Reducing tuberculosis incidence by tuberculin skin testing, preventive treatment, and antiretroviral therapy in an area of low tuberculosis transmission

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BACKGROUND: Tuberculin skin testing (TST) and preventive treatment of tuberculosis (TB) are recommended for all persons with human immunodeficiency virus (HIV) infection. We aimed to assess the effect of TST and preventive treatment of TB on the incidence of TB in the era of combination antiretroviral therapy in an area with low rates of TB transmission.

METHODS: We calculated the incidence of TB among participants who entered the Swiss HIV Cohort Study after 1995, and we studied the associations of TST results, epidemiological and laboratory markers, preventive TB treatment, and combination antiretroviral therapy with TB incidence.

RESULTS: Of 6160 participants, 142 (2.3%) had a history of TB at study entry, and 56 (0.91%) developed TB during a total follow-up period of 25,462 person-years, corresponding to an incidence of 0.22 cases per 100 person-years. TST was performed for 69% of patients; 9.4% of patients tested had positive results (induration > or = 5 mm in diameter). Among patients with positive TST results, TB incidence was 1.6 cases per 100 person-years if preventive treatment was withheld, but none of the 193 patients who received preventive treatment developed TB. Positive TST results (adjusted hazard ratio [HR], 25; 95% confidence interval [CI], 11-57), missing TST results (HR, 12; 95% CI, 4.8-20), origin from sub-Saharan Africa (HR, 5.8; 95% CI, 2.7-12.5), low CD4+ cell counts, and high plasma HIV RNA levels were associated with an increased risk of TB, whereas the risk was reduced among persons receiving combination antiretroviral therapy (HR, 0.44; 95% CI, 0.2-0.8). CONCLUSION: Screening for latent TB using TST and administering preventive treatment for patients with positive TST results is an efficacious strategy to reduce TB incidence in areas with low rates of TB transmission. Combination antiretroviral therapy reduces the incidence of TB.