

Predictive Value of Mycobacterium Tuberculosis Antigen-based Skin Test for Active Tuberculosis: A Diagnostic Accuracy study

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One of the keys to controlling Tuberculosis (TB) epidemic is accurate diagnosis. The immunodiagnostic methods in the bacteriologically negative TB usually lack specificity. In WHO consolidated guidelines on TB diagnosis, studies to assess the predictive value for active TB compared with current TB infection tests was recommended as one of the priorities. The objective of this study was to evaluate the predictive value of C-TST for active TB which was a new Mycobacterium tuberculosis antigen-based skin test recommended by WHO.

This was a diagnostic accuracy study comparing C-TST and tuberculin skin test (TST) in a real-world setting, which was conducted among suspected TB cases between January 2022 and July 2024 in Chongqing, China. We evaluated the C-TST predictive value above a certain cut-off point in suspected TB cases, and compared it with TST using the positive predictive value (PPV).

There were 1553 suspected TB participants, and 1155 (74.4%) were excluded for various reasons, leaving 393 (25.3%) participants with TST or C-TST result. When using the third quartile of C-TST (34.3 millimeter) as the cut-off point in active TB group, the PPV of C-TST for active TB was 74.5% (95%CI, 63.8% to 85%). When using the third quartile of TST (18 millimeter) as the cut-off point in active TB group, the PPV of TST for active TB was 54.5% (95%CI, 35% to 73.7%). The PPV of C-TST for active TB diagnosis was significantly larger than that of TST ($Z=1.65$, $P=0.496$).

C-TST may have the potential to predict active TB under specific conditions. The underlying mechanism may be attributed to the stimulation with STAT6 and CFP10 antigens in the C-TST amplifying the specific immunologic signatures associated with active TB in the context of a heterogeneous immune background with comorbidities, and it needs further research.

Biography

Dr. Bo Wu is an Associate Chief Physician with 17 years of experience in tuberculosis prevention and treatment in Chongqing Public Health Medical Center, who has led 3 key tuberculosis research projects. He has published more than 20 papers in reputed journals and has been serving as a standing committee member of the Youth Branch of Chinese Antituberculosis Association, a committee member of the Practical Technology Evaluation Branch and the Treatment Care Branch of Chinese Antituberculosis Association, a committee member of Chongqing Medical Association, and council member of the Chongqing Antituberculosis Association.

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