A Case of Neonatal Plasmodium Vivax Malaria Caused by Exchange Transfusion in a G6PD Deficient Baby

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ABSTRACT

Neonatal malaria is one of the differential diagnoses of sepsis in malaria endemic areas. Neonatal malaria is often Overlooked as it is considered uncommon. Transfusion acquired malaria is among the causes of neonatal malaria, as blood is rarely screened for malarial parasite. Here we present a unique case of neonatal malaria caused by exchange transfusion done for indirect hyperbillirubenemia in a G6PD deficient baby.

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INTRODUCTION

Malaria is one of the serious infections with significant morbidity and mortality in pediatric age group[1]. The role of malaria infection in under five-year age group is well documented with significant child mortality. In a study out of 655 000 total deaths due to malaria, 86% were below the age of 5 years[2]. There is very less or inconsistent data available in neonates. Malaria in neonates is classified according to the time of infection. Congenital malaria is when asexual parasites detected in the cord blood or in the peripheral blood smear during the first week of life, and this is usually due to vertical transmission from the mother to the baby through the placenta just before or during delivery due to materno-foetal hemorrhage. While neonatal malaria, which can occur within the first 28 days of life, is due to mosquito bite after birth or in rare instances after blood transfusion from an infected person[3].

CASE REPORT

A 28 days old male infant 3.3kg weight presented to Saidu group of Teaching hospital pediatric unit with history of high grade fever for one week that was intermittent in nature and occurred in spikes during the morning and evening. Fever was also associated with sweating and was temporarily relieved by taking anti pyretics. There was also history of abdominal distention with no history of constipation or vomiting. The child was reluctant to feed for 2 days and also lethargic with decrease activity for one day. The baby was exclusively on breast feeding and his immunization was up to date. Past history was significant for admission in Neonatal Intensive Care Unit for Neonatal jaundice, indirect hyperbilirubinemia at 6th day of life and was diagnosed as a case of G6PD deficiency. The baby underwent exchange transfusion for high indirect bilirubin. Other causes of indirect hyperbilirubinemia were ruled out at the time of first admission like ABO, Rh incompatibility & sepsis.

There was no history of fever or use of any medication by the mother in last trimester or during delivery. The baby was born through supervised vaginal delivery at 38 weeks gestation without any complication.

On examination, the baby was irritable and had a toxic look with a temperature of 102F respiratory rate of 60/min and heart rate of 150/min. His height and length were on the 50th centile for age and sex. On systemic review, the chest was clear bilaterally with normal vesicular breathing pattern, cardiovascular examination showed a soft murmur at the lower left side of the sternum; on abdominal examination the liver edge was palpable below the costal margin and spleen was palpable 3cm below the costal margin. The rest of the examination was unremarkable.

Investigation revealed hemoglobin level 10.5g/dl, total leukocyte count of 5090cells/ul and platelet count 120000/ul, CRPwas positive and SGPT was 105 U/L and Serum bilirubin of 5 with indirect of 4.2. Serum electrolytes and coagulation profile were normal. Blood, urine and CSF culture were sent and results were awaited. Ultrasound abdomen showed splenomegaly. Echocardiography showed large ASD secundum with good left ventricular function. The rest of the investigations were in normal limits.

The baby was admitted to NICU with provisional diagnosis of late onset of neonatal sepsis and started empirically on IV antibiotics. After 48 hours of admission the patient remained febrile with

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spikes of 103 F during evenings and respiratory distress did not improved. Cultures reports were followed and all were negative. The baby was started on 2nd line antibiotics and all the baselines investigations were repeated. The follow up investigations revealed Hb of 9.2g/dl, WBC count of 6430 u/l and platelets count dropped to 22000u/l and smear revealed trophozoite of plasmodium vivax with malarial parasite index of 0.26%. The baby was started on IV Arthesunate. There was significant improvement in baby condition. Fever subsided after 24 hours of starting Arthesunate. The baby remained admitted until full course of IV Arthesunate and the antibiotics were stopped. The baby was called for a follow up visit 14 days after the discharge.

DISCUSSION

Malarial infection in neonates are very rare due to various reasons attributed to host immunity transferred from mother in the form of immunoglobulin G (IgG) and fetal hemoglobin (HbF) that is present at high concentration at birth, preventing parasite development and protect infant in first few months of life[4,5]. However, neonates can acquire infection through vertical transmission from mother at birth or after birth due to mosquito bite and blood transfusion.

Exchange transfusion is a lifesaving procedure in case of severe indirect hyperbilirubinemia in neonates; it is also associated with complication like hypersensitivity reaction, volume overload and transfer of infections. Transfusion induced malaria is an accidental plasmodium infection caused by transfusion of whole blood or component of blood. It is first described in 1911[6]. Transfusional malaria is the most common protozoal transfusion transmissible infection[7]. This complication must be considered for fever following exchange transfusion.

In our case, the baby got infected by the parasite through exchange transfusion from an infected donor done for indirect hyperbilirubinemia due to hemolysis in a G6PD deficient baby. In this case, congenital malaria is unlikely because the mother blood tested negative for malarial parasite and also the donor tested positive for malarial parasite and was treated for vivax malaria.

Blood transfusion can be one of the causes of neonatal malaria as routinely the blood is not screened for malarial parasite. Neonatal malaria is a relatively rare condition that should be included in the differential diagnosis of neonatal infections, sepsis, and unexplained fever or in infants presenting with hemolytic anemia, jaundice and hepatosplenomegaly in malaria endemic zones[8]. Also, a lot of cases of neonatal malaria are confused with neonatal sepsis as the presenting complaints are very much the same.

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