Can an incompatible foeto-maternal transfusion cause an acute maternal haemolytic transfusion reaction with fulminant disseminated intravascular coagulation?

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Abstract

Introduction
This paper reports if an incompatible foeto–maternal transfusion can cause an acute maternal haemolytic transfusion reaction with fulminant disseminated intravascular coagulation.

Case report
A previously healthy woman gave birth with a vacuum ventouse with a total blood loss of 1100 ml. After 4 hours she became haemodynamically instable and started to bleed profusely. Her coagulation status was totally deranged (with high Pk, activated partial thromboplastin time, and low fibrinogen), indicating severe DIC. After a week, she described a period of chills during delivery, and severe restlessness and pain in the epigastrium during the hours after delivery.

Conclusion
We speculate that the clinical course in this case is consistent with an incompatible foeto–maternal transfusion.

Discussion
From an obstetrical view, there was a discrepancy in the clinical picture with a severe DIC in combination with a moderate postpartum haemorrhage (PPH) (1200 ml). Other causes for the DIC and the clinical situation may be considered. Later, when it was possible to communicate with the patient and her husband, it became obvious that during the hours after delivery she had experienced severe pain in her body with the maximum in the epigastrium. She had severe restlessness, intensive pain, and had to move around in the bed continuously. Her husband did not dare let her take care of the baby.

Her symptoms–of chill, hypotension, severe pain in the body, and post-partum haemorrhage, or being the aetiological background to these severe conditions.

Abstract

Introduction
In obstetrics, we have several symptomatic diagnoses. Gravida with some near-miss events might be diagnosed with several possible diagnoses when there is no specific known cause. In the following severely sick gravida, we hypothesize that the patient's symptoms might be due to a maternal acute haemolytic transfusion reaction to an incompatible foeto–maternal transfusion.

Case report
A primagravida with an uneventful pregnancy was admitted due to contraction in the 41st week of gestation. At admission, she was well and she made a normal progress of labour. At cervical dilatation of 8 cm, she experienced a period of chills. When the cervix was fully dilated and the head was on the pelvic floor, the foetal heart rate suddenly fell from 130 to 70 beats per minute and remained low. The obstetrician on call performed a vacuum ventouse and extracted the foetus easily. The newborn had Apgar seven at five minutes. The peripartum blood loss was 1100 ml.

During the next 4 hours, there was a 100 ml blood loss. The woman complained of abdominal pain, which was interpreted as contractions. Thereafter, she had a low blood pressure 70/40, a rising maternal heart beat (130 beats/min), and she suddenly bled another 1000 ml vaginally. She was taken to the operation theatre for a manual exploration. The uterus was empty and there were no injuries diagnosed in the birth canal. She started to bleed from all mucous membranes and transfusions of blood, plasma, and platelets were initiated. She was transferred for intensive care and her coagulation status was totally deranged (with high Pk INR), activated partial thromboplastin time, and low fibrinogen, indicating severe DIC. Replacement was undertaken with concentrated coagulation factors including recombinant factor VII. CT of the abdomen revealed a small retroperitoneal haematoma in close proximity to the uterus. Embolisation of branches of the right iliac artery was performed (see constriction of maternal blood vessels before embolisation in Figure 1).

After the procedure, the patient's condition deteriorated further and there were signs of severe renal and liver failure. Moreover, the patient developed severe rhabdomyolysis with high levels of myoglobin in blood.

Discussion

From an obstetrical view, there was a discrepancy in the clinical picture with a severe DIC in combination with a moderate postpartum haemorrhage (PPH) (1200 ml). Other causes for the DIC and the clinical situation may be considered. Later, when it was possible to communicate with the patient and her husband, it became obvious that during the hours after delivery she had experienced severe pain in her body with the maximum in the epigastrium. She had severe restlessness, intensive pain, and had to move around in the bed continuously. Her husband did not dare let her take care of the baby.

Her symptoms–of chill, hypotension, severe pain in the body, and...
a fulminant DIC—are in accordance with an acute haemolytic transfusion reaction. Her haptoglobin level was low and the initial increase in bilirubin was unconjugated, indicating haemolytic aetiologies. Foetal haptoglobin was 0.6% in maternal blood 4 days after birth and a microscopic examination revealed shiitocytes and anisocytos. The mother had blood group 0 Rh+ and the newborn had blood group A Rh+. The maternal antibodies to blood group A were in high titre in both Ig M and IgG and the antigenicity of the newborn blood was highest on a four-step scale. After four weeks of intensive care and dialysis, her kidneys started to work properly and her liver had improved. The clinical status and/or laboratory analysis were not in agreement with typical pregnancy-related complications such as thrombocytopenic thrombotic purpura (TTP), haemolytic uremic syndrome (HUS), acute fatty liver of pregnancy, or HEELP syndrome. The similarities of the chills, restlessness, and the intense pain in the epigastrium to haemolytic transfusion reactions to an incompatible blood transfusion lead us to our hypothesis.

**Conclusion**

We speculate that the clinical course in this case is consistent with incompatibility foeto-maternal blood transfusion leading to an acute maternal haemolytic transfusion reaction, which in turn caused a severe DIC with multi-organ failure. It might be that an acute haemolytic transfusion reaction in women during parturition easily can be overseen and misjudged as a HEELP syndrome, or amniotic fluid embolism, with DIC and post-partum haemorrhage, or being the etiological background to these severe conditions.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

**Abbreviations list**

HEELP, haemolysis, elevated liver proteins and low platelets; HUS, haemolytic uremic syndrome; PPH, postpartum haemorrhage; TTP, thrombocytopenic thrombotic purpura.

**References**