Acid-Fast Bacilli – [Serum] Analysis

Objective

The objective of this test is to detect acid-fast bacilli (AFB) in serum samples. AFB detection is crucial in diagnosing mycobacterial infections, particularly Mycobacterium tuberculosis, which causes tuberculosis (TB).

Materials and Methods

Materials:
- Serum sample from patient
- Ziehl-Neelsen or Auramine-Rhodamine staining reagents
- Microscope (light or fluorescence)
- Centrifuge, pipettes, and glass slides

Methods:
1. Sample Preparation: Process serum by centrifugation and prepare smear on slide.
2. Staining: Perform Ziehl-Neelsen (ZN) staining or fluorescent staining with Auramine-Rhodamine.
3. Microscopic Examination: Observe for red or fluorescent bacilli against a contrasting background.
4. Interpretation: Presence of AFB confirms mycobacterial infection; negative results do not exclude TB and may require culture or PCR confirmation.
5. Quality Control: Include positive and negative control smears for reliability.

Results

- Positive: AFB detected; consistent with mycobacterial infection (e.g., tuberculosis)
- Negative: No AFB detected; may require further testing if TB is suspected
- Semi-quantitative grading can be reported based on smear density (e.g., scanty, 1+, 2+, 3+)

Conclusion

AFB detection in serum is a valuable test for diagnosing disseminated or extrapulmonary tuberculosis. Negative results should be interpreted with caution and may require complementary tests like culture or PCR for definitive diagnosis.