New technique may quickly distinguish between active and latent TB

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An emerging technique designed to quickly distinguish between people with active and dormant tuberculosis may help health professionals diagnose the disease sooner, thereby potentially limiting early exposure to the disease, according to a study conducted by researchers at Duke University Medical Center.

"Current blood tests for tuberculosis are reasonably good at distinguishing between uninfected and infected persons, but cannot tell the whether an infected person has active, and possibly infectious, tuberculosis or has latent infection," said senior author Jason Stout, M.D., M.H.S., assistant professor of medicine at Duke University Medical Center. "Generally a culture is required to tell the difference between latent infection and active tuberculosis, but a culture usually requires weeks to deliver a result. A rapid test that could tell the difference between latent and active tuberculosis would be a major step forward."

The findings will be reported at the ATS 2010 International Conference in New Orleans.

"This pilot study explored whether using patterns in the immune response to tuberculosis could be helpful in improving rapid diagnosis of the disease," Dr. Stout said.

Dr. Stout and colleagues collected whole blood samples from 71 people belonging to one of three groups: those with active tuberculosis, those

with latent tuberculosis infection, and those who were not infected with tuberculosis. After exposing the samples to pieces of the tuberculosis bacteria to stimulate an immune response, researchers measured the levels of 25 specific proteins, called cytokines, to determine the presence of a pattern that could allow them to differentiate among the three groups.

"We found that a pattern of two cytokines, called MCP-1 and IL-15, was reasonably good at differentiating between persons sick with TB and persons infected but not sick," Stout said. "In addition, a third cytokine, called IP-10, looked promising in distinguishing between uninfected persons and infected individuals."

Stout said that while previous studies identified all three cytokines as possible individual predictors of tuberculosis infection, the usefulness of the combination of MCP-1 and IL-15 was unexpected.

"These findings could lead to earlier diagnosis of active tuberculosis, which could be beneficial for both the sick person and others around her or him who might be spared from infection," Dr. Stout noted. "There is also the potential for avoiding unnecessary and potentially toxic medications in persons who are not sick with tuberculosis."

Although the initial results were promising, Dr. Stout noted the sampling for this pilot study was limited, and added that further research would be needed to determine if the results could be replicated in a larger population, "ideally a group of persons suspected of having tuberculosis ."

"Future studies may also help researchers determine whether examining additional cytokines would improve on the accuracy of our results," he added.