New vaccine shows promise for COPD patients at risk for pneumonia

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A new vaccine against pneumonia may offer better protection from chronic obstructive pulmonary disease (COPD) patients than the currently accepted vaccine, according to recent research that will be published in the September 15 issue of the *American Journal of the Respiratory and Critical Care Journal,* a publication of the American Thoracic Society.

Because pneumonia disproportionately affects patients with COPD and frequently causes exacerbations, the Centers for Disease Control currently recommend that all adults with COPD receive the 23-valent pneumococcal polysaccharide vaccination (PPSV23). However, the efficacy of PPSV23 is not well established in the COPD patient population.

"Reasonable effectiveness for this vaccine has been demonstrated in cohort studies in adults with lung disease," said Mark Dransfield, M.D. of the University of Alabama at Birmingham and lead author of the study. "[However,] debate remains about its immunogenicity and effectiveness in COPD."

Dr. Dransfield and colleagues sought to determine the efficacy of a newer type of vaccine, PCV7, a protein conjugate vaccine, which attaches a weak antigen (in this case, the pneumococcal polysaccharide antigen) to a stronger antigen (the diphtheria toxin) in the hope that the stronger antigen with provoke a more forceful defense from the immune system.

"Conjugated vaccines were originally intended for young children who respond poorly to polysaccharide antigens," said Dr. Dransfield. "We wanted to see whether they could have a similar effect in the COPD patient population in whom immune responses may also be blunted."

Results of the randomized open label trial of 120 adults with moderate to severe COPD showed that, while both the PPSV23 vaccine and the PCV7 vaccine were well-tolerated, the PCV7 vaccine produced superior immune responses on several measures of immunogenicity. Among patients randomized to take the PCV7 vaccine, the fraction exhibiting a twofold increase in serotype-specific IgG antibodies was higher in five of the seven serotypes tested. Blood drawn from patients who had received the PCV7 vaccine was also more effective at killing pneumococci in six of seven serotypes tested one month after vaccination.

"We have shown that PCV7 induces a superior immune response to PPSV23 in COPD at one month post-vaccination," concluded Dr. Dransfield. "Both vaccines elicit responses comparable to those previous observed in health elderly patients." Older age and prior vaccination with PPSV23 dampened the efficacy of the PCV7 vaccine, however.

A vaccine in development that contains the capsule of 13 pneumococcal serotypes, called PCV13 (compared to PCV7 which has seven) is hoped to expand the coverage of the vaccine.

"We hope that future research will confirm the superior immunogenicity of PCV13 in COPD," he added. "We also want to determine the relative duration of the immune response following PPSV23 and conjugate vaccination and to identify the immunologic correlates of protection against both invasive and non-invasive pneumococcal disease. We believe our data provide the rationale for further study of the clinical efficacy of protein-conjugate pneumococcal vaccines in the high risk COPD population."

Source: American Thoracic Society (news : web)