acid (PNB) susceptibility testing³.

5ml of Blood was collected, in plain vacutainers, from all patients after counseling and informed consent in the ICTC attached to the department. Serum was separated and tested for HIV 1 and 2 antibodies by three tests as recommended by NACO, ELISA using Innostest HIV-1/HIV-2 Ab, Capillus HIV, Spot/Immunocomb, and HIV-1/HIV-2 kits were used.

Observations & Results: Of the 1093 samples tested, four hundred and twenty two (38.61%) samples were of EPTB. The distribution of the samples of EPTB in both HIV positive & negative patients is shown in Table no.1. There was no significant difference observed between HIV reactive EPTB (47.5%) and HIV non reactive EPTB (31%) by Z test ($Z = p > 0.05$). All (11) isolates from specimens of HIV-EPTB co-infected patients were MTB and not NTM. From non HIV EPTB out of 84, 73(86.9%) MTB and 11(13.1%) were NTM.

Table No.1: Distribution of MTB & NTM

Species	HIV Positive		HIV Negative		Total
	No.	% age	No.	% age	
MTB	11	100	73	(86.9%)	84 (88.42%)
NTM	00	00	11	(13.1%)	11(11.57%)
Total	11	100	84	(100%)	95

Conclusion:

The proportion of extra-pulmonary tuberculosis was relatively high among HIV reactive patients (47.5%) in comparison to HIV negative patients (31%). The predominate isolate was MTB from both groups. No MOTT bacteria could be isolated in patients with EPTB and HIV co-infection. Due to the increasing prevalence of dual infection with HIV & Extra Pulmonary Tuberculosis, all cases of extra-pulmonary tuberculosis should be screened for co-existing HIV infection. This would result in appropriate therapy can be instituted early decreasing

the overall burden of tuberculosis in the community.

Discussion:

The incidence of EPTB in HIV patients has been reported in a range of 14.81% - 78.01%^{1, 3-10}. However we have reported (47.5%) from Mumbai which is not correlating with any of the author's incidence. There is an overall increase in the incidence of EPTB contributing to the overall burden of Tuberculosis in developing countries. In the current retrospective study a high incidence of EPTB was observed in HIV patient (47.5%) and in patients with no HIV infection (31%). The reason for increased figure is

that HIV-infected patients are usually treated in tertiary level centers, because of availability of diagnostic facility. Studies have reported that EPTB occurs as a result of dissemination of pulmonary infection especially in the immuno-compromised patients^{7, 10}. In the present study, however, we have not come across EPTB with a co-existent PTB.

The common forms of EPTB in HIV positive patients in the present study were abscess (30%), lymphadenopathy (7.5%), cutaneous (5%) and pleural effusion (2.5%) while in non HIV patients abscess (14.1%), pleural effusion (7.3%) and lymphadenopathy (3.9%). R.Gopal (2001)⁵ has also reported the commonest site of EPTB in HIV as abscess (40%) followed by lymphadenopathy and meningitis (20%) and pleural effusion (10%). While other Indian studies have reported common forms of EPTB in HIV patients as lymphadenopathy and pleural effusion^{1, 4,8,10}.

Among the mycobacterial isolates, MTB was the commonest in both EPTB patients. No MOTT bacteria were isolated from HIV positive patients. Thus stressing the fact the conventional *Mycobacterium tuberculosis* is still the major pathogen in these patients. *Mycobacterium avium-intracellulare complex* (MAIC) is the leading causative organism causing TB in HIV infected patients in most of the western countries¹⁰.

Non-tuberculous mycobacteria were however isolated from HIV negative EPTB samples. They were however not speciated but this indicates that the MOTT bacteria are gaining a foot hold in the Indian subcontinent as causative agents of tuberculosis and are more likely to present with EPTB in the immunocompetent patient

REFERENCES :

1. Arora VK and Gupta R. Trends of Extra-pulmonary tuberculosis under revised National Tuberculosis Control Programme: A Study from South Delhi. *Ind. J. Tub.*, 2006; **53**: 77-8.
2. Arora VK and Chopra KK. Extra Pulmonary Tuberculosis, Editorial article. *Ind. J. Tub*, 2007; **54**: 165-167.
3. Manual on Isolation, Identification and Sensitivity Testing of *Mycobacterium tuberculosis* of National Tuberculosis Institute, Bangalore, 1998.
4. Sharma SK and Mohan A., Extra pulmonary tuberculosis. *Ind J Med Res*, October 2004; **120**: 316-353.
5. Arora VK, Gowrinath K and Samba Siva Rao R. Extra pulmonary involvement in HIV with special reference to Tuberculous cases. *Ind J Tub*. 1995; **42**: 27-32.
6. Gopal R, Padmavathy BK, Vasanthi S and Jayashree K. Extra-Pulmonary Tuberculosis – A Retrospective Study. *Ind. J. Tub.*, 2001; **48**: 225-226.
7. Rajshekaran S, Jima A, Kamakshi S, Jeyaganesh D, Senthamizchelvan A, Savithri S and Gopinathan Trends of HIV infection in patients with Tuberculosis. *Ind J Tub* 2000; **47**: 223 – 226.
8. Subir Kumar Dey. Clinical Pattern of Tuberculosis in relation to HIV Seropositivity in West Bengal summaries of papers presented at the 55th National Conference on Tuberculosis and Chest Diseases held at Kolkata, Dec 7-10, 2000, *Ind.J Tub*; 2001, **48**, 117, 158-159.
9. Zuber A, Bhargava R, Pandey DK and Sharma K. HIV infection Seroprevalence in Tuberculosis Patients. *Ind J Tub*, 2003; **50**: 151-153.
10. Col Praharaj AK, Lt Col Kalghatgi AT, Lt Col Varghese SJ and Co Nagendra A Incidence and Drug Susceptibility pattern of *Mycobacterium tuberculosis* in

Tables: Table No2: Results and distribution of samples according to site among HIV infected
non- HIV infected cases of tuberculosis

SPECIMEN	HIV POSITIVE			HIV NEGATIVE		
	Processed Nos.	Smear +ve	Culture +ve	Processed Nos.	Smear +ve	Culture +ve
Pus	17	4 (23.8%)	8 (47%)	136	11(8.1%)	43(31.4%)
Pl. fluid	05	00	01(20%)	106	08(7.5%)	20(18.8%)
Tissue/biopsy	04	02(50%)	0	45	03(6.7%)	04(8.9%)
LN aspirate	04	02(50%)	01(25%)	24	04(2.9%)	12(2.9%)
Urine	04	0	0	21	01(4.8%)	01(4.76%)
CSF	02	0	0	16	03(18.7%)	01(6.25%)
Ascitic fluid	01	0	0	10	0	02(18.2%)
ICD	0	0	0	08	01(12.5%)	01(12.5%)
Throat swab	0	0	0	03	0	0
Oral scraping	01	0	0	2	0	0
Ovarian/Cystic Fluid	0	0	0	2	0	0
Peritoneal fluid	0	0	0	1	01(100%)	0
Pericardial fluid	0	0	0	1	01(100%)	0
Stool	2	0	1	0	00	0
Total	40	8	11	382	34	84

Date of manuscript submission: 28 January 2012

Date of initial approval: 23 February 2012

Date of Peer review approval: 27 March 2012

Date of final draft preparation: 2 June 2012

Date of Publication: 9 June 2012

Conflict of Interest: Nil, Source of Support: Nil.

