Cutting unnecessary treatment for blood disorder in pregnancy

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A new test for identifying a mismatch between the blood of a pregnant woman and her baby is accurate, feasible, and could substantially reduce unnecessary treatment, finds a Bristol study published on bmj.com today.

Problems can occur if a woman's blood is Rhesus (Rh) negative but she is carrying a baby whose blood is Rh positive. This is because Rh positive blood contains a substance called RhD antigen, which passes into the mother's blood at birth. The mother then makes antibodies against the RhD positive blood.

There are usually no problems during a woman's first pregnancy, but if she goes on to have another RhD positive baby, these antibodies cross the placenta and destroy the baby's red blood cells, causing a blood disorder known as haemolytic disease that can be serious and even fatal.

To prevent this, all pregnant women have their blood tested at their first antenatal visit. RhD negative women are given one or two antiserum injections (anti-RhD immunoglobulin, derived from blood products) during the pregnancy.

However, about 38 per cent of RhD negative women are carrying an RhD negative baby, so they receive this treatment unnecessarily.

So researchers at the NHS Blood and Transplant Centre in Bristol assessed a new test for predicting a baby's blood group by "typing" its

DNA in the plasma of RhD negative pregnant women.

They analysed blood samples from 1,997 women taken at or before the 28 week antenatal visit. In 96 per cent of cases, the correct RhD phenotype of the baby was predicted by the genotyping tests. This was confirmed by comparing the results obtained from cord blood samples taken at delivery.

A false positive result was obtained in 0.8 per cent (14 samples), and in only three samples (0.2 per cent) were false negative results obtained.

In 3.4 per cent of cases results were either unobtainable or inconclusive.

If these results had been applied as a guide to treatment, only 2 per cent of the women would have received anti-RhD unnecessarily, compared with 36 per cent without genotyping.

The results show that fetuses of RhD negative women can be genotyped with an acceptable level of accuracy and a low rate of false positive results, says the study's co-author, Dr Geoff Daniels of Bristol University's Department of Cellular and Molecular Medicine and the International Blood Group Reference Laboratory, NHS Blood and Transplant, Bristol.

Testing would avoid unnecessary treatment in about 38 per cent of RhD negative women and avert the associated discomfort, inconvenience, and risk of exposure to donor blood products that such injections entail, the study concludes.

Source: University of Bristol