

# Dengue and HELLP: Beware of the Masquerade

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## ABSTRACT

HELLP is a syndrome characterized by hemolysis, elevated liver enzymes, and low platelets. It is a rare complication of pregnancy and is usually associated with pre-eclampsia. However, 10–20% cases of HELLP can present without hypertension. Dengue fever is an arboviral-borne tropical illness that is characterized with fever, thrombocytopenia, and bleeding manifestations. We present a case of a primigravida with HELLP syndrome masquerading in the background of dengue fever. Unique features to this case report include delayed presentation of HELLP syndrome with normotension which can have overlapping features with dengue fever, especially in term pregnancy. This case highlights the need of strict vigilance in cases of dengue fever with pregnancy.

**Keywords:** Cesarean section, Dengue fever, Fetomaternal outcome, HELLP syndrome, Obstetric ICU.

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## HIGHLIGHTS

HELLP and dengue can have similar presentation making the primary diagnosis difficult. Such cases are uncommon. This report elaborates on such a case.

## INTRODUCTION

HELLP is a unique syndrome characterized by hemolysis, elevated liver enzymes, and low platelet count. All three components are required for the diagnosis. The incidence of HELLP is less than 1% of all pregnancies. Partial HELLP syndrome is a condition when any one element is missing. A probable case of dengue fever (DF) is an acute febrile illness with two or more of the characteristic manifestations.<sup>1</sup> Both conditions can present with severe thrombocytopenia and deranged liver function tests.<sup>2</sup> We present an interesting case of HELLP syndrome masquerading in the background of DF. Hence it is important to clearly establish the diagnosis as treatment for both conditions is different.

## CASE DESCRIPTION

A 19-year-old primigravida at 36 weeks gestation was presented with history of headache and fever for 3 days, without associated chills and rigor. She underwent regular antenatal checkup. On presentation she was febrile, conscious, and well-built with normal hemodynamic parameters. Detailed examination revealed bilateral pedal edema. Her lab investigations are illustrated in [Table 1](#).

Relevant biochemistry workup and thyroid function test were normal. Rapid HIV and HbsAg immunoassay were negative. Dengue NS1 and IgM ELISA were reactive. Immature platelet fraction was 19.1% and vitamin B12 levels were 180 ng/mL. Urine microscopy showed albumin 2+ with 1 RBC/HPF. Peripheral smear showed normocytic normochromic blood picture with occasional schistocytes. Blood cultures were sterile. She was treated with adequate hydration and all supportive measures for her DF. Vitamin B12 supplementation and 4 units of RDP transfusion were given for persisting low platelet counts. However, despite 6 days of treatment, there was no improvement in platelet counts, although fever had subsided. Repeat LFT and peripheral smear on day 6 showed worsening transaminitis, rising LDH levels and increase in schistocytes. She was also noted to have high BP in increasing

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trend from day 6 for which she was started on antihypertensives. Intravenous dexamethasone 4 mg once daily was started for possible benefit of improving platelet counts with suspected HELLP. On day 7, she had an episode of generalized tonic-clonic seizure. Intravenous lorazepam and magnesium sulfate were given. Blood sugars were 90 mg/dL and BP was 190/90 mm Hg at the time of seizure. Postictal confusion persisted for 30 minutes and she was shifted to intensive care unit (ICU) for further management. CT brain was normal. She underwent emergency cesarean section and delivered a healthy 2.54 kg female child. She was transfused with 2 units of packed cells and 4 units of random-donor-platelets intraoperatively. Postoperatively she had improving platelet counts and decreasing transaminitis and LDH level. There was no further drop in hemoglobin and platelet counts. Her blood pressure normalized on day 3 postoperatively. Repeat cultures in ICU stay were also sterile. She was discharged on day 16 from admission, with normal blood investigations.

