Safety and immunogenicity of a novel multiple antigen pneumococcal vaccine in adults: A Phase 1 randomised clinical trial.

Entwisle C[1], Hill S[2], Pang Y[2], Joachim M[2], McIlgorm A[2], Colaco C[2], Goldblatt D[3], De Gorguette D'Argoeuves P[3], Bailey C[2]. **Vaccine.** 2017 Dec 18;35(51):7181-7186.

Abstract

Pneumococcal vaccines, combining multiple protein antigens, provide an alternative approach to currently marketed vaccines and may provide broader protection against pneumococcal disease. This trial evaluated the safety and immunogenicity of a novel vaccine candidate PnuBioVax in healthy young adults.

METHODS:

In a Phase 1 double-blind study, 36 subjects (18-40 years) were randomised to receive 3 doses of PnuBioVax, 28 days apart, at one of three dose levels (50, 200, 500 µg) or placebo. Safety assessments included rates of emergent adverse events (AEs), injection site and systemic reactions. Immunogenicity endpoints included antibody titre against PnuBioVax and selected pneumococcal antigens.

RESULTS:

In the placebo (n=9) and PnuBioVax (n=27) vaccinated subjects, there were 15 and 72, reported TEAEs, respectively. The majority of TEAEs were classified as common vaccine related AEs. There were no serious AEs. Common vaccine-related AEs occurred in 13 PnuBioVax (48%) and 2 placebo (22%) subjects and were all headaches (mild and moderate). Injection site reactions, mostly pain and tenderness (graded mild or moderate) were reported, in particular in the 200 µg and 500 µg PnuBioVax groups. There were no clinically significant changes in vital signs, ECG or blood chemistries. Subjects receiving the higher dose (200 and 500 µg) demonstrated a greater fold increase in IgG titre compared with the starting dose (50 µg) or the placebo group. The fold-increase was statistically significantly higher for 200 and 500µg PnuBioVax vs 50µg PnuBioVax and placebo at each timepoint post-immunisation. Most subjects receiving 200 and 500 µg PnuBioVax demonstrated a ≥2-fold increase in antibody against pneumolysin (Ply), Pneumococcal surface antigen (PsaA), PiaA (Pneumococcal iron acquisition), PspA (Pneumococcal surface protein A) and pilus proteins (RrgB and RrgA).

CONCLUSIONS:

All dose levels were considered safe and well tolerated. There was a statistically significant increase in anti-PnuBioVax IgG titres at the 200 and 500 µg dose levels compared to 50 µg and placebo.

TRIAL REGISTRATION NUMBER:

NCT02572635https://www.clinicaltrials.gov.