

HIV - Pulmonary TB Co-Infection and Mortality – Single Centre Study

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ABSTRACT

Aim: To look into the incidence of HIV – TB co-infection among pulmonary tuberculosis registered patients and its contribution to mortality.

Design: Cross sectional study

Setting: Department of Pulmonology, QAMC/B.V. Hospital, Bahawalpur- from October 2018 to August 2019

Methods: Files of tuberculosis registered patients during the specified time were reviewed for HIV-AB results along with mortality in HIV positive patients.

Results: Among 720 registered tuberculosis patients screened for HIV, n-4 (0.55%) were found positive. Two {n-2 (50%)} of HIV-AB positive were cured from tuberculosis and n-2 (50%) died. Among died one was sputum smear negative and other was smear positive for AFB. Two were acid fast bacilli not seen sputum (AFB smear Negative) {n-2 (50%)} and acid fast bacilli seen sputum (AFB smear Positive) were n-2 (50%).

Conclusion: The incidence of HIV-TB co-infection was 0.55%. Mortality was 50% among HIV-TB co-infection patients.

Keywords: Incidence , HIV, Tuberculosis, Co-infection, HIV-TB , Mortality.

INTRODUCTION

WHO by 2018 labeled eight countries as high burden for tuberculosis and super power china is also included among these and other are Bangladesh, India, Indonesia, Nigeria, Pakistan, the Philippines, and South Africa. However China maintained the prestige of achieving more than 80% treatment target along with Brazil, the Russian Federation and Zimbabwe¹.

Co-infection tuberculosis and HIV always needs extra vigilance and screening help improve outcome. Being a leading killer in HIV, tuberculosis always needs critical eye. Although overall mortality among tuberculosis patients has decreased to 1.5 million in 2018 among total of 10 million cases however HIV associated mortality was 251,000 among 862,000 of total HIV-TB co-infection thus signifying early retroviral therapy along with tuberculosis treatment².

In contrary to WHO policy of ensuing preventive therapy for all contacts of tuberculosis cases only 49% of adults and 27% of children's below 5 years of age could achieve this. This could be explained by bankroll gap².

Considering condition of our country Pakistan in 2018 total number of tuberculosis patients enrolled were 265/100,000 with incidence of HIV of 1.8 in 636 totals HIV positive cases .Mortality in 2018 among TB patients was 20/100,000 while in HIV reported cases it was 0.6/100,000. And only 417 (66%) received antiretroviral treatment. Preventive therapy for tuberculosis in HIV cases in adults could not be started while only 5.7% of children below 5 years of age could receive that³.

Not surprisingly tuberculosis was the leading cause of death among HIV positive patients⁴.

This is an old concept that HIV exacerbates the tuberculosis and turns latent infection into active disease. Co-infected macrophages release lower levels of tumor

necrosis factor- α (TNF- α) and induce less TNF-dependent apoptosis than only tuberculous moreover production of memory T cells is also affected and CD38, CD70, HLA-DR and CD45RO are activated. In nutshell cell mediated memory response is impaired in HIV infected individuals⁵.

Considering the importance emphasized at all major forums at national and international level we conducted this study to look into incidence of HIV positive cases among registered tuberculosis patients and mortality among them at Bahawal Victoria Hospital Bahawalpur.

MATERIAL & METHODS

This cross sectional study of record analysis pattern was conducted at Bahawal Victoria Hospital Bahawalpur Pakistan Pulmonary unit from October 2018 to August 2019. All pulmonary tuberculosis registered cases consented for HIV testing were enrolled in the study. The registered cases are those which has been investigated and diagnosed by all needed investigations and sent for registration for treatment of tuberculosis. Endpoint was labeled as

- Cured after improvement and
- Sputum negativity on treatment completion,
- Died,
- Transferred to other centers, happens if patient needs HIV treatment at specified hospitals.

Pediatrics population was not included in the study. Mortality was the main end point objective if occurred before others.

The variables in the study were

- HIV status
- Sputum smear
 - SEEN or
 - NOT SEEN
- Death

Statistical analysis was done using soft ware SPSS.

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RESULTS

Among 720 registered tuberculosis patients screened for HIV, n-4 (.55%) was found positive. Two {n-2 (50%)} of them cured from tuberculosis and n-2 (50%) died. among died one was smear negative and other was smear positive for AFB. Two were acid fast bacilli not seen sputum (AFB smear Negative) {n-2 (50%)} and acid fast bacilli seen sputum (AFB smear Positive) were n-2 (50%).

DISCUSSION

Worrisome fact is that, one in every three patients among HIV died due to tuberculosis³.

This point has been well described above in the introduction. The results from our retrospective analysis are showing only 0.55% HIV positive cases among registered pulmonary tuberculosis patients but 50% among these died during antituberculous therapy. This is in contrary to a big cohort of HIV-TB co infection studied at National Institute of Infectious Diseases Evandro Chagas, Rio de Janeiro, Brazil where 4% was the mortality rate⁶.

In Pakistan centers of AIDS control Karachi searched for HIV-TB co-infection at medical unit of Civil hospital and it was found to be 19.39% (n-38/196)⁷. Similarly A retrospective analysis from different areas of Karachi showed HIV-TB co-infection of 1.4%. These developed city statics from each research place were higher as compared to our single center registry⁸.

In Pakistan Baluchistan, during summers and winters HIV-TB co-infection percentages were 30.7% and 36.5% respectively⁹.

The most common mortality predictor in HIV –TB co-infection is late diagnosis¹⁰ and extensive infection¹¹. Fortunately in our study survivors were also showing extensive multilobar chest x ray involvement. Pathophysiologically high CD 4 count is protective and HIV associated immunosuppressant is factor determining mortality¹². Additionally but importantly tertiary level HIV-TB co treatment centers have better survival rates¹².

In Pakistan literature review of 1987-2016, showed HIV-TB co-infection in Sindh 0.34% (n-42/12552) among them Karachi and Hyderabad cities were having none similarly Punjab province city Lahore was also having zero co-infection cases¹³. Our study showing 0.55% (n-4/720) which signifies that it's slightly more than our neighboring province Sindh.

As compared to 0.6/100,000 HIV-TB co-infection mortality of Pakistan our figures were more alarming as although we had less numbers of co-infection but our study showed we lost half of those. The further follow up was not aim of study.

In our study deaths equally happened in sputum smear positive and negative patients which means there are other factors that needs to be explored for the mortality in both groups for our registry area. However a meta analysis done at epidemic center Georgia, tuberculosis control centre Georgia and Albert Einstein college of medicine New York showed less mortality in smear negative groups of patients. This is a good finding as smear positive HIV-TB co-infection patients be given early treatment of both diseases and should be subjected to appropriate battery of tests as CD counts , AFB smears

and culture sensitivity of sputum not once but according to guidelines¹⁴.

Same point was highlighted at Ojha chest disease unit Karachi, where sputum AFB smear tuberculosis patients were at significant risk of mortality with HIV then smear negative patients¹⁵.

CONCLUSION

Our study demonstrated that HIV-TB co-infection do exist in our city and registered at city main center. However isolated sputum smear results didn't affect the mortality.

Recommendations: Further studies are planned in future to evaluate the reasons of mortality in our area in HIV-TB co-infection irrespective of sputum results.

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