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Detection of latent and active tuberculosis among HIV-positive patients at the North of Tehran

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ABSTRACT

Objectives: HIV patients are prone to tuberculosis (TB) disease, and screening these patients for TB is important. The aim of this study is to analyze the prevalence of active and latent TB and the sensitivity, specificity, negative (NPV) and positive predictive value (PPV) of clinical signs and symptoms for the diagnosis of active TB in HIV-infected subjects.

Method: From April 2008 to March 2011, 154 consecutive HIV-infected patients attending the HIV clinic at Masih Daneshvari Hospital were enrolled in the study. For the diagnosis of active TB, two sputum samples (one on presentation and another early morning) were collected from each subject and examined by Ziehl–Neelsen (ZN) microscopy for identification of acid-fast bacilli (AFB). Mycobacterial culture sputum specimens were inoculated on Lowenstein–Jensen (LJ) slants for 4–8 weeks to detect colonies. In those patients with a negative sputum sample for AFB, a polymerase chain reaction (PCR) was performed. Active TB was defined as positive sputum smear or culture for mycobacterium TB or positive polymerase chain reaction (PCR). Also, patients with signs and symptoms compatible with TB who responded to anti-tuberculous medications were classified as having active TB.

Results: The mean of age was 36 ± 8 (ranged, 22–62) and 127 (82%) were male. The antiretroviral therapy (ART) had been started in 40 (26%) patients, with 15 (10%) receiving trimethoprim/sulfamethoxazole as a prophylaxis; 119 (77%) were intravenous drug users.

Among these patients, 58 (38%) individuals were diagnosed with active TB, of which 48 (83%) had smear-positive pulmonary TB. The mean of the baseline CD4 cell count in HIV patients with and without active TB was 67 cells/μl and 180 cells/μl, respectively (*P*-value = 0.018).

The multivariable regression analyses found that CD4 < 100 cells/μl (OR = 2.67; 95% CI 1.23–5.78; *P*-value = 0.013) and smoking (OR = 13.4; 95% CI 3.03–59.4; *P*-value = 0.001) were the only significant variables associated with TB in this study.

Among the 96 patients who were not diagnosed with active TB, 8 (8%) had a positive tuberculin skin test (TST) and isoniazid prophylaxis was initiated.

The presence of any one of six clinical features (cough, sputum, fever, night sweating, weight loss and loss of appetite) had sensitivity (89.6%) and specificity (45.8%) with a PPV of 50% and a NPV of 88%.

Conclusion: Due to the high rate of active TB, careful screening of patients with signs and symptoms, X-ray and sputum examination must be performed.

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