The Impact of Vaccines to Prevent Vertically Transmitted Infection**

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Infectious diseases related to vaccines are defined as ‘preventable diseases’ by the WHO. Although rubella is a preventable disease, an outbreak of it occurred in 2012 in Japan. The number of reported patients was as high as 14,357 and subsequently 32 babies with congenital rubella syndrome (CRS) were born. There is a notable background to this outbreak of rubella, including the history of rubella vaccination, which needs to be understood.

In Japan, rubella vaccine was first administered in 1976 for only girls in junior high schools. Although MMR vaccine was started for both boys and girls in 1989, it was canceled in 1993 due to anxiety about its side effects, such as aseptic meningitis. Although it was started again in 1995, there were gaps in some adults between 20–40 years old who could not receive a vaccine and who have an elevated risk of rubella infection. At the time of the above-mentioned outbreak, this population led to an increase in the number of patients. The importance of rubella vaccine was thus confirmed.

Hepatitis B is one of the major vertically transmitted infections because we reduced the number of HB patients by using better transfusion systems. In 2013, the government changed the protocol to prevent vertically transmitted infection of HBV, which will be more effective for prevention.

Influenza vaccine is the most commonly administered vaccine during pregnancy due to its immunotolerance. It is known that influenza vaccine can be given safely throughout pregnancy, and there are some additional effects.

Finally, a recently investigated vaccine is one for cytomegalovirus (CMV). CMV infection during pregnancy induces congenital CMV infection with neurodevelopmental insufficiency and deafness. Although the rate of positivity for CMV antibodies in adults was previously as high as 90%, it decreased to around 65% for environmental reasons. Manufactured CMV vaccine is in a phase II clinical trial. There will thus be some delay before its potential use in clinical practice. This paper is intended as a review of the history of vaccination and confirmation of the efficacy of vaccines in clinical practice.

Key words: vertically transmitted infection, rubella, hepatitis B, influenza virus, cytomegalovirus