

Early Initiation of Antiretroviral Therapy in HIV/Tuberculosis Co-infection and Immune Reconstitution Inflammatory Syndrome

**Mongkontida Umphonsathein¹,
Somnuek Sungkanuparph²**

Background: The early initiation of antiretroviral therapy (ART) during tuberculosis (TB) therapy has improved survival of HIV-infected patients with TB. Immune reconstitution inflammatory syndrome (IRIS) is an important concern for early ART. However, there is limited data on the timing of ART initiation and TB-IRIS.

Methods: A retrospective cohort study was conducted among patients with HIV/TB co-infection who were initiated ART between January 2000 and December 2009 in a university hospital. Risk factors for TB-IRIS were determined using Kaplan-Meier analysis and Cox proportional hazard model.

Results: A total of 186 patients were studied. The mean \pm SD age was 37.7 ± 8.2 years and 67.2% were male. Of all, 42.9%, 31.5%, and 25.6% had pulmonary, extrapulmonary, and disseminated TB, respectively. Median (IQR) baseline CD4 cell count and HIV-1 RNA were 59 (26-123) cells/mm³ and 191,000 (82,200-508,000) copies/mL, respectively. ART was initiated at a median (IQR) duration of 3.1 (2.2-7.6) months

after starting TB treatment. Patients were followed up for a median (IQR) duration of 50.8 (29.8-74.2) months after ART initiation. Of all, 12 (6.5%) developed TB-IRIS at a median (IQR) duration of 2.6 (2.0-5.5) months after ART initiation. In Kaplan-Meier analysis, patients with early ART within 4 months of TB treatment had a higher probability to develop TB-IRIS (log-rank test, $p=0.029$). From Cox analysis, early ART within 4 months of TB treatment [HR 7.09; 95% CI, 1.09-25.56; $p=0.042$] and disseminated TB [HR 3.59; 95% CI 1.06-13.35; $p=0.047$] were significant risk factors for TB-IRIS. Baseline CD4 cell count, HIV-1 RNA, type of ART regimen, and CD4 change were not associated with TB-IRIS.

Conclusions: When early initiation of ART in HIV-infected patients is encouraged, TB-IRIS should be aware, particularly in patients with disseminated TB. Closed monitoring is needed when initiating ART in these patients. Further study of intervention to minimize TB-IRIS is needed.

¹Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand.

²Division of Infectious Diseases, Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand.