

ASSESSMENT AND EVALUATION OF HIV, TB AND THEIR CO-INFECTION STATUS ANALYSIS IN RAJASTHAN STATE IN THE YEAR 2012

Dhamija Jas Pal¹, Mittal Surender², Bhatheja Himanshu³, Sharma Niharika⁴, Garg Prakhar⁵, Akash Rajender⁶, Maheshwari Vitthal⁷

HOW TO CITE THIS ARTICLE:

Dhamija Jas Pal, Mittal Surender, Bhatheja Himanshu, Sharma Niharika, Garg Prakhar, Akash Rajender, Maheshwari Vitthal. "Assessment and Evaluation of HIV, TB and Their Co-Infection Status Analysis in Rajasthan State in the year 2012". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 23, June 09; Page: 6304-6309, DOI: 10.14260/jemds/2014/2740

ABSTRACT: BACKGROUND: Sparse published data are available in indexed journals regarding burden of Human Immunodeficiency Virus (HIV) infection in Tuberculosis (TB) cases in Rajasthan. **OBJECTIVE:** HIV infection is a global pandemic which may trigger the occurrence of opportunistic infections, Tuberculosis (TB) being very common. There is strong association between HIV, TB co-infection and a high mortality among HIV-infected TB patients. Therefore this study is undertaken to evaluate status of HIV, TB and its co-infection and their analysis in Rajasthan state. **MATERIALS AND METHODS:** Present study is carried out to evaluate HIV, TB and their co-infection status analysis in Rajasthan state during January to December 2012. This retrospective study is done to analyze data of patients registered under Revised National TB Control Programme (RNTCP) at designated centers and at Integrated Counseling & Testing Centers in Rajasthan during the period from January 2012 to December 2012. **RESULTS:** During this period out of 37,310 patients of TB 395 were HIV positive and out of 14,827 cases referred from ICTC to RNTCP 4,536 were HIV positive. In the present study various data entered and recorded were collected, compiled and subsequently evaluated, analyzed and interpreted details recorded in text. **CONCLUSION:** High Prevalence of TB 1296 /14827 (8.74%) in referrals from ICTC to RNTCP and a high positivity for HIV 395/37310 (1.06%) in TB patients referred from RNTCP centers to ICTC has been observed. It suggests and points to high positivity and strong association between HIV and TB and its co infection in Rajasthan state.

KEYWORDS: Human Immunodeficiency Virus (HIV), Acquired Immunodeficiency Syndrome (AIDS), Tuberculosis (TB), People Living with HIV (PLHIV), National AIDS Control Programme (NACP), Revised National TB Control Programme (RNTCP), Designated Microscopy Centers (DMC), Directly Observed Therapy Short Course (DOTS), Integrated Counseling & Testing Centre (ICTC), Ante Retroviral Therapy (ART).

INTRODUCTION: The first case of HIV / AIDS in India was reported in Tamil Nadu in 1986 and it is estimated that in India there are approximately 2.5 million people who are HIV positive.⁽¹⁾ Though India is the second-most populous country in the world, it has more new TB cases annually than any other country. As per WHO global TB reports in 2009, out of the estimated global annual incidence of 9.27 million incident TB cases, 2 millions are in India, thus contributing to a fifth of the global burden of TB.⁽²⁾ In 2010 globally there were 8.8 million incident TB cases, 1.1 million deaths from TB in HIV negative people and 0.35 million deaths from TB with HIV.⁽³⁾

In India the National AIDS Control Programme (NACP) was launched in 1992, and is being implemented as a comprehensive program for prevention and control of HIV /AIDS.

ORIGINAL ARTICLE

India has the third largest number of people living with HIV/ AIDS, with an estimated adult prevalence of 0.29 %.⁽⁴⁾ However Rajasthan is low endemic state with adult HIV prevalence rate 0.17% in adult general population.⁽⁵⁾

There may be several reasons for the high mortality among HIV-infected TB patients: these include undiagnosed or late diagnosis of HIV, delayed or missed TB diagnosis among PLHIV (People Living with HIV), inadequate chemotherapy to drug-resistant TB cases and insufficient availability of decentralized facilities along with late presentation and lack of finances resulting in suboptimal linkage to centralized ART services.

