

EFFECT OF A SINGLE GIFT OF ANTENATAL ANTI-D-PROPHYLAXIS WITH 1000 IU IN WEEK 30 ON THE INCIDENCE OF RHESUS-D-IMMUNIZATION IN THE FIRST TRIMESTER OF NEXT PREGNANCY

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Background: Rhesus(Rh)-D-immunization can cause severe haemolytic disease of the newborn. Since 1969, 1000 IU anti-D is administered in the Netherlands to RhD-negative women after delivery of a RhD-positive child, resulting in 80% reduction of new RhD-immunizations. To achieve further reduction of RhD-immunization resulting from ongoing fetomaternal haemorrhage in pregnancy, since July 1998, a single gift of 1000 IU of anti-D is administered antenatal in week 30 to RhD-negative women in first pregnancies. Only relatively small studies on the effectiveness of antenatal anti-D are available. Moreover dose and timing of the Dutch antenatal anti-D-prophylaxis programme differ from those studies.

Objective: To determine the effect of the current Dutch policy of antenatal anti-D-prophylaxis (1000 IU in week 30), on the incidence of RhD-immunization, detected early in second pregnancy by routine irregular erythrocyte antibody (IEA-)screening..

Methods: Population study with post hoc observational analysis. Nation-wide all primiparae (one foregoing delivery) with RhD-immunization detected by routine IEA-screening in 1999/2002/2004 were identified. Data about parity, moment of first detection of RhD-IEA, RhD-factor of first child, ante- and postnatal anti-D-administration in first pregnancy, were collected from obstetric caregivers. Based on 17% RhD-negativity in the population, data from the National Birth Statistics on the number of first and second born children, the frequency of abortion between IEA-screening and week 24 (start of birth statistics) and by estimation of underregistration, the total number of RhD-negative primiparae was calculated. The percentage of primiparae with first delivery before and after introduction of antenatal prophylaxis was calculated from known birth-intervals between first and second children. The coverage of antenatal anti-D-prophylaxis was estimated to be 100 percent, judged from the number of provided ampoules of anti-D (1000 IU) by Sanquin (single provider in the study period).

Results: New RhD-antibodies were detected in 133 RhD-negative primiparae. Excluded from further analysis were 33 women: 21 because of first delivery outside the Netherlands, 12 received no postnatal anti-D-prophylaxis, of which 10 after incorrect RhD-typing of mother (n=8) or child (n=2). Of 100 included women 92 certainly received postnatal prophylaxis, of 8 that was unknown. Antenatal prophylaxis was certainly given to 37 and possibly to 1 of 92 women with certain and to 1 of 8 women with unknown postnatal prophylaxis. From National Birth Statistics data it was determined that in 1999/2002/2004 13,695 RhD-negative primiparae were screened who delivered a RhD-positive first child before and 9,434 women who delivered a RhD-positive child after introduction of antenatal anti-D-prophylaxis. The incidence of RhD-immunization after only postnatal anti-D-prophylaxis ranged from $54/9.434=0.57\%$ (95% CI 0.42-0.72) to $63/9.434=0.67\%$ (95% CI:0.50-0.83). After antenatal and postnatal anti-D-prophylaxis from $37/13.695=0.27\%$ (95% CI:0.18-0.36) to $40/13.695=0.29\%$ (95% CI:0.20-0.38). The Relative Risk for RhD-immunization after ante- + postnatal anti-D-prophylaxis compared to only postnatal anti-D-prophylaxis was 0.40-0.51.

Conclusion: Antenatal anti-D-prophylaxis with a single gift of 1000 IU reduces RhD-immunization in the first trimester of next pregnancy with 50-60%. This is conform with previously published, smaller, studies with other antenatal anti-D administration schemes. The effect on RhD-immunization during the whole next pregnancy, and on fetal outcome (HDN) needs further study.