CONGENITAL MALARIA PRESENTING AS NEONATAL SEPSIS
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PRESENTATION OF CASE
23-day-old male neonate presented to Neonatal Intensive Care Unit (NICU) of the Department of Paediatrics, Sri Venkateswara Medical College, Government General Hospital, Tirupati with fever, refusal of feeds of 3 days duration and tachypnoea. The baby was born to a 22-year-old multigravida mother, second birth order and delivered at 38 weeks gestational age through normal vaginal delivery by vertex presentation. Antenatally mother had fever with chills intermittently throughout gestation but she did not take any treatment. No antenatal history suggestive of TORCH (toxoplasmosis, rubella, cytomegalovirus, herpes simplex virus) infection or premature rupture of membranes. On examination, baby was pale, grade 3 splenomegaly of Hackett classification, oxygen saturation (SpO₂) was 96% in room air and rest of the systemic examination was normal. Figure 1 shows newborn with splenomegaly. Based on clinical presentation, provisionally diagnosed as late onset sepsis and started on empirical intravenous antibiotics cefotaxime and amikacin and maintenance intravenous fluids. Blood culture was negative.

In view of pallor, splenomegaly, low haemoglobin and thrombocytopenia, peripheral smear examination was sent which revealed ring and trophozoite forms of plasmodium vivax and occasional ring forms of plasmodium falciparum, normocytic normochromic anaemia with thrombocytopenia. Based on peripheral smear examination it was diagnosed as malaria of mixed infections. In view of malaria in newborn, congenital malaria was suspected. Hence entire family was screened for malaria. Peripheral smear of mother revealed trophozoites of plasmodium vivax and confirmed our diagnosis of congenital malaria. Peripheral smear of father and the other sibling were negative for haemoparasites. In the present case both mother and newborn were incidentally diagnosed as malaria based on peripheral smear examination. Liver function tests revealed unconjugated hyperbilirubinemia suggesting haemolysis with normal hepatic enzyme levels at the time of admission. Ultrasound abdomen revealed moderate splenomegaly.

Packed cell transfusion was given for anaemia. Malaria was treated with oral quinine in a dose of 25 mg per kg per day in three divided doses for 7 days as per the standard protocol. As there was persistent parasitemia even after 7 days of quinine, hence treated with intravenous artesunate 3 mg per kg for 5 doses at 0, 12 hr, 24 hr, 48 hr and 72 hr and intravenous clindamycin 10mg per kg per day twice daily for 7 days. Peripheral smear after completion of artesunate combination therapy (ACT) showed no haemoparasites. At the time of discharge baby was pink, playful, haemoglobin improved, platelet count became normal, total serum bilirubin reduced and feeding well. Table 1 shows haematological and biochemical parameters at the time of admission and after artesunate combination therapy (ACT).

Simultaneously mother was treated with antimalarials. Repeat peripheral smear of the mother was negative for haemoparasites.

Table 1. Haematological and Biochemical Parameters at Admission and After ACT Therapy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Laboratory Value (at Admission)</th>
<th>Laboratory Value (After ACT Treatment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb%</td>
<td>5.8 g/dl</td>
<td>9.0 g/dl</td>
</tr>
<tr>
<td>TLC</td>
<td>6,600 cells/cmm</td>
<td>8,200 cells/cmm</td>
</tr>
<tr>
<td>DC</td>
<td>P 49%, L48%, E2%, M1%</td>
<td>P 56%, L42%, E2%, M0%</td>
</tr>
<tr>
<td>RBC</td>
<td>2.54 millions/cmm</td>
<td>3.42 millions/cmm</td>
</tr>
<tr>
<td>Platelet count</td>
<td>52,000/cmm</td>
<td>2.37 lakhs/cmm</td>
</tr>
<tr>
<td>Haematocrit</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>Total serum bilirubin</td>
<td>7.2 mg/dl</td>
<td>2.1 mg/dl</td>
</tr>
<tr>
<td>Direct bilirubin</td>
<td>0.6 mg/dl</td>
<td>0.2 mg/dl</td>
</tr>
<tr>
<td>SGPT</td>
<td>43 IU/L</td>
<td>46 IU/L</td>
</tr>
<tr>
<td>GDOT</td>
<td>53 IU/L</td>
<td>54 IU/L</td>
</tr>
</tbody>
</table>


