Perioperative management of aplastic anemia in pregnancy with platelet transfusion refractoriness

To the Editor:

We report our experience with the perioperative management of a patient with aplastic anemia in pregnancy and platelet transfusion refractoriness (PTR) related to the NaK^a antigen, a platelet-specific antigen.

A 31-yr-old woman with two previous spontaneous abortions presented with pancytopenia at the third month of pregnancy. Her platelet count decreased asymptotically and she was diagnosed with aplastic anemia at the sixth month of gestation. At 37 weeks, platelet transfusions were repeated on four occasions, but the patient presented with PTR. Further platelet transfusions were avoided prior to the operation, due to the fact that the cause of PTR had been unclear. At 39 weeks, 20 U of platelets were transfused before induction of anesthesia, and Cesarean delivery was performed uneventfully under general anesthesia. Following delivery it was revealed that the anti-NaK^a antibody was highly positive. The patient's platelet count increased spontaneously without any transfusions.

Aplastic anemia in pregnancy, albeit rare, is a life-threatening disorder. Earlier case reports have proposed termination of pregnancy when aplastic anemia is detected. However, in recent reports, the advancement of therapeutic strategies and supportive care has been associated with favourable maternal and fetal outcomes.¹ It appears that appropriate and intensive support with transfusions and antibiotics are important.

The choice of anesthesia in cases presenting with thrombocytopenia has been an ongoing issue of debate. While thresholds may vary, a platelet count $< 50 \times 10^9 \text{ L}^{-1}$ may be safe for surgery and neuraxial blockade, provided that there is normal platelet function.² In the current case, general anesthesia was planned to avoid the risk of spinal hematoma caused by regional anesthesia, since the patient had presented with severe thrombocytopenia and PTR.

Platelet transfusion refractoriness is a serious complication of long-term platelet-supportive care. The presence of antibodies to human leukocyte antigen (HLA) is considered to be a major factor associated with PTR. In addition, antibodies to human platelet antigen (HPA), which are platelet-specific antibodies, play a minor but relatively important role in some patients.³ If PTR is detected with these immunogenic characteristics, then HLA and/or HPA compatible

platelet transfusions are required. In the present case, screening for platelet antigens showed that only anti-NaK^a antibodies were present. Anti-NaK^a antibodies are specific for a platelet antigen localized on platelet glycoprotein. There has been only one case report of anti-NaK^a antibody-induced PTR.⁴ Although the antibody can occur naturally, albeit rarely, a history of frequent platelet transfusions, combined with pregnancy, is a major risk factor for immunogenic PTR.³ In this case, three pregnancies including two past abortions might have been related to the production of the anti-NaK^a antibody.

The problem in the present case was a lack of sufficient time to discuss the case management with both obstetricians and hematologists. In addition, we did not fully recognize the importance of platelet antigens and a prompt analysis and report of the patient's platelet antigens was not conducted. Therefore, we were unable to detect the cause of the patient's PTR, and thus could not transfuse adequate NaK^a-negative platelets prior to the operation.

This report demonstrates the uneventful outcome in managing a parturient with aplastic anemia and PTR, using prophylactic platelet transfusions immediately before Cesarean delivery. We recommend an integrated team approach involving obstetricians, hematologists and anesthesiologists to optimize the outcome of patients with this rare condition.

Eiko Onishi MD

Kazuko Fujita MD

Satoshi Yokono MD PhD

Kyoto Second Red Cross Hospital, Kyoto, Japan

E-mail: e-came78@jk9.so-net.ne.jp

Accepted for publication June 12, 2007.

References

- 1 Kwon JY, Lee Y, Shin JC, Lee JW, Rha JG, Kim SP. Supportive management of pregnancy-associated aplastic anemia. *Int J Gynaecol Obstet* 2006; 95: 115–20.
- 2 Kam PC, Thompson SA, Liew AC. Thrombocytopenia in the parturient. *Anaesthesia* 2004; 59: 255–64.
- 3 Novotny VM. Prevention and management of platelet transfusion refractoriness. *Vox Sang* 1999; 76: 1–13.
- 4 Fujino H, Ohta K, Taniue J, et al. Primary refractoriness to platelet transfusion caused by NaK^a antibody alone. *Vox Sang* 2001; 81: 42–4.