

Tuberculin Skin Test

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Abstract: from Chinese version, pp,192-205

Tuberculin skin test (TST) is used to detect if a person has been infected with *Mycobacterium tuberculosis*. Its clinical application has been around for almost 100 years. However, the interpretation of TST results has always been under some controversy.

The formulation and manufacturer of tuberculin, techniques of administration, timing and methods of interpretation, as well as experience of interpreting personnel all affect the results of TST. So far, PPD (purified protein derivative) is the only material that can be used for making tuberculin. TST may be most appropriately done with tuberculin of bioequivalence of 5TU PPD-S and injected intradermally by Mantoux method. Meanwhile, interpretation should be done 48 to 72 hours after tuberculin administration. Induration instead of erythema should be used to interpret the result of TST.

False-positive results of TST can be categorized into technical and biological aspects. Technical reasons include the materials of tuberculin as well as the methods of TST administration and result interpretation. Biological factors include viral infection, bacterial or fungal infection, tuberculosis, malignancy,

Received: Dec 15, 2005; Accepted: Feb 2, 2007.

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immunosuppression therapies, age of subject, and other factors.

False-negative results of TST are mainly caused by previous administration of BCG vaccine or infection with nontuberculous mycobacteria (NTM). Since the antigens of BCG vaccine and NTM are similar to that of tuberculosis, cross reaction is likely. Besides, repeated administration of TST may increase the size of reaction. Reasons for an increased reaction include non-specific change, boosting or conversion.

One substitute of TST is interferon (IFN- γ) assay. The new generation of IFN- γ assay uses early secreted antigen target 6 (ESAT-6) and culture filtrate protein 10 (CFP-10) as antigens, hence excluding all BCG-related and the majority of NTM-related interference while increasing specificity. Currently, QuantiFERON-TB Gold and T-SPOT.*TB* are available for this assay. Overall, QuantiFERON-TB Gold and T-SPOT.*TB* can not substitute TST completely, but for identifying tuberculosis among certain populations, the use of QuantiFERON-TB Gold and T-SPOT.*TB* can decrease false-positive and false-negative results of TST.

TST can merely be used for detection of tuberculosis infection but not for diagnosis of active tuberculosis. Hence, the usefulness of TST varies with clinical situations and patient populations.

Keyword: Tuberculin skin test