



TB-HIV co-infection among pregnant women in Karnataka, South India: A case series



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Summary Tuberculosis (TB) is a significant contributor to mortality in HIV-infected patients. Concurrent TB infection is also a significant contributing factor to maternal mortality in human immunodeficiency virus (HIV)-infected pregnant women. Studies addressing the outcomes of TB and HIV co-infection among pregnant women are generally infrequent. Although limited, the records maintained by the Revised National Tuberculosis Control Programme (RNTCP) and the National AIDS Control Programme (NACP) in Karnataka State, Southern India provide information about the numbers of pregnant women who are co-infected with TB and HIV and their pregnancy outcomes. We reviewed the data and conducted this study to understand how TB-HIV co-infection influences the outcomes of pregnancy in this setting.

We sought to determine the incidence and treatment and delivery outcomes of TB-HIV co-infected pregnant women in programmatic settings in Karnataka State in southern India.

The study participants were all the HIV-infected pregnant women who were screened for tuberculosis under the NACP from 2008 to 2012. For the purposes of this study, the program staff in the field gathered the data regarding on treatment and delivery outcomes of pregnant women.

A total of seventeen pregnant women with TB-HIV co-infection were identified among 3,165,729 pregnant women (for an incidence of 5.4 per million pregnancies). The median age of these pregnant women was 24 years, and majority were

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primiparous women with WHO HIV stage III disease and were on a stavudine-based ART regimen. The maternal mortality rates were 18% before delivery and 24% after delivery. The abortion rate was 24%, and the neonatal mortality rate was 10%. The anti-tuberculosis treatment and anti-retroviral treatment outcome mortality rates were 30% and 53%, respectively.

Although the incidence of TB among the HIV-infected pregnant women was marginally less than that among the non-HIV-infected women, the delivery outcomes were relatively poorer. The current strategy for the management of TB among the HIV-positive pregnant women needs urgent review.

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Introduction

Globally, tuberculosis (TB) remains one of the major causes of death in adults living with HIV [1]. People infected with HIV are at high risk for developing active TB either due to the reactivation of a latent infection or the progression of newly acquired tubercle bacilli infections. Among women in the reproductive age group, TB-HIV co-infection is a significant non-obstetric cause of maternal mortality primarily in resource-limited countries [2–6]. The exact incidence of tuberculosis in pregnancy is not readily available but is expected to be as high as in the general population [7]. In regions with high prevalences of TB and HIV, it is estimated that more than 300,000 pregnant women are infected with TB and HIV [8]. If left untreated, pregnant women with TB can exhibit a mortality of up to 40% [6,7]. Active tuberculosis disease in HIV-infected pregnant women increases the risk of maternal mortality by nearly 300% [9]. Neonatal mortality is considerably high among TB-HIV co-infected women compared to HIV-uninfected pregnant women [10]. An audit of maternal mortality in Johannesburg, South Africa revealed that 70% of the deaths in women infected with HIV were HIV-related rather than due to obstetric causes, and these deaths were mainly due to TB and pneumonia [11,12].

In India, collaborative activities to control TB-HIV have been implemented jointly by the Revised National Tuberculosis Control Programme (RNTCP) and the National AIDS Control Programme (NACP) since 2006 [13]. Under the NACP, all pregnant women are counseled and screened for HIV at prevention of parent to child transmission (PPTCT) centers routinely. Those found to be HIV-positive are evaluated, clinical staged based on World Health Organization (WHO) criteria, and initiated on anti-retroviral treatment (ART) [14]. All HIV-positive pregnant women are also screened for

tuberculosis at the nearest microscopy center, and those diagnosed with TB are initiated on appropriate treatment based on the RNTCP protocol [6]. The RNTCP program routinely collects information about the HIV statuses of TB patients; however, information about pregnancy and delivery outcomes are not collected under in routine program settings. In contrast, the NACP program does capture information about the delivery and birth outcomes. We speculate that pregnant TB-HIV patients belong to a special category and duly require additional services for adequate management. We conducted this study under programmatic settings because there is limited information about (a) the incidence of TB among HIV-infected pregnant women and (b) their delivery, birth, anti-tuberculosis and anti-retroviral treatment outcomes in the study settings.

Methods

This study involves a case series reported from the state of Karnataka, India. This state has a population of 61 million and is considered to have a relatively advanced HIV epidemic; based on the HIV Surveillance Survey (2010–2011) data, the HIV prevalence is 0.69%, which amounts to 250,000 persons living with HIV [15]. The NACP delivers its services through nearly 1515 public HIV-testing sites and 44 ART centers. All HIV-positive pregnant women infected with tuberculosis are initiated on the RNTCP-recommended treatment protocol at a place close to the patient's residence, and treatment is supervised by a Directly Observed Treatment (DOT) provider. The supervision and monitoring of TB treatment and the patient response to treatment is also monitored by the ART center physician. All pregnant women tested for HIV from the 1st of April 2008 to

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