

## LETTER TO EDITOR (VIEWERS CHOICE)

### FETOMATERNAL HEMORRHAGE (FMH) AS A CAUSE OF SEVERE ANEMIA IN A NEWBORN

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**Keywords:** Fetomaternal hemorrhage (FMH), Newborn Anemia, Kleihauer-Betke test (KBT)

A 26 year old primigravida mother delivered a 3 kg female baby by emergency caesarean section (done in view of fetal distress). Mother had no antenatal problems and her hemoglobin levels were normal. Baby at birth had heart rate of < 60/min with apnea and shock and needed resuscitation with colloids and artificial ventilation. She improved but continued to be very pale. There was no antepartum hemorrhage. Placenta and umbilical cord were normal. Baby had no hepatosplenomegaly or dysmorphism. On investigation, her hemoglobin (Hb) was 4.8 gm %, direct Coombs test was negative and reticulocyte count was 21%. Liver function, renal function and clotting profile were normal. Both mother and baby had A+ve blood group. We did a Kleihauer-Betke test (KBT) (1) which was positive (2%) denoting a feto maternal hemorrhage (FMH) of at least 100 ml. This baby improved after packed cell transfusion.

FMH is common in 8% of pregnancies. FMH >20 to 30 ml at delivery is estimated to occur in approximately 1 in 200 to 300 deliveries. FMH >80 ml occurs in 1 in 1000 deliveries and >150 ml is estimated to occur 1 in 5000 deliveries. (2) This is a considerable amount considering the fact that blood volume in a newborn is 80ml/kg. (3) This amount of fetal blood can be easily detectable in maternal circulation as it accounts to almost 0.8 % of maternal blood volume though they are rapidly cleared from the circulation. Fetal RBCs can be detected either by Kleihauer-Betke (KBT) or flow cytometry.

Kleihauer-Betke preparation involves examination of a stained specimen of maternal blood by microscopy following differential elution of HbA and not HbF for red blood cells. In the peripheral smear the maternal red cells appear as ghost cells. The fetal red cells can also be measured by flow cytometry. This is not readily available in most places. If the FMH is chronic or sub acute, the fetus compensates and may present only as mild anemia. (4, 5) Acute severe blood loss can result in fetal death or significant hypovolemic shock in immediate newborn period. Our baby responded well to packed cell transfusion. Other rare causes for anemia such as maternal parvovirus infection were ruled out by viral studies. We also did a complete hematological profile to rule out other hemoglobinopathies on follow up which were normal.

Fetomaternal hemorrhage is a rare cause of severe anemia in fetus and newborn. This needs to be considered in any non immune mediated hemolytic anaemia in newborn. The confirmation is by sending

for KBT as early as possible as the fetal red cells get lysed quickly in maternal circulation. Other studies such as flow cytometry can also be used to confirm the diagnosis.

#### Contributor Statement

All authors were involved in management of this patient. SVK drafted the manuscript which was approved by all authors.

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