Emory researchers find blood based biomarkers for tuberculosis

Culturing the mucous secretions for Mycobacterium tuberculosis (Mtb) infections continues to be the standard practice of care, but can have a lead time of up to 6 weeks. A faster, more reliable method of diagnosis is critical for patient care.

Researchers at Emory University recently identified three blood based biomarkers that can distinguish between active tuberculosis (ATB) and a dormant form of tuberculosis known as latent tuberculosis (LTB). These biomarkers could also be used to monitor the patient's response to treatment.

A cohort of patients (n=24) from the metropolitan Atlanta area were enrolled in a study to measure the biomarkers. Patients who were ATB-positive, HIV-negative, and harbored three Mtb-specific antigens were recruited. Using flow cytometry, the researchers discovered Mtb-specific CD4+ T cells expressed immune activation markers CD38 and HLA-DR, and intracellular proliferation marker Ki-67 in much higher frequencies for ATB. Patients with ATB who underwent TB-treatment had similar levels of these biomarkers to patients with LTB indicating the treatment's effectiveness.

The predictive power to determine ATB vs LTB using these biomarkers was evaluated on an independent group (n=36) in South Africa. In the blind study, investigators successfully identified cases of ATB and LTB with biomarkers CD38 and HLA up to 95% accurately. With the proliferation Ki-67, investigators accurately identified ATB at 80% and LTB at 100% correct.

Future studies on a larger spectrum of Mtb infections as well as a larger endemic TB-population are necessary to validate these biomarkers.

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Reference

Biomarkers on patient T cells diagnose active tuberculosis and monitor treatment response. Adekambi *et al*, *J. Clin. Investig.*, 2015, **125**, 1827