Available evidence suggests mortality reduction may be most effectively driven by efficient, improved and early diagnosis. WHO recommends interactions to jointly address the co epidemics of TB and HIV by HIV testing for all TB patients, provision of ART for HIV positive TB patients and intensified case finding for TB among HIV patients. There is need and necessity of progress in scaling up provision of these services.⁽⁶⁾

Sparse published data are available in indexed journals regarding burden of human immunodeficiency virus (HIV) infection in tuberculosis (TB) cases in Rajasthan. Therefore this study is undertaken to assess, evaluate and analyze HIV-TB co-infection status in Rajasthan state.

MATERIALS AND METHODS: This study is a retrospective study carried at Provider Initiated HIV Testing and Counseling (PITC) in patients registered for the treatment of various forms of TB under Revised National TB Control Programme (RNTCP) at 881 Designated Microscopy Centers (DMC) and more than 2000 DOTS centers⁽⁷⁾ and at 195 Integrated Counseling & Testing Centers⁽⁵⁾ in Rajasthan during the period from January 2012 to December 2012.

By Revised National Tuberculosis Control Programme (RNTCP) WHO recommended Directly Observed Therapy Short Course (DOTS) is implemented in India.⁽⁷⁾ In Rajasthan all the districts are covered in this Programme with 881 Designated Microscopy Centers (DMC) for diagnosis of TB⁽⁸⁾ and its treatment is provided at more than 2000 DOTS centers.⁽⁷⁾

Testing Procedures: Commonest method to diagnose HIV infection is by detection of presence of antibodies to HIV in the blood of an HIV-infected person. Rapid tests, used to diagnose HIV infection are user friendly and can provide quick results. Varieties of rapid tests are available and employ different principles. NACO recommends the use of rapid HIV test kits which provide results within 30 minutes. Rapid test kits with detection rate >99.5% of all HIV-infected individuals and false-positive results in <2% of all those who are tested are recommended for general use. HIV testing facilities are provided by National AIDS Control organization and Rajasthan State AIDS Control Society (RSACS). Testing is done free of cost at all Stand-alone facility Integrated Counseling & Testing Centers (ICTC) in the government health sector.

A person who has a negative result in one test is declared to be HIV-negative. A person is declared to be HIV-positive when the same blood sample is tested three times using kits with different antigens/principles and the result of all three tests is positive.⁽⁹⁾ In HIV positive cases follow-up counseling includes establishing linkages and referrals to services for care and support including Ante retro viral therapy, nutrition and legal support.

At Integrated Counseling & Testing Centre during interpersonal communication the counselor collects the information and keeps it in Human Immune-deficiency Virus - Tuberculosis Collaborative

ORIGINAL ARTICLE

activity record keeping registers.⁽¹⁰⁾ In the present study various data entered and recorded were collected, compiled and subsequently evaluated, analyzed and interpreted.

RESULTS: During the period January 2012 to December 2012 in Rajasthan 37310 patients diagnosed to have various forms of TB were referred from RNTCP centers to ICTC in Rajasthan State. Out of it 395 were found positive for HIV. During this period amongst persons attending ICTC 14,827 cases were suspected with tuberculosis symptoms and were thus referred from ICTC to RNTCP centers for diagnosis of tuberculosis, both HIV positive as well as negative were referred. Amongst these 14,827 referred cases 4,536 were positive and 10,291 negative for HIV.

Out of these 14,827 cases referred from ICTC to RNTCP for diagnosis of tuberculosis 1,296 (8.74%) were diagnosed to be suffering from tuberculosis. Amongst it there were 1,225 patients of Pulmonary Tuberculosis, out of it 651 (4.39%) were suffering from sputum positive pulmonary tuberculosis, 574 (3.87%) were suffering from sputum negative pulmonary tuberculosis and 71 cases (0.48%) were suffering from extra- pulmonary tuberculosis disease.

Out of total 1,296 diagnosed tuberculosis patients, 249 were with HIV positive status and 1,047 were with HIV negative status: In Sputum positive pulmonary tuberculosis group – Out of 1,225 PTB and in it out of 651 sputum positive PTB group patients 67 were positive for HIV and 584 were negative for HIV with (67/651) 10.29% HIV positivity in this group.

