

Clinical Significance Of Normal Chest Radiographs Among HIV-infected TB Suspects In Uganda

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Rationale: Algorithms for management of HIV-infected pulmonary tuberculosis suspects typically include a chest radiograph with further work-up and/or empiric treatment recommended for patients with abnormal radiographs. The clinical implications of a normal chest radiograph in this population are not well-described. Our objectives were to describe the frequency, predictors, disease etiology, and outcomes of HIV-infected tuberculosis suspects with a normal chest radiograph.

Methods: Consecutive HIV-infected adults hospitalized at Mulago Hospital (Kampala, Uganda) between September 2007 and July 2008 with cough ≥ 2 weeks were enrolled. Chest radiographs were obtained within 24 hours of admission and were interpreted independently by two radiologists blinded to clinical data. CD4+ T-lymphocyte counts were obtained at enrollment. Patients submitted two sputum specimens for acid-fast bacilli (AFB) smear and culture on Lowenstein-Jensen media. Patients with negative sputum AFB smears were referred for bronchoscopy with bronchoalveolar lavage (BAL). Bronchoscopy included inspection for endobronchial Kaposi sarcoma (KS). BAL fluid was examined for mycobacteria, Pneumocystis jirovecii, and other fungi. Patients were followed for 2 months after hospital discharge. Diagnostic criteria: (1) Tuberculosis: positive sputum/BAL mycobacterial culture; (2) Fungal pneumonia: positive BAL fungal culture; (3) PCP: positive BAL Giemsa stain; and (4) Kaposi Sarcoma: KS lesions seen during airway examination. We assigned patients a clinical diagnosis of bacterial pneumonia or culture-negative tuberculosis if they improved with empiric treatment for those pneumonias.

Results: 52 (16%) of 323 patients had a normal chest radiograph. Patients with a normal chest radiograph were younger (median age 30 vs. 34 years, $p=0.003$), more often female (73% vs. 51%, $p=0.004$), and had lower CD4+ T-lymphocyte counts (median 13 vs. 56 cells/ul, $p<0.001$) than those with an abnormal radiograph. Pulmonary tuberculosis was the most common diagnosis (42%), followed by bacterial pneumonia, pulmonary aspergillosis, and pulmonary cryptococcosis among those with a normal chest radiograph. Four (8%) patients with a normal radiograph had two respiratory processes at the same time. The frequency of a normal chest radiograph was 8% among patients diagnosed with culture-positive tuberculosis patients and 20% among patients diagnosed with culture-negative tuberculosis ($p=0.02$). Two-month mortality was not significantly different between patients with a normal chest radiograph (37%) and patients with an abnormal radiograph (29%, $p=0.25$).

Conclusions: A normal chest radiograph is common among HIV-infected pulmonary tuberculosis suspects, especially among those who are young, female, or have very low CD4+ T-lymphocyte counts. This finding should not preclude further diagnostic evaluation, as pulmonary tuberculosis is common and mortality is high.

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