

Seroprevalence of *Bordetella pertussis* antibodies and anti-pertussis antibody response after a single dose of Tdap in pregnant Thai women

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Background: Maternal immunization with tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) has recently been implemented to prevent infant pertussis. Tdap is still not routinely recommended in Thailand, and there are limited data to support or challenge this strategy.

Objectives: The primary aim was to determine the seroprevalence of anti-pertussis toxin antibodies (anti-PT IgG) among pregnant Thai women. The secondary aims were to evaluate antibodies response after Tdap vaccination between seronegative and seropositive mothers and to compare the different antibody titers at delivery among seropositive mothers who received Tdap to those who received tetanus-diphtheria vaccine (Td).

Methods: This randomized clinical trial was conducted during April 2018 to April 2019 at Siriraj Hospital, Bangkok, Thailand. A total of 129 pregnant women were included. Paired blood samples for anti-PT IgG levels were obtained during the first antenatal visit and at delivery. A baseline cut-off value of <5 IU/ml indicated seronegativity. All seronegative participants (n=69) received Tdap, while the seropositive group were randomized 1:1 to receive either Tdap (n=18) or Td (n=13) during 27-36 weeks' gestation. The antibody levels from both sera were compared between groups.

Statistical analysis: All data analyses were performed using PASW Statistics version 18.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive data are presented as number and percentage, mean \pm standard deviation, or median and range (minimum–maximum), as appropriate. One-way analysis of variance (ANOVA) and Kruskal-Wallis test was used to compare continuous variables with and without normal distribution among 3 groups, respectively. Either Pearson's chi-square test or Fisher's exact test was used to compare qualitative characteristics among groups. Comparison of anti-PT IgG levels between the first antenatal care (ANC) and during delivery in each group was performed using Wilcoxon test. Mann-Whitney U test was used to evaluate antibody response after Tdap vaccination between seronegative and seropositive mothers (group 1 vs. group 2), and to compare the different anti-PT IgG levels of paired serum samples among seropositive mothers between those who received Tdap and those who received Td (group 2 vs. group 3). Spearman's rho analyses were performed to examine the correlation of the increment of anti-PT IgG titers with the interval of Tdap vaccination and delivery. A p-value <0.05 was considered statistically significant.