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Case Report

Overlap of dengue fever and HELLP syndrome in pregnancy: a complex clinical encounter

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ABSTRACT

Dengue fever is an arboviral infection caused by the bite of an infected *Aedes* mosquito, common in tropical areas, especially in India. It is characterized by fever, fatigue, malaise, joint pain, retrobulbar pain, abdominal pain, and thrombocytopenia. It is often complicated by bleeding manifestations like petechiae, bleeding gums, and blood in vomitus. Hemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome is usually a complication of preeclampsia in pregnancy (elevated blood pressure after 20 weeks of gestation) and is characterized by hemolysis, elevated liver enzymes, and low platelet count. This is the case of a primigravida that presented at 32 weeks + 2 days of gestation with dengue fever in the background of HELLP syndrome. Significant overlap in the features of dengue fever and HELLP syndrome can lead to a delay in the diagnosis of HELLP syndrome and its management. This case highlights the importance of early recognition of HELLP syndrome in a dengue positive pregnant patient.

Keywords: Dengue fever, Arbovirus, HELLP syndrome, Thrombocytopenia

INTRODUCTION

More than 3.9 billion people in over 129 countries are at risk of contracting dengue, with an estimated 96 million symptomatic cases and an estimated 40,000 deaths every year.[1] It is common in tropical and subtropical areas, especially in India. According to the most recent data, 233,251 cases were reported in India in 2022.[2] Dengue infection in a pregnant woman can cause complications such as preterm birth, maternal bleeding, low birth weight, and stillbirths. HELLP syndrome comprises hemolysis, elevated liver enzymes, and low platelet counts. HELLP syndrome is a complication of pregnancy usually associated with pre-eclampsia. However, 15-20% of the patients can be normotensive.[3] Elevated liver enzymes, low platelet counts, and bleeding manifestations are common to both HELLP syndrome and dengue. Dengue fever in a pregnant patient can delay the diagnosis of HELLP syndrome. Here, we present a case of normotensive HELLP syndrome in a pregnant patient with dengue fever.

CASE REPORT

A 25-year-old primigravida at 32 weeks + 2 days of gestation with reactive dengue NS1 antigen was referred to our hospital with a history of fever for 4 days associated with right upper quadrant pain, chills, rigor, and generalized body ache. The patient also gave a history of red-brown colored urine for 2 days. On presentation, she was febrile and conscious. On checking the vitals, she was found to have a blood pressure (BP) of 88/62 mm Hg. Immediately, 500 ml of normal saline (NS) was rushed intravenously followed by NS infusion of 500 ml/hour after which her BP returned to normal limits and stabilized. She had a deranged liver profile (AST- 332 IU/l, ALT-180

IU/l) with hemoglobin (Hb)- 8.4 gm/dl, total bilirubin 2.1 mg/dl, direct bilirubin 1.3 mg/dl, total leucocyte counts of 4100/mm^3, platelet counts of 21000/mm^3 and serum lactate dehydrogenase (LDH) 817 U/l. Peripheral blood smear revealed presence of schistocytes (Figure 1). Urine examination revealed proteinuria 3+ and numerous red blood cells (RBCs) on microscopy. Malarial smear, Weil Felix test, leptospirosis serology and viral markers for human immunodeficiency virus (HIV), hepatitis A, B, C, D, and E were negative. Dengue IgM enzyme linked immunosorbent assay (ELISA) was reactive. The Blood culture was sterile. Although our patient didn't have hypertension, a diagnosis of HELLP syndrome was made as per the Tennessee criteria and the patient was prepared for induction of labor. 1 unit of packed RBCs and 6 units of platelet-rich plasma were transfused. 4 doses of 6 mg intravenous dexamethasone were given 12 hourly to promote fetal lung maturity. After giving the first dose of dexamethasone, 2 doses of 0.5 mg intravaginal dinoprostone gel were given 8 hours apart. Then, concentrated oxytocin infusion was started at 4 mIU and titrated according to contractions. Her repeat Hb levels and platelet counts were 9.3 mg/dl and 74000/mm^3 respectively before delivery. She delivered a baby girl weighing 2.2 kg through normal vaginal delivery. The patient showed a steady rise in platelet levels with counts of 1,72,000/mm^3 and normal peripheral smear on day 7 of admission. The patient was discharged on day 8 and scheduled for follow-up in outpatient department (OPD) after 6 weeks. The laboratory findings are summarized in Table 1.

Table 1: Laboratory investigations of the patient over time.

