

Sickle cell anemia complicated by Hepatitis E infection in pregnancy

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Case report: The hemoglobinopathies are a heterogeneous group of single-gene disorders that include the structural hemoglobin variants and the thalassemias. We present a rare case of sickle cell anemia in pregnancy in a young lady who was investigated in the line of jaundice due to hemolytic anemia (suspicion of hemolytic crisis) and associated with Hepatitis E IgM positivity who eventually had a fruitful pregnancy outcome with least maternal and neonatal morbidity.

Key word: Hemoglobinopathies, Hepatitis E IgM positivity in pregnancy, Jaundice.

Introduction

Pregnancy outcome in women with sickle cell disease are being evaluated.^{1,2}

Sickle cell anemia is inherited autosomal recessive disorder in both sex and this condition was first discovered in 1910 by the cardiologist professor James B. Herrick when his intern Ernest Edward detected “peculiar elongated and sickle shaped” cells in the blood smear of Walter Clement Noel, a 20 year old first year dental student from Grenada and was admitted to the Presbyterian Hospital in 1904 who was suffering from anemia. This condition is prevalent in black people of African origin, in Saudi Arabians (1 in 576) and even in white Mediterranean and India.

In sickle cell disease, two types of haemoglobinopathies are formed. Sickle cell hemoglobin C disease HbSC; and sickle cell disease (HbSS) latter being more common (homozygous state inherited from both parents) or Sickle cell trait (HbAS) (heterozygous state/single parent) which is produced due to structural mutation at the sixth position of N-terminal end of beta globin (plypeptide) chain; glutamic acid being substituted by aminoacid valine.

Sickle cell traits sometimes coexist with $\hat{\alpha}$ thalassemia minor.

$\hat{\alpha}$ thalassaemia is due to defect in the normal production of $\hat{\alpha}$ chain. Normal hemoglobin contains mostly Hb A1 (‘HbA’

consisting of a pair each of $\hat{\alpha}$ and $\hat{\alpha}$ chain) with small percentages Hb A2 (a pair of $\hat{\alpha}$ chain and $\hat{\alpha}$ chain). If gene for HB A1 is missing then the individual is $\hat{\alpha}$ thalassemia heterozygous)

Hemoglobin C and S carrier status was identified 2.4% (Hb AC) and 8.2% in (Hb AS)³

Sickle cell trait and disease besides producing anemia are responsible for various hemolytic and vasoocclusive crises that could be a cause for morbidity and mortality in women with increased adverse effect in pregnancy and child birth. Acute chest syndrome, splenic sequestration, acute sickle cell intrahepatic cholestasis and cerebral blood vessels occlusions with resultant brain cortex necrosis are some examples Hematological crises, aplastic crises, acute serious vasoocclusive crises (splenic sequestration, acute sickle cell intrahepatic cholestasis, and carotid artery occlusions).³⁻⁶

Case

25yrs old G₂ P₁, from Dang but now a resident of Sitapaila, Kathmandu, presented at 27+5 weeks of gestation for the first time in TUTH with jaundice, right upper abdominal pain and myalgia for 15 days. There was no associated itching, vomiting, fever or history of blood transfusion. She had a 5year old female child delivered in hospital following uneventful antenatal and intranatal period. But developed

jaundice during a month after the child birth during puerperium and cured with ayurvedic medicine. On the day of her presentation in TUTH she was stable, anemic and jaundiced. Fundal height was corresponding with gestational age. The fetal heart sound (FHS) was regular. While investigating, hemoglobin was 9.8gm%, reticulocyte count was 5%; RBC having mixed morphology with normocytic normochromic and macrocytic picture. There was low platelets- 56000/cmm too. The total and direct bilirubin showed 8 fold rise 185 micromol/lts, while the liver enzymes were normal. Other coagulation profile was also normal. There was associated HEV Ig M positive which might have added jaundice over anemia. There was no hepatorenal syndrome as the renal function test (RFT) were normal. Detail work up for the cause of hemolysis revealed presence of Hemoglobin F to be 15%, hemoglobin electrophoresis showing faint band at hemoglobin F and dark band at Hb S, thus confirming sickle cell anemia. She was managed conservatively with and folic acid supplements along with the medical unit. After 4 weeks of hospitalization, she was discharged after slight improvement. At 36 weeks of gestation, was admitted with cord prolapse and footling breech in second stage of labour for which caesarean was done under general anaesthesia. Alive male baby with in good condition was born with Apgar score, 7/10 and 8/10 in 1 and 5 minute was born. Weight of the baby was 3.25 kgs. The haemoglobin of mother at discharge was 8.1 gm%.

Post partum period being uneventful, was discharged on 7th post operative day after suture removal. Till date she is on regular follow up. Both mother and baby are doing well.

Discussion

Refractory anemia, jaundice a manifestation of hemolysis led us to investigate in the line of hemoglobinopathies in this second gravida and as such sickle cell disease is rare in Nepalese women. Hemoglobin electrophoresis rightly diagnosed the condition but the good perinatal outcome despite of hepatitis E infection was good. Hepatitis E has not been common in sickle cell disorder pregnancy and blood transfusions have been blamed for other types of hepatitis.⁷

Our case was complicated by premature ruptures of membrane, premature labour which is associated in 6% and 9% cases of sickle cell anemia; others being preeclampsia (14%), miscarriage (5-6%), acute anemia in (3%), placenta previa (1%) along with eclampsia and pylonephritis. A fetus may be small for gestational age (21%) or premature (27%) with stillbirth in 1-2% and prenatal diagnosis is possible by chorionic villus sampling, amniocentesis, fetal DNA analysis, fetal blood sampling.

Therapies being evaluated include those that increase fetal hemoglobin concentration and prevent dehydration of the sickle red blood cell.⁸ Hydroxyurea is one of them and along with either 5-azacytidine or recombinant erythropoietin to increases HbF production which is believed to retard sickling crisis or inhibits polymerization of HbS. Hydroxyurea also reduces sickled erythrocyte adherence to endothelium. Bone marrow transplant has been used to provide normal HbA erythrocyte precursors that appear to ameliorate sickle cell anemia. For sickling crisis, polymerized human hemoglobin solution in combination with erythropoietin is used and many more. Polyvalent pneumococcal-polysaccharide immunization has been considered.⁹

As pregnancy puts an additional risk in this type of hemoglobinopathy, virtually anything that precipitates hypoxia hypovolemia, dehydration, acidosis, hypothermia, stress must be avoided. Continued oxygen inhalations in labour or epidural analgesia and curtailed prolonged labour that puts threat to dehydration adopted may be helpful. Infection from susceptibility infection from encapsulated organism during intrapartum or early puerperium was duly adopted by incorporating methyl penicillin prophylaxis in this case management.

Tourniquet use that has probability to precipitate vasoocclusive crisis was avoided at cesarean delivery and fortunately complications were nil. In one study caesarean has been applied in 20%.¹⁰ Owing to emergent controversies regarding prophylactic blood transfusion on the ground of isoimmunization, transfusion reaction, infection and iron overload which was not idiolized. Moreover this was singleton pregnancy and there were no crisis whereas prophylactic is twins and reduce crisis episodes.

Luckily expression of sickle cell anemia was mild without any crisis. However this case having healthy neonate and mother at the end despite of multiple obstetric complications like sickle cell anemia, hepatitis E infection and jaundice before third trimester, preterm premature rupture of membrane preterm labour, footling breech with cord prolapse is really impressive.

In conclusion an optimistic approach to sickle cell anemia can be prognosticated although maternal and perinatal mortality must be evaluated properly

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