ABSTRACT

Objectives: To compare the immunogenicity and reactogenicity of Cervarix® or Gardasil® Human Papillomavirus (HPV) vaccines in HIV-infected adults.

Methods: A double-blind, controlled trial randomizing HIV-positive adults to receive three doses of Cervarix® or Gardasil® at 0, 1.5 and 6 months. Immunogenicity was evaluated for up to 12 months. Neutralizing anti-HPV-16/18 antibodies were measured by pseudovirus-based neutralization assay (PBNA). Laboratory tests and diary cards were used for safety assessment. The HPV-16A status of the participants was determined before and after immunization.

Results: Ninety-two participants were included in the study. Anti-HPV-18 antibody titers were higher in the Cervarix® group compared with the Gardasil® group at 7 and 12 months. No significant differences in anti-HPV-16 antibody titers were found among vaccine groups. Among Cervarix® vaccinees, women had higher anti-HPV-16/-18 antibody titers compared to men. No gender-specific differences in antibody titers were found in the Gardasil® group. Mild injection site reactions were more common in the Cervarix® group than in the Gardasil® group (91.3% vs. 69.6%; P < 0.02). No serious adverse events occurred.

Conclusions: Both vaccines were immunogenic and well-tolerated. Compared with Gardasil®, Cervarix® induced superior vaccine responses among HIV-infected women whereas in HIV-infected men, the difference in immunogenicity was less pronounced.

METHODS

Study design: This was an investigator-initiated, randomized, double-blind head-to-head trial randomizing persons with HIV to vaccination with either Cervarix® or Gardasil®. The study was conducted at the Department of Infectious Diseases, Aarhus University Hospital, Denmark. Participants were stratified according to use of HAART and gender and thereafter randomized 1:1 in blocks of 4 to receive Cervarix® or Gardasil®. Participants received vaccination with either Cervarix® or Gardasil® at month 0, 1.5 and 6 and they were seen at month 7 and 12 for immunogenicity and safety follow-up.

RESULTS

Immunogenicity: Primary endpoints are shown in Figure 1. Both vaccines increased HPV-16 GMTs from baseline to 7 and 12 months and no significant differences in anti-HPV-16 antibody titers were found between vaccine groups. Anti-HPV-18 GMTs were higher in the Cervarix® group compared with the Gardasil® group at 7 and 12 months. The GMT ratio was 4.31 at 7 months (95% confidence interval [CI] 2.21–8.40) and 4.15 at 12 months (95% CI 3.95–4.34).

Safety: No serious adverse events were detected in this study. Both vaccines were generally well-tolerated and very few mild systemic reactions were observed. Injection site reactions were more common in the Cervarix® compared with the Gardasil® group (91.3% vs. 69.6%; P < 0.02).

SUMMARY

In the present study we found that Cervarix® was significantly more immunogenic than Gardasil® in HIV-infected women. However, this difference in immunogenicity was less pronounced in HIV-infected men where the two vaccines induced similar antibody responses against HPV-16 but higher anti-HPV-18 antibodies for Cervarix® than Gardasil®. Mild injection site reactions were more common in the Cervarix® group. Collectively, our findings suggest that Cervarix® is superior to Gardasil® in terms of inducing protective immunity against oncogenic HPV-16 and HPV-18 infection in HIV-infected women. However, whether this difference translates into enhanced or prolonged protection against cervical cancer is still unknown.