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Title: Risk factors for latent tuberculosis infection in close contacts of active tuberculosis patients in South Korea

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Body: Background: The diagnosis and treatment of latent tuberculosis infection (LTBI) have become mandatory to reduce the burden of tuberculosis worldwide. Then close contacts of active TB patients are at high risk of both active and LTBI. The aims of this study are to identify the predominant risk factors of LTBI in close contacts with active TB patients and to compare the efficacy of the tuberculin skin test (TST) and QuantiFERON®-TB GOLD (QFT-G) to diagnose LTBI. Mehtods: Close contacts of active pulmonary TB patients visiting a hospital in South Korea were diagnosed for LTBI using TST and/or QFT-G. The association of positive TST and/or QFT-G with the following factors was estimated: age, gender, history of Bacillius Calmette-Guerin (BCG) vaccination, history of pulmonary TB, cohabitation status, the acid-fast bacilli smear status, and presence of cough in source cases. Results: Of 308 subjects, 38.0% (164/305) were TST positive and 28.6% (59/206) were QFT-G positive. TST positivity was significantly associated with male gender (OR: 1.734; 95% CI: 1.001-3.003, p = 0.049), history of pulmonary TB (OR: 4.130; 95% CI: 1.441-11.835, p = 0.008) and household contact (OR: 2.130; 95% CI: 1.198-3.786, p = 0.01) after adjustment for confounding variables. The degree of concordance between TST and QFT-G was fair (70.4%, $\kappa = 0.392$). Conclusion: A prevalence of LTBI among close contacts of active pulmonary TB patients was high, and prior TB history and being a household contact were risk factors of LTBI in the study population.