Figure 1. Newborn with Splenomegaly

CLINICAL DIAGNOSIS
Based on clinical presentation, provisionally diagnosed the case as late onset septicemia and started on empirical intravenous antibiotics, cefotaxime and amikacin and maintenance intravenous fluids. Blood culture was negative.
DIFFERENTIAL DIAGNOSIS
Congenital malaria is relatively rare condition and should be included in the differential diagnosis of neonatal infections, neonatal sepsis, unexplained fever in newborn, infants presenting with haemolytic anaemia, severe thrombocytopenia and hepatosplenomegaly.

DISCUSSION OF MANAGEMENT
Congenital malaria is a very rare disease. So far, 300 cases are reported in the literature. It is usually a delayed complication of maternal malaria. The prevalence of congenital malaria in malaria endemic areas varies from 0% to 33%. Symptoms of congenital malaria usually appear at 10-30 days of age. The previous concept was infection occurs predominantly from transplacental passage of parasites at the time of delivery. However recent evidence shows that antenatal transplacental transmission occurring before the onset of labour is more frequent than the previous concept. We report a very rare case of congenital malaria of a mixed infection mimicking as neonatal septicaemia. Postulated mechanisms for congenital malaria include maternal transfusion into fetal circulation either at the time of delivery or during pregnancy, penetration through premature separation of placenta, direct penetration through chorionic villi. The foetus has resistance to infection which include physical barrier of placenta to infected erythrocytes, passive transfer of maternal antibodies, fetal haemoglobin and low free oxygen tension in fetal erythrocytes makes environment unfavourable for plasmodial replication.

The clinical features of malaria include anaemia (77%), fever (74%), hepatosplenomegaly (68%), poor feeding, lethargy, irritability and jaundice. Severe thrombocytopenia without bleeding manifestations is also a feature of congenital malaria. The present case had most of the features of congenital malaria.

The time of onset of clinical symptoms in congenital malaria can vary from immediately after birth to ten weeks with median age of presentation is 21 days. In this case, the age of presentation is 23 days. Peripheral smear examination is a simple test to diagnose congenital malaria. In our case, initially suspected as septicaemia but later as a part of evaluation for anaemia, splenomegaly and thrombocytopenia we did peripheral smear examination which revealed mixed infection of plasmodium vivax and plasmodium falciparum. This case illustrates the importance of consideration of congenital malaria in newborns who present with clinical features mimicking septicaemia especially with mothers hailing from malaria endemic area. As per the literature, our case is the second case of congenital malaria with mixed infections of both plasmodium vivax and plasmodium falciparum reported from India. The First case report of congenital malaria was published by Sudip Saha et al in 2009. The treatment of congenital malaria requires blood schizonticides like chloroquine in a dose of 10 mg/kg followed by 5 mg/kg of base at 6, 24 and 48 hours. Primaquine is unnecessary as in congenital malaria there is no hepatic stage of plasmodium. Since Primaquine is also contraindicated in pregnancy and lactation, there is no radical treatment for pregnant women. Due to high prevalence of multi drug resistance in both plasmodium falciparum and plasmodium vivax, infants can be treated with oral quinine. Dihydroartemesinin-piperaquarine can be used for uncomplicated malaria in infants. Neonates with severe malaria are treated with intravenous artesunate. In this case we initially treated with oral quinine later switched on to parenteral artesunate and clindamycin because of persistent parasitaemia.

Emphasis should be given for preventive measures like chemoprophylaxis and bed nets in the community. Weekly chloroquine prophylaxis in pregnant women safe and effective in preventing vivax malaria, but not practised widely even in malaria endemic areas. The introduction of highly effective artemisinin combination therapy for malaria treatment in the second and third trimester of pregnancy decreased the incidence of congenital malaria. Routine screening of newborns for asymptomatic parasitaemia will reduce the burden of congenital malaria.

REFERENCES