Parameters	Reference range	Day 1 of admission	Day 4 of admission (post-delivery day 2)	6 weeks after discharge
Hemoglobin (gm/dl)	13-17	8.4	9.0	11.2
Total leucocyte counts (per mm^3)	4000-11000	4100	5400	6200
Platelet counts (per mm^3)	1,50,000-4,00,000	21000	1,17,000	2,92,000
AST (IU/l)	<40	332	245	28
ALT (IU/l)	<40	180	112	31
Total bilirubin (mg/dl)	0.3-1.2	2.1	1.7	0.8
Direct bilirubin (mg/dl)	<0.3	0.4	0.34	0.2
Serum LDH (U/l)	140-280	817	611	160

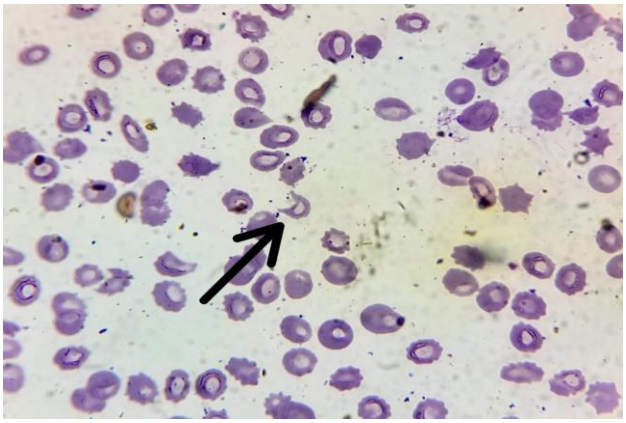

Figure 1: Peripheral smear image showing schistocytes.

DISCUSSION

Dengue fever (DF) comprises 3 phases - febrile, critical, and recovery phase.[4] The initial febrile phase usually lasts 2-7 days and is often accompanied by facial flushing, skin erythema, generalized body ache, myalgia, arthralgia, and headache. The beginning of the critical phase is marked by the increase in capillary permeability in parallel with increasing hematocrit levels, around the time of defervescence. Leucopenia, decreased platelet count, hemorrhagic manifestations, plasma leakage, shock, and organ impairment can be seen in this phase. This phase usually lasts for 24-48 hours. A gradual reabsorption of extravascular compartment fluid takes place in the following 48-72 hours marking the recovery phase.

HELLP syndrome is characterized by hemolysis, elevated liver enzymes, and low platelet count. Tennessee classification states 3 criteria for diagnosing HELLP syndrome- platelet count of <100,000/mm^3; elevated liver enzymes - AST or ALT >2 times the upper limit of normal; and hemolysis confirmed with at least 2 of the following findings – serum bilirubin >1.2 mg/dl, peripheral smear with schistocytes and burr cells, low serum haptoglobin (<25 mg/dl) or LDH >2 times the upper limit of normal, and severe anemia, unrelated to blood loss.

All 3 must be present to make a diagnosis of HELLP syndrome.[5] If any one of them is missing, it is called partial HELLP syndrome.[6]

The management of HELLP syndrome is based on the period of gestation.[3,7] Immediate deliveries should be done in patients presenting at 34 weeks of gestation or later. Patients presenting at 27 to 34 weeks of gestation should be carefully evaluated and delivered within 48 hours after stabilization of maternal condition and steroid treatment for fetal lung maturity. Patients presenting before 27 weeks of gestation should receive corticosteroids, magnesium sulfate, and expectant management for 48-72 hours, with close monitoring of mother and fetus.[8]

Our patient satisfied the Tennessee criteria of HELLP syndrome. Although HELLP syndrome is usually a complication of preeclampsia, our patient presented with Hypotension which was corrected by NS infusion. It may be possible that the presenting hypotension and later, normotension in our patient could be a combined effect of DF and HELLP.

Hemolytic anemia has also been associated with DF.[9] There can be a significant overlap in the features of DF and HELLP syndrome. It becomes quite difficult to diagnose HELLP syndrome in such patients with hypotension or normotension. Therefore, ignoring the possibility of HELLP syndrome in such cases can pose a significant threat to the patient's life.

CONCLUSION

HELLP syndrome can be overlooked in a dengue-positive pregnant patient in third trimester. Presenting features of severe dengue such as elevated liver enzymes, thrombocytopenia, and bleeding manifestations can overlap with signs of HELLP syndrome. This can deceive the physician and delay the diagnosis of HELLP syndrome, especially if the patient is hypotensive or normotensive. Therefore, HELLP syndrome should be suspected in all pregnant patients with thrombocytopenia and transaminitis irrespective of the blood pressure readings.

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