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Immunogenicity of single-dose hepatitis A vaccines in young adults

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Background: In many countries, hepatitis A virus (HAV) infection has become an important public health issue with improvement in socioeconomic status. In Korea, a HAV vaccination program for young adults has recently been under consideration because of the low seroprotection rate in this age group.

To ensure long-term immunity, the vaccine manufacturers recommend 2 doses of the vaccine, but in some countries, a single-dose HAV vaccine is used for infants. The immunogenicity of the single-dose HAV vaccine is a key factor for deciding the vaccination schedule, but only a few studies have evaluated this immunogenicity in adults.

This study was performed to examine the immunogenicity of the single-dose HAV vaccine in young adults.

Methods: The study population comprised a total of 582 college students from 8 medical schools in Korea. Total 451 participants who had negative results for anti-HAV antibody (cut-off value: 20 mIU/ml) and met the inclusion criteria were randomly allocated into 2 groups for receiving either of the 2 vaccines: Havrix (n = 225) and Epaxal (n = 226) groups. We checked the seroconversion rate at 7–12 months after vaccination.

Results: The seroconversion rate in Havrix group (84.9%) was significantly higher than that in Epaxal group (76.5%; P = 0.031), and the male participants (75.3%) showed significantly lower seroconversion rates than the female participants (91.4%; P < 0.001). In the logistic regression model, only gender was a statistically significant factor affecting seroconversion rates (OR= 2.7, P = 0.016) and vaccine type showed borderline significance (OR = 1.6, P = 0.051). The other covariates (follow-up time, age, and body weight) were not significant. In the logistic regression model analysis according to the vaccine type, gender showed a significant effect only in the Epaxal group (OR = 5.0, P = 0.011).

Conclusion: After single-dose vaccination, the HavrixTM and Epaxal® vaccines showed immunogenicity of more than 75.0% at 7–12 months after the vaccination, and the male participants showed lower seroconversion rates than the female participants, particularly in the Epaxal group. The seroconversion rate after the second dose and the long-term immunogenicity will be compared for the 2 vaccine types in future studies.

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Efficacy of mumps vaccine in Korea

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Background: Although mumps is a vaccine-preventable disease and mumps vaccine has more than 95% of its vaccination rate as a component of MMR vaccine, disease occurrence is continued. We aimed to assess the effectiveness of the mumps component of the MMR vaccine.

Methods: This study evaluated the efficacy of mumps vaccine through the prospective and retrospective case-control studies in four university hospitals. Another achievement is to establish the mumps virus RT-PCR assays for diagnosis in the research team.

Results: In prospective case-control study, 55 cases of mumps were identified and 165 controls were selected from March 2010 to October 2011. Data about their demographic characteristics and MMR vaccination status were collected in cases and controls. Risk for disease estimated by conditional logistic analysis is OR 0.67 (95%CI 0.06-7.35) in vaccinated that is lower than in nonvaccinated. Risk for mumps is OR 0.58 (95%CI 0.05-6.90) for 1 dose and OR 1.10 (95% CI 0.09-13.31) for 2 doses. In retrospective studies, 122 cases of mumps were identified and 449 controls were selected. In 2008-2009 in western Seoul, Incheon and Goyang, an outbreak of mumps occurred among children most of whom were born before 1994. 98% of cases whose vaccination status were available had a history at least one MMR vaccination. Estimated risk for disease is OR 0.33 (95% CI 0.02-5.33) in vaccinated that is lower than in nonvaccinated. Risk for mumps is OR 0.33 (95% CI 0.02-5.33) for 1 dose and OR 0.11 (95% CI 0.01-2.12) for 2 doses. And, we analyzed data collected in the prospective and retrospective study. Estimated risk for disease is OR 0.50 (95% CI 0.08-2.99) in vaccinated that is lower than in nonvaccinated. Risk for mumps is OR 0.58 (95% CI 0.10-3.56) for 1 dose and OR 0.42 (95% CI 0.06-2.81) for 2 doses.

Conclusion: Mumps vaccine had preventive effect and two dose vaccination had superior effect than one dose, even though there was no statistically significant difference. In addition to the efficacy of the vaccine, it is needed to consider other factors that are involved in occurrence of mumps outbreak.

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