New TB booster shows promise

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A booster shot appears to improve tuberculosis (TB) resistance in previously vaccinated adults, according to new research in South Africa.

The study has been published online ahead of print publication in the American Thoracic Society's American Journal of Respiratory and Critical Care Medicine.

"The world urgently needs new, better vaccines against TB," said Willem Hanekom, M.B.Ch.B., associate professor and co-director, South African Tuberculosis Vaccine Initiative (SATVI). "It is important to test the safety of these vaccines in settings where TB is very common, such as South Africa."

Every year 1.7 million people die from TB, according to the World Health Organization. This study is the first to report results from testing an adenovirus-35-based vaccine in humans. Adenovirus-35 is attractive to vaccine developers because fewer humans have been exposed to this strain of the virus, compared with many other adenoviruses, and the immunity from exposure is therefore less likely to interfere with the vaccine's action.

The Aeras-402 vaccine, developed by Aeras Global Tuberculosis Foundation and Crucell, was made by weakening the virus in the lab, so that it can no longer replicate and cause disease. Parts of the TB bacterium that are important to stimulate the immune system (antigens) were then inserted into the virus.

"We showed that the vaccine was safe in healthy adults who have previously been vaccinated with the current TB vaccine, BCG," said Dr. Hanekom. "Aeras-402 was able to stimulate the immune system in a manner thought to be important for protection against TB. This included activation of both CD4 and CD8 T cells. Potent activation of CD8 T cells by a new TB vaccine has not been demonstrated to date."

Animal testing of AERAS-402 had showed promise, and the researchers had expected to see stimulation of CD4 cells, but were "pleasantly surprised" at how well CD8 T cells were also stimulated.

"We are completing a trial of Aeras-402 in babies, to make sure that the vaccine is safe and immunogenic in this population," said Dr. Hanekom. "If all the studies go well, we will proceed with a Phase IIb study of Aeras-402 in up to 4,000 BCG-vaccinated babies, who will receive either the vaccine or a placebo in their first year of life. The results should indicate whether the vaccine may prevent TB disease. An effective booster vaccine would ultimately reduce the incidence of TB disease and, consequently, the spread of the TB pandemic."

Provided by American Thoracic Society