In Sputum negative pulmonary tuberculosis group- Out of 1,225 PTB and in it out of 574 sputum negative PTB group patients 149 were positive for HIV and 425 were negative for HIV with (149/574) 25.96% HIV positivity in this group. Extra pulmonary tuberculosis group - Out of 71 patients in this group 33 were positive for HIV and 38 were negative for HIV with (33/71) 46.48% HIV positivity in this group.

DOTS receiving tuberculosis group - Out of 1,296 tuberculosis diagnosed patients 646 are receiving anti tubercular treatment at DOT centers. Amongst DOTS receiving 646 patients 182 are HIV positive and 464 HIV negative with (182/646) 39.22 % HIV positivity in this group.

CONCLUSION: TB is the most common opportunist infection in HIV patients in India ⁽¹¹⁾. The risk of developing TB after an infectious contact is 5-10 per cent per year among HIV infected individuals compared to 5-10 per cent during the lifetime among HIV negative individuals.⁽¹²⁾ People who are HIV positive are 21 to 34 times more likely to develop TB disease compared to those who are HIV negative. Globally over one in ten of about 9 million people who develop TB each year is HIV positive equivalent to 1.1 million new TB cases among HIV positive people.⁽¹³⁾

In the present study period from January 2012 to December 2012, out of 37,310 patients diagnosed TB who were referred from RNTCP centers to ICTC in Rajasthan State, 395 were found positive for HIV. This shows (1.06%) HIV positivity is in tuberculosis patients in Rajasthan. This reveals a higher prevalence of HIV co-infection in Tuberculosis as compared to 0.17% HIV positivity status in adult general population in Rajasthan.⁽⁵⁾ However HIV prevalence in incident TB cases worldwide as per WHO report 2011 is estimated to be 3.3 %.⁽¹⁴⁾

In this study prevalence of TB in referrals from ICTC to RNTCP observed in Rajasthan is 1,296 /14827 (8.74%) which is very high as compared to (0.256%) prevalence of TB in general population in India⁽¹⁴⁾ and 5.76% prevalence of TB in referrals from ICTC to RNTCP in India as per 4Q11 RNTCP report.⁽¹⁵⁾ In India in 4Q11 overall 51.6% TB patients were tested for HIV with varying performance

ORIGINAL ARTICLE

in different states. States with high performance of testing had more than 80% and with low performance had less than 30% HIV testing in TB patients. As per progress report Rajasthan is among states whose performance remains sub-optimal i.e. states who managed to test HIV in less than 30% of TB patients.⁽¹⁵⁾ Performance level of testing of HIV in TB needs to be enhanced and this can be achieved by strengthening and facilitation of establishment of HIV testing facilities at all RNTCPDMC. This can be achieved by help of State AIDS Control Society initiative to boost it.⁽¹⁵⁾

ICTC to RNTCP referrals with confirmed tuberculosis patients HIV positivity in different groups in this study reveals that: In all category tuberculosis group - out of 1,296 patients 249 are positive for HIV showing (249/1296) 19.21% HIV positivity. In Pulmonary Tuberculosis group - out of total 1,225 patients 216 are positive for HIV showing (216/1225) 17.63% HIV positivity. In Sputum positive pulmonary tuberculosis group - out of 651 patients 67 are positive for HIV showing (67/651) 10.29% HIV positivity.

In Sputum negative pulmonary tuberculosis group - out of 574 patients 149 are positive for HIV showing (149/574) 25.96% HIV positivity. In Extra- pulmonary tuberculosis group - out of 71 patients 33 are positive for HIV showing (33/71) 46.48% HIV positivity. In DOTS receiving tuberculosis group out of 646 patients 182 are positive for HIV showing (182/646) 39.22 % HIV positivity.

All above finding suggests and points to a very high and strong HIV and TB association and its co-infection in Rajasthan state. The exact reason of this high association remains unexplained. However as in both HIV and TB presenting symptoms and signs closely mimic, therefore at an early and undiagnosed stage patients are likely to present to any of the facility. It also reflects a positive trend that community at large is gaining awareness of HIV and its prevention aspects. It has also started shedding its apprehension to report and receive HIV services at an early date.

