III-2. Impact to immune response to vaccination of infants born from vaccinated mothers

Impact to immune response to vaccination of infants born from vaccinated mothers

Blunting effect is the phenomenon if maternally derived antibodies might have inhibitory effect to the infant’s own responses to primary immunisation with the same vaccine antigens.

The level of pertussis antibodies is higher in mothers immunised with pertussis vaccine during pregnancy compared with unimmunised mothers at the delivery and also about one year after the delivery.

The level of pertussis antibodies in newborn’s cord sera is also higher among infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones.

After maternal pertussis immunisation all children are immunised according to the national immunisation programme. Based on different studies, the higher antibody concentration among infants maternally immunised than those not, persists until infant’s primary immunisation programme starts. At the end of the infant’s primary immunisation series the blunting effect to at least one type of pertussis antibodies are noticed among infants who are born from mothers immunised with pertussis vaccine during pregnancy. However, the impact to the type and level of pertussis antibodies varies between studies and no certain trend is revealed. However, after booster dose the concentration of pertussis antibodies is mostly similar in infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones.

The protective level of pertussis antibodies is not known. Thus, the real impact of lower level of antibodies between the end of infant’s primary series and booster dose among infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones is unknown. So far, no clinical relevance of blunting effect after primary immunisation and before the booster is found (here and here).

During the maternal pertussis immunisation, the tetanus toxoid, reduced diphtheria toxoid and reduced acellular pertussis (Tdap) vaccine is administrated to pregnant women. Therefore, the infant’s immunological response to diphtheria and tetanus antigens might also be influenced. However, the antibody titres remained always at the protective level in both cases (here and here).
For conclusion, maternal pertussis immunisation is associated with higher pertussis antibody concentrations during the period between birth and start of infant’s pertussis immunisation programme. Following the primary immunisation, the level of pertussis antibodies is lightly lower among infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones. However, the differences did not persist following the booster dose. So far, the clinical significance of blunting effect is not revealed.

**Topic conclusions**

The level of pertussis antibodies in newborn’s cord sera is also higher among infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones. For conclusion, maternal pertussis immunisation is associated with higher pertussis antibody concentrations during the period between birth and start of infant’s pertussis immunisation programme. Following the primary immunisation, the level of pertussis antibodies is lightly lower among infants born from mothers immunised with pertussis vaccine during pregnancy compared with unimmunised ones. However, the differences did not persist following the booster dose. So far, the clinical significance of blunting effect is not revealed.