Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

Microbiology

Mantoux Test Role and Its Interpretation in Diagnosis of Tuberculosis

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Review Article

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Article History
Received: 24.05.2018
Accepted: 06.06.2018
Published: 30.06.2018

DOI:
10.36347/sjams.2018.v06i06.010

Abstract: Mantoux test is a tuberculin skin test. Although it is not standard test for diagnosis of tuberculosis; it is widely used by physicians for tuberculosis diagnosis. Mantoux test is sensitive but not specific for diagnosis of active pulmonary tuberculosis. The Mantoux test is technically difficult to administer and to read. Skilled personal are required for its proper interpretation. This article is aimed to educate proper interpretation of Mantoux test.
Keywords: Mantoux test, tuberculosis diagnosis.

INTRODUCTION

Mantoux test is a tuberculin skin test. Although it is not standard test for diagnosis of tuberculosis; it is widely used by physicians for tuberculosis diagnosis. Mantoux test is sensitive but not specific for diagnosis of active pulmonary tuberculosis. The Mantoux test is technically difficult to administer and to read. Skilled personal are required for its proper interpretation. This article is aimed to educate proper interpretation of Mantoux test. Tuberculosis (TB) caused by bacteria (*Mycobacterium tuberculosis*) usually affects lungs. The disease is transmitted from person to person through droplet inhalation. However, not all the individuals infected with TB bacteria develop disease. In Latent tuberculosis an individual is infected with *Mycobacterium tuberculosis* -complex but does not have active tuberculosis disease and cannot spread TB infection to others [1]. People with latent tuberculosis infection are in peril of progressing to active tuberculosis. Thus, identifying and treating persons with latent infection is a paramount TB control strategy in developed countries with lower incidence of the disease.

There is no standard test to detect the presence of latent tuberculosis infection. Measurements of adaptive host immune responses to the bacteria using tuberculin skin test and\or interferon-γ release assay in blood are the screening tests for latent tuberculosis [2,3]. Tuberculin skin test is the classic example of a delayed hypersensitivity reaction. A dose of 0.1ml of five tuberculin units (5TU) (0.1ml) is injected intradermally and read 48 to 72 hour later for the presence or absence of induration. The diameter of induration is measured in millimeters; transversely to the long axis of the forearm [4]. Also look for the development of vesicles, bullae, lymphangitis, ulceration and necrosis at the test site indicating high degree of tuberculin sensitivity [5].
Skin test interpretation depends on two factors [6].

- Size of the induration in millimeters
- Person's risk of being infected with TB and of progression to disease if infected

Induration of ≥ 5 mm is positive in

- Person with HIV
- Recent contact with tuberculosis patient
- Persons with fibrotic changes on Chest X-ray consistent with old TB
- Organ transplant recipients
- Immunosuppressed patients or who are on immune-suppressive agents

Induration of ≥ 10 is considered positive in:

- Immigrants of < 5 years from high TB prevalence countries
- I/V drug users
- Residents and employees of high-risk set ups
- Mycobacteriology laboratory personnels
- Children < 4 years of age
- Infants, children, and adolescents exposed to adults in high-risk categories

Induration of ≥ 15 mm is considered positive in any person with no known risk factors for TB.

False-positive reactions may occur in case of infection with non-tuberculous mycobacteria, previous

BCG vaccination, and error in administration of TST or reading of result.

False-negative reactions may occur in case of weakened immune system, TB infection within 8-10 weeks of exposure, Very old TB infection, less than 6 months old age, Recent live-virus vaccination or viral illness, error in administration of TST or reading of result.

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