Tuberculosis Assessment

Tuberculosis (TB) is a pulmonary infectious disease caused by the Mycobacterium tuberculosis, although it can affect other organs. There is a high rate of TB among patients with HIV infection due to their suppressed immune system. It is not a highly infectious disease, but requires close, frequent, and prolonged contact, which is why it occurs more often with the poor, unhoused, underserved, and in long-term care facilities, prisons, and shelters.



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Etiology

Airborne Droplet
Airborne-infantry Droplet
The organism is transmitted via aerosolization when an infected person coughs, laughs, sneezes, whistles, or sings and their air droplets are inhaled by another person. TB is not spread by kissing, sharing food or drinks, shaking someone’s hand, or touching bed linens or toilet seats.

Assessment

3 Week Productive Cough
(3) Tree with Productive Coughing Coffee-pot
A persistent cough and mucopurulent sputum with blood streaks present for 3 weeks or more is common. Dyspnea and hemoptysis (coughing up blood) are late symptoms of the disease. Patients also present with altered breath sounds like wheezing and dullness on percussion over the affected area of the lung.

Night Sweats
Sweaty Moon
Night sweats occur in conjunction with the fever and are characteristic of the disease process.

Chest Pain
Chest Pain-bolt
In pulmonary TB, chest discomfort often manifests as a persistent, dull ache or a sharp, stabbing pain that intensifies with deep breathing or coughing. This pain arises from inflammation of the pleura—the membrane enveloping the lungs—leading to conditions like pleuritis or pleural effusion. Such pleural involvement is a common extrapulmonary manifestation of TB.

Fever
Fever-beaver
Fever is often reported as low grade. Sometimes, an acute presentation of TB disease can present with flu-like symptoms, high fever, and pleuritic pain.

Weight Loss
Skinny with Baggy-pants
In TB, weight loss results from a combination of factors: The body's prolonged immune response to Mycobacterium tuberculosis leads to increased levels of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-?). These cytokines suppress appetite and promote catabolism, leading to muscle wasting and fat loss. Leptin, a hormone produced by adipose tissue, regulates hunger and energy balance. In TB patients, decreased fat stores lead to lower leptin levels, which may further impair appetite and immune responses

Fatigue
Sleepy-guy
Fatigue and malaise are symptoms associated with the infectious process and with pulmonary involvement there is hypoxia contributing to the fatigue.

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Diagnosis

Chest X-Ray

Chest X-ray

While a chest x-ray cannot solely be used to diagnose TB, it may be ordered if TB is suspected. Findings suggestive of TB include upper lobe infiltrates, cavitary infiltrates, and lymph node involvement.

Blood Tests

Blood Test-tubes

Two types of blood tests are performed that confirm diagnosis – QuantiFERON or the T-SPOT. Test results are available in several hours and can be used with patients who have received bacille Calmette-Guérin (BCG) vaccination, as their Mantoux test would be positive.

Mantoux Skin Test

Mantis-toe

This intradermal skin test uses 0.1 mL of purified protein derivative (PPD). Test is read in 48-72 hours and considered positive if induration is greater than 10mm for high risk individuals. In an immunosuppressed client an induration of 5mm is considered positive. In healthy individuals with low risk, a 15 mm induration is considered positive. A positive skin test does not necessarily indicate the patient has active TB. It does not tell whether the person has latent TB infection (LTBI) or has progressed to TB disease.

3 Positive Sputum Tests

(3) Tree Positive (+) from Spit-thumb

The collection of 3 consecutive sputum cultures collected on different days confirms diagnosis. This process may take up to 8 weeks to grow the cultures.

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