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ISSN: 2327-5073
Clinical Microbiology: Open Access

Opinion Article

Brief Note on Diagnosing Tests for Tuberculosis

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DESCRIPTION

Tuberculosis (TB) is an infectious disease usually caused by Mycobacterium Tuberculosis Bacteria (MTB). Tuberculosis generally affects the lungs, but can also affect other parts of the body. Most infections show no symptoms, in which case it is known as latent tuberculosis.

Tuberculosis is spread from one person to the next through the air when people who have active TB in their lungs cough, spit, speak, or sneeze. People with Latent TB do not spread the disease. Active infection occurs more often in people with HIV/AIDS and in those who smoke. Diagnosis of active TB is based on chest X-rays, as well as microscopic examination and culture of body fluids. Diagnosis of Latent TB relies on the Tuberculin Skin Test (TST) or blood tests.

In addition, although bacterioscopic examination is used as a marker of infectivity in tuberculosis patients, it has been observed that up to 17% of transmission is due to negative bacterioscopic examination and positive culture of patients. Compared with microscopy, culture is still the reference method because it has good sensitivity and can diagnose most of the 185 species of mycobacteria currently described.It also enables future studies (identification, sensitivity and epidemiological classification) of the isolated mycobacteria.

Therefore, in recent years, various strategies have been proposed to quickly diagnose active tuberculosis. These methods are very diverse and are based on the improvement of traditional techniques, the use of genotyping and proteomics methods, and even mycobacteriophages. In addition, it is important to distinguish the level of application, whether it is microorganisms grown in culture or microorganisms grown directly from clinical specimens. In the first case, the diagnosis is somewhat delayed, but the methodological diversity is greater and the overall sensitivity is better.

BCG vaccine and tuberculin skin test

There is a disagreement regarding the use of the Mantoux test for people vaccinated with BCG. The US recommendation is that when administering and interpreting the Mantoux test, the previous BCG vaccination should be ignored; the UK recommends that the interferon test should be used to help explain the positive tuberculin test. In addition, the UK does not recommend continuous tuberculin skin testing for BCG patients (an important part of the US strategy). In general, the US method may lead to more false positives and unnecessary potentially toxic drug treatments; the UK method is equally sensitive in theory and due to the use of interferon gamma tests, it should be more specific.

Cost-effectiveness of diagnosing tuberculosis

Tuberculosis is still one of the leading causes of death from a single source of infection worldwide. The HIV/AIDS pandemic has made this situation worse because one third of HIV/AIDS patients are also infected with Mycobacterium tuberculosis. The failure to control the spread of tuberculosis is mainly due to our inability to detect and treat all cases of tuberculosis infection in time, leading to the continued spread of Mycobacterium tuberculosis in the community. The diagnosis of tuberculosis can be made using indirect and direct methods. Indirect tests, such as the interferon gamma release test, provide a new diagnostic method for Mycobacterium tuberculosis infection, but cannot distinguish between infection and active disease. The implementation of a molecular microbiological technique in the diagnosis of tuberculosis is extremely cost-effective compared to the usual method. Its introduction into the routine diagnostic procedure could lead to an improvement in quality care for patients, given that it would avoid both unnecessary hospitalisations and treatments, and reflected in economic savings to the hospital.

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Received: 4-Jan-2022, Manuscript No. CMO-22-264; **Editor assigned:** 10-Jan-2022, Pre QC No. CMO-22-264(PQ); **Reviewed:** 24-Jan-2022, QC No. CMO-22-264; **Revised:** 28- Jan-2022, Manuscript No. CMO-22-264(R); **Published:** 4-Feb-2022, DOI: 10.35841/2327-5073-22.11.264.

Citation: Fortsch C (2022) Brief Note on Diagnosing Tests for Tuberculosis. Clin Microbiol.11:264.