The Hantaan virus vaccine efficacy on progression of the hemorrhagic fever with renal syndrome (HFRS)

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Objectives: Inactive Hantaan virus vaccination has been broadly used as a preventive strategy in South Korean army. After application of the Hantavax® vaccination in a selective outbroken area, overall incidence of Hantavirus infective cases dropped down. However, still hundreds of new cases have arisen annually, and the greater part of the patients were Hemorrhagic fever with renal syndrome (HFRS). Furthermore, there were seldom studies for proving Hantavax's vaccine efficacy in field area. This study aimed to evaluate the vaccine efficacy on HFRS' severity by case-control comparison analysis.

Methods: From 2009 to 2017, we had registered Hantavirus infection cases in South Korean army hospitals with the vaccination history. We retrospectively classified HFRS patient into three groups by the vaccination record: 1) no any history of Hantavax vaccination, 2) validly vaccinated group and 3) group of invalidity due to incomplete or more than one year lapsed from the last vaccination. To evaluate the vaccine efficacy on severity of renal injury, AKI stages and dialysis requirement were investigated from all patient’s medical record. The vaccine efficacy derived from the odds ratio between none vaccinated group and validly vaccinated group.

Results: We assessed the efficacy of the vaccine on severity in 18 HFRS patients with valid vaccination history and 110 HFRS patients without any vaccination history. In validly vaccinated group, two of 18 patients (11.1%) requiring dialysis during the admission, while 25 of 110 (22.7%) patients were received dialysis in no vaccination group. The vaccine efficacy on progression of the HFRS(Vep) was 57.3% (95% CI was -31.3 to 88.0 percent).

Conclusions: The vaccine efficacy on progression of the HFRS in the case-control study had failed to show a statistically significant result. However, different severity profiles between vaccinated and none-vaccinated group were observed. More large population would be needed for proving the vaccine effect on HFRS patients.