



Fetomaternal haemorrhage in deliveries by cesarean section

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AIM OF THE STUDY

Determine the incidence of fetomaternal haemorrhage (FMH) in deliveries by cesarean section and assess the volume of fetal erythrocytes that infiltrate maternal circulation. Establishing these parameters could allow optimisation of recommendations for the prevention of RhD alloimmunization.

WORKING HYPOTHESIS

A 10 µg dose of IgG anti-D administered intramuscularly should cover 0.5 ml of fetal RhD positive erythrocytes or 1 ml of whole blood. In the great majority of deliveries, less than 2.5 ml of fetal erythrocytes (5 ml of whole blood, sufficient dose of IgG anti-D 50µ) enter maternal circulation. During delivery, only rarely does FMH occur, which surpasses 5 ml (10 ml of whole blood, sufficient dose of IgG anti-D 100µg). **However, no risk factor is present in the majority of such deliveries.** In deliveries by cesarean section, the risk of fetal erythrocytes infiltrating maternal circulation is increased.

METHODS

In the pilot study, a total of **441** examinations were performed. The amount of fetal erythrocytes which infiltrate maternal circulation during delivery by cesarean section was established by flow cytometry using the BDFACSCanto flow cytometer (Becton Dickonson International).

Laboratory processing: Fetal Cell Count™ kit (Diagnosis of Feto-maternal Transfusion by flow cytometry), IQ Products, IQP-379.

Calculation of the total volume of fetal erythrocytes which infiltrate maternal circulation: Scientific Subcommittee of the Australian and New Zealand Society of Blood Transfusion. Guidelines for laboratory assessment of fetomaternal haemorrhage. 1st ed. Sydney: ANZSBT, 2002: 3-12.

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RESULTS

Fetomaternal haemorrhage (FMH) ≤ 2.5 ml (5 ml of whole blood) was present in **96.6%** cases of C-section deliveries (426/441), and the sufficient dose of IgG anti-D was **50 µg**. FMH ≤ 5 ml (10 ml of whole blood) was seen in **99.3%** cases (438/441), and the sufficient dose of IgG anti-D was **100 µg**. In the remaining three cases, the FMH was 15.4 ml, 16.3 ml and 18.2 ml (31 ml, 33 ml and 37 ml of whole blood), the sufficient dose of IgG anti-D was 310 µg, 330 µg and 370 µg respectively.

CONCLUSION

In C-section deliveries where an RhD negative mother gives birth to an RhD positive child, it is appropriate to establish the volume of fetomaternal haemorrhage (FMH) in order to determine the dose of IgG anti-D necessary for the prevention of RhD alloimmunization. In 99.3% of cases, an IgG anti-D dose of 100 µg was sufficient; contrarily, in the remaining **0.7%** of cases, there was an **excessive volume of FMH** which necessitated an IgG anti-D dose which was **more than three times the standard dose**.

