1113. Safety and Efficacy of a Cytomegalovirus Glycoprotein B (gB) Vaccine in Adolescent Girls

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Background. Cytomegalovirus (CMV) is a leading cause of congenital infection and an important target for vaccine development.

Methods. This randomized double blind trial (NCT00133497) was conducted in 5 USA sites. CMV seronegative girls between 12 and 17 years of age received 20 μg of CMV glycoprotein B with MF59 or saline by the IM route at 0, 1 and 6 months. Subjects were followed for 24 months after the last vaccination for safety, immunogenicity and efficacy. Blood and urine were obtained prior-to and one month following each vaccination then every 3 months for evidence of CMV infection based on PCR and / or seroconversion to non-vaccine CMV antigens measured by ELISA. Vaccine efficacy was estimated using Cox Proportional Hazards model with p-values calculated using a 2-sided log-rank test.

Results. 402 CMV seronegative subjects were enrolled and vaccinated (195 vaccine, 207 placebo) based on an assumption of a 20% attack rate in the placebo group and 8% in the vaccine group. The vaccine was generally well tolerated although local and systemic adverse events were significantly more common in the vaccine group. The vaccine was immunogenic inducing gB antibody (measured by ELISA) in all vaccine recipients and a gB geometric mean titer of 13,400 (95% CI: (11,436 – 15,700) after 3 doses of vaccine. Overall, 48 CMV infections were detected (21 in vaccine, 27 placebo). In the per protocol population (124 vaccine, 125 placebo) vaccine reduced the incidence of CMV infections after 3 vaccinations from 14 in the placebo group to 8 in the vaccine group (efficacy 43%; 95% CI: -36; 76, P =0.20). Using the modified intent to treat population (3 doses, regardless of timing of vaccinations; 164 vaccine, 170 placebo) the vaccine reduced the number of CMV infections from 18 in the placebo to 11: (efficacy 38%; 95% CI: -31; 72, P = 0.20). The most significant difference was after 2 doses, administered as per protocol; vaccine: 13/164, placebo: 24/172 (efficacy 45%, 95% CI: -9; 72, P = 0.08). The failure to show a significant reduction may have been influenced by the lower than anticipated attack rate.

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Conclusion. The vaccine was safe and immunogenic. Although the decrease in CMV infection in the vaccine group did not reach significance the results are consistent with a previous study (Pass et al NEJM 360:1191, 2009) using the same formulation.

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