MedicalXpress

Better and faster: Distinguishing non-TB pulmonary disease from TB

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A diagnostic kit shows new promise for distinguishing between tuberculosis (TB) and its infections from disease caused by related mycobacteria family, which mimic TB and other lung disease in symptoms but require distinctly different clinical treatments.

The bacterium that causes TB, mycobacteria tuberculosis, comes from a larger family of mycobacteria, certain strains of which can cause lung disease. The most common pathogenic nontubercular mycobacteria are known together as Mycobacterium avium complex, or MAC. Distinguishing MAC-related pulmonary disease (MAC-PD) from TB is difficult, and can take eight weeks or more. Complicating matters, MAC bacteria are ubiquitous in the environment, and a positive culture may mean nothing more than specimen contamination.

Now, researchers have shown in a multi-center study that differentiating MAC-PD from TB can be accomplished in just a few hours using an assay that can identify antibodies specific to MAC.

The research was published in the first issue for April of the *American Journal of Respiratory and Critical Care Medicine*, published by the American Thoracic Society.

MAC is responsible for a growing proportion of pulmonary disease, but how much is unclear. “There are more cases being reported,” said Dr. Alvin Teirstein, professor of medicine at Mount Sinai School of Medicine. “We are not sure where it was hiding 25 years ago, but there

appears to be a growing epidemic over the last 20 years."

Up to now, distinguishing between MAC and TB largely relied on a suite of clinical signs and obtaining repeatedly positive sputum cultures—a process that was both unwieldy and often unreliable. "About 20 percent of the time the physician might make the wrong determination," said Dr. Teirstein.

Furthermore, even though initial diagnosis is uncertain, patients whose sputum is positive for acid-fast bacilli are often immediately isolated and sometimes started on a regimen of anti-TB drugs. Isolating non-TB patients and beginning inappropriate treatment regimens not only drains resources that could be used to treat infectious TB, it is a burden and risk to the patient as well. In contrast to TB, MAC is not contagious and sometimes requires no treatment.

"Diagnosis of pulmonary disease due to MAC is complicated and time-consuming," wrote Seigo Kitada, lead researcher on the study. "In the context of infection control it is particularly important to distinguish between MAC-PD and pulmonary TB."

To test the efficacy of the immunoassay kit, the researchers acquired specimens from six centers between June 2003 and December 2005. The samples came from 70 patients with MAC-PD; 18 with MAC contamination, 36 with pulmonary TB, 45 with other lung disease and 76 from healthy patients.

They found that found that serum antibody levels to the MAC-specific antigen were higher in patients with MAC pulmonary disease as compared to those with other respiratory diseases, including tuberculosis. The sensitivity and specificity of the serologic test were 84.3% and 100%, respectively. Equally important, the test, took only hours as opposed to the four to eight weeks it takes to determine

conventional culture results.

While Dr. Tierstein points out that to be validated, the kit must perform well with different populations and in different locations, as MAC strains can vary from place to place, this is the first multi-center demonstration of the efficacy of such a kit, raising the hope that it may solve the problem of distinguishing MAC-PD from TB and represents a critical step in increasing the accuracy and efficiency in treating patients with MAC-PD and TB.

Source: American Thoracic Society