It also suggests that there is still a wide gap in diagnosing unidentified cases of HIV, TB and its co-infection. Many cases of HIV and TB are likely to remain undiagnosed if both these diseases are treated independently and separately without any linkage. To redress this gap there is urgent need for further strengthening, integration, monitoring and co-ordinate efforts in RNTCP and NACP at primary level for effective management of HIV, TB and its co-infection. Goals can be achieved with plan target that all TB patients should be tested for HIV and all TB patients living with HIV should be provided ART services.

REFERENCES:

1. Joshi U, Ceena DE, Ongole R, Samanth KM, Boaz K, Priya KJ, Srikant N. AIDS related Kaposi's sarcoma. JAPI July 2012; 60: 50-52.
2. WHO report 2009 - Global Tuberculosis control: Epidemiological burden of TB. Access 08.05.2014.
3. WHO report 2011 - Global Tuberculosis Control: www.who.int/tb/publications/global-report/2011:Executive_Summary. Page 10. The burden of disease caused by TB. Access 08.05.2014.
4. Bendle M, Bajpai S, Choudhary A, Pazare A. Prevention of Perinatal HIV 1 Transmission. JAPI Dec 2012; 60: 12: 39-44.

ORIGINAL ARTICLE

5. Government of India. National AIDS Control Organization, Department of AIDS Control, Ministry of Health & Family Welfare, National AIDS Control Programme 2012-13. State Fact Sheets. April- December 2012.
6. WHO report 2011, Global Tuberculosis Control: Addressing the co-epidemics of TB and HIV. www.who.int/tb/publications/global-report/2011: Chapter 6, Page 61. Access 08.05.2014.
7. www.nrhmrajasthan.nic.in/programmes.htm#dcp. National Rural Health Mission. GoR. Disease Control Programme, RNTCP. Access 08.05.2014.
8. www.rajswashaya.nic.in. Medical Health and Family Welfare Government of Rajasthan. Disease Control Programme. Access 08.05.2014.
9. Government of India. National AIDS Control Organization, Department of AIDS Control, Ministry of Health & Family Welfare. Guidelines for HIV testing, March 2007.
10. Government of India. National AIDS Control Organization, Department of AIDS Control, Ministry of Health & Family Welfare, Operational Guidelines for Integrated Counseling and Testing Centers, July 2007.
11. Kumarasamy N, Solomon S, Flanigan TP, HemalathaR, Thyagarajan SP, Mayer KH. Natural history of human immunodeficiency virus disease in southern India. *Clin Inf Dis* 2003; 36: 79-85.
12. Ravilgione M, Harries A, Msika R, Wilkinson D, Nunn P. Tuberculosis and HIV current status in Africa. *AIDS* 1997; 11 (Suppl B): S115-23.
13. WHO report 2011. Global Tuberculosis Control: www.who.int/tb/publications/global-report/2011/gtbr11-full.pdf. page 61-65. Access 08.05.2014.
14. WHO report 2011. Global Tuberculosis Control: www.who.int/tb/publications/global-report/2011/gtbr11-full.pdf. Page 96. Access 08.05.2014.
15. www.tbcindia.nic.in/pdfs/4q11. RNTCP Performance Reports India. Fourth Quarter 2011. Access 08.05.2014.

AUTHORS:

1. Dhamija Jas Pal
2. Mittal Surender
3. Bhatheja Himanshu
4. Sharma Niharika
5. Garg Prakhar
6. Akash Rajender
7. Maheshwari Vitthal

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.
2. 2nd Year Post Graduate Resident, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.
3. 2nd Year Post Graduate Resident, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.
4. 2nd Year Post Graduate Resident, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.

5. Final Year Post Graduate Resident, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.
6. Final Year Post Graduate Resident, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.
7. Professor and HOD, Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dhamija Jas Pal,
#B-207, Shiv Gyan Enclave,
Nirman Nagar,
Jaipur-302019, Rajasthan.
E-mail: dr.jpddhamija@gmail.com

Date of Submission: 23/05/2014.
Date of Peer Review: 24/05/2014.
Date of Acceptance: 31/05/2014.
Date of Publishing: 04/06/2014.