## DISCUSSION

The 2009 Revised Case definitions by WHO for dengue includes probable or laboratory-confirmed DF. DF consists of following phases:

**Table 1:** Lab investigations over time of the patient

	Day 1	Day 6	Day 8 (Postoperative day 1)	Reference range
Hemoglobin (gm/dL)	11.8	13.3	10.0	13.0–17.0
Total WBC counts (per mm <sup>3</sup> )	4,900	3,519	2,480	4,000–10,000
Platelet counts (per mm <sup>3</sup> )	6,000	19,000	42,000	150–400
Total bilirubin (mg/dL)	0.98	1.9	0.86	0.3–1.2
Direct bilirubin (mg/dL)	0.77	1.29	0.62	<0.3
AST (IU/L)	488	345	69	<50
ALT (IU/L)	242	292	134	<50
aPTT (seconds)	40.5	25.4	20.6	15–30
IPF (%)	19.1	—	—	1–6
LDH (U/L)	1,345	2,560	1,252	100–190

- Febrile phase—characterized by fever, myalgia, headache, leucopenia, and lasts for 2–7 days.
- Critical phase—lasting 24–48 hours, characterized by systemic vascular leak syndrome, hemorrhage, shock and organ impairment, around the time of defervescence. Moderate-to-severe thrombocytopenia is observed with nadir platelet counts ( $\leq 20,000$  cells/mm<sup>3</sup>). However, the features of systemic vascular leak are typically absent in DF without warning signs.
- Recovery/convalescent phase—lasting 2–4 days, with profound fatigue for days to weeks after recovery.

This patient presented to us at the end of febrile phase with severe thrombocytopenia, without features of systemic vascular leak or hemorrhage and positive NS1 antigen test. Thus, she was managed as laboratory confirmed DF without warning signs.<sup>3</sup> Prophylactic platelet transfusion was also given to our patient as her platelet counts were below 10,000 cells/mm<sup>3</sup>.<sup>1</sup> A confirmed NS1 antigen positivity with mild albuminuria, transaminitis, and normal BP did not raise suspicion of other differential diagnosis. However, she had persisting thrombocytopenia even after day 7 of illness. Although delayed recovery of thrombocytopenia has been documented in several cases of dengue fever, it is still rare, especially with DF without warning signs.<sup>4</sup>

According to Tennessee classification, following parameters should be present for diagnosing HELLP:

- Hemolysis, established by at least two of the following:
  - Peripheral smear with schistocytes and burr cells
  - Serum bilirubin  $\geq 1.2$  mg/dL
  - Low-serum haptoglobin ( $\leq 25$  mg/dL) or LDH  $\geq 2$  times the upper level of normal
  - Severe anemia (unrelated to blood loss)
- Elevated liver enzymes: AST or ALT  $\geq 2$  times the upper level of normal
- Low platelets:  $<100,000$  cells/ $\mu$ L

Our patient satisfied all criteria of complete HELLP syndrome only on day 6. Incidentally, normotension and mild proteinuria were also present. Hypertension and proteinuria are known to be absent in 10–20% of HELLP.<sup>5</sup> Based on ACOG recommendation on the possible benefit of corticosteroids, intravenous dexamethasone 4 mg once daily was given.<sup>6,7</sup> The presence of seizure episode and dramatic improvement in platelets counts post-delivery suggests the presence of an underlying HELLP syndrome which was missed due to the presence of concomitant thrombocytopenia of DF.<sup>7</sup>

Till date, only one such case report has been documented.<sup>8</sup> In that case, patient had gross proteinuria on urine microscopy, underwent normal vaginal delivery within 6 hours of admission,

and had intraoperative seizures. However, in our case, patient came with features suggestive of only DF with mild proteinuria. When her platelet counts did not improve along with worsening of liver functions, a diagnosis of masquerading HELLP was thought. It is possible that presenting normotension was due to the combined effect of HELLP and DF. We also cannot deny that our patient might be a case of normotensive HELLP. DF and HELLP have overlapping features and differentiating between them in normotensive patients is difficult. Ignoring the possibility of HELLP in such cases leads to delayed treatment and threat to patient's life.

## CONCLUSION

HELLP and dengue have congruent features. This case reiterates the fact that HELLP can be easily missed in cases of DF in pregnancy, especially in cases presenting near term pregnancy.

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