

# Anticipated and unanticipated complications of severe dengue in a primigravida

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## Abstract

As the incidence of dengue is rising among adults more cases of dengue fever are being reported during pregnancy. Physiological changes of pregnancy mask the pathognomonic features of severe dengue such as increased hematocrit, thrombocytopenia, and leukopenia and a high index of suspicion are required in endemic areas. Massive hemorrhage may complicate operative deliveries in unsuspected patients. World Health Organization recommends that all patients with severe dengue should be admitted to a hospital with access to intensive care facilities and blood transfusion. We present the successful management of hemorrhage and unanticipated complications of severe dengue in a young primigravida admitted to the Intensive Care Unit after an emergency cesarean section.

**Keywords:** Severe dengue, thrombocytopenia, blood transfusion, intensive care units, pregnancy

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## Introduction

Dengue is the most rapidly spreading mosquito-borne viral disease in the world and in the last 50 years, incidence has increased 30-fold.<sup>[1]</sup> In Pakistan (World Health Organization [WHO] Eastern Mediterranean Region), the first confirmed outbreak of dengue hemorrhagic fever occurred in 1994 and since then dengue infections have been reported with increasing frequency and severity from large cities in Pakistan.<sup>[2,3]</sup> As the incidence of dengue is rising among adults more cases of dengue fever are being reported during pregnancy. Dengue infection in pregnancy increases the risk of hemorrhage for both the mother and the newborn,<sup>[4]</sup> especially if the mode of delivery is operative.<sup>[5]</sup> We present the successful management of hemorrhage and unanticipated complications of severe dengue in a young primigravida admitted to the Intensive Care Unit (ICU) after an emergency cesarean section.

## Case Report

An 18-year-old primigravida with no known co-morbidities presented to one of the secondary setups of a university hospital at 35 weeks of gestation, with a history of fever for 5 days and threatened preterm labor. Initial blood reports [Table 1] were normal along with normal liver function tests and negative screening for hepatitis, typhoid, and malaria. A baby girl of 2.8 kg was delivered by emergency lower segment cesarean section as tocolysis failed to delay labor. Estimated blood loss during the procedure was 1.5 l due to difficult hemostasis. Excessive bleeding per vaginum and hematuria was observed in the postanesthesia care unit, but she remained hemodynamically stable. Oxytocin infusion was continued, four units packed cells and four units

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fresh frozen plasma (FFP) were transfused, and she was referred to the tertiary setup in anticipation of need for admission to the surgical ICU (SICU). On admission to the SICU, she was hypotensive (blood pressure of 104/64) and tachycardic (heart rate of 140/min) but fully conscious. Blood counts are shown in Table 1, and dengue serology was reported as positive. Pharmacological measures (oxytocin infusion 40 IU in 500 ml normal saline at 100 ml/h and misoprostol 800 µg) and balloon tamponade failed to control heavy per vaginal bleeding, and an exploratory laparotomy was performed in view of deteriorating condition of the patient. There was no structural or vascular injury, but the uterus was found to be atonic. B-lynch sutures were applied, and bilateral internal iliac artery ligation and vaginal tamponade was done to control the generalized ooze. In the ICU, the vaginal bleeding continued, and she became hemodynamically unstable despite adequate volume replacement and transfusion of six units packed cells, 10 units of platelets, and 10 units of cryoprecipitate. Two doses of activated factor VII were given to avoid hysterectomy in this young primigravida. However, the bleeding continued, and supracervical hysterectomy with ovarian conservation was performed as a lifesaving procedure. She was shifted back to the ICU for hemodynamic monitoring, vasopressor support, mechanical ventilation, and transfusion of blood products. During her 16-day ICU stay, she received mechanical ventilation for 9 days and noninvasive ventilation for another 5 days along with deep venous thrombosis prophylaxis, stress ulcer prophylaxis, and enteral nutrition via a nasogastric tube. The postoperative course was further complicated by an ileus, wound infection leading to wound dehiscence, persistent thrombocytopenia [Table 1] leading to hematuria, and ongoing fever treated with broad-spectrum antibiotics. A chest computed tomography after discharge from ICU showed pulmonary embolism which was initially managed by heparin anticoagulation and later by warfarin. She also developed right sided leg weakness and pain which was diagnosed as acute right plexopathy on nerve conduction studies. She remained in the special care ward for another 6 days and was discharged home when she was afebrile, tolerated a regular diet, and mobilized with support. Her total hospital stay was 45 days. In addition, to the obstetrics and gynecology, she required follow-up by general surgery for wound management, chronic pain service for leg pain, and hematology for anticoagulation surveillance.

**Table 1: Results of the blood tests**

Day	HB gm/dl	HCT %	WBC mm <sup>3</sup>	PLATELET COUNT mm <sup>3</sup>
Day 1*	10.7	31.8	7.0	167
Day 2**	9.4	27.7	29.0	23
Day 2	9.3	28.2	21.2	17
Day 2	5.6	16.3	14.5	26
Day 3	10.7	30.8	7.8	16
Day 3	7.5	21.7	5.9	34
Day 4	9.0	26.5	6.4	30
Day 5	8.2	23.9	7.4	38
Day 6	8.4	25.1	8.0	53
Day 7	8.4	25.3	8.8	37
Day 8	8.3	25.1	9.2	60
Day 9	9.9	30.7	9.5	60
Day 10	9.0	27.4	12.3	79
Day 11	8.8	27.2	13.5	134
Day 12	9.0	27.5	15.4	213
Day 13	8.8	26.7	18.7	289
Day 14	8.1	24.3	15.4	257
Day 15	8.4	26.1	18.2	413

\*Secondary hospital pre-operative, \*\*Secondary hospital post-operative

## Discussion

Severe dengue should be considered if the patient is from an area of dengue risk presenting with fever of 2–7 days and evidence of plasma leakage, significant bleeding, and severe GI involvement, altered level of consciousness, or severe organ impairment.<sup>[1]</sup> Diagnosis of dengue is difficult during pregnancy because the physiologic changes of pregnancy mask the pathognomonic features of severe dengue such as increased hematocrit, thrombocytopenia, and leucopenia. This patient had a normal white cell count, platelet count and hematocrit on presentation and thrombocytopenia was observed later [Table 1]. Immunoglobulin M (IgM) (ELISA) is a widely used, simple and rapid method to detect dengue specific IgM antibodies and should have been part of the initial workup of fever in this patient. Conservative obstetrical management is preferred in women with dengue infections, but the incidence of cesarean deliveries is between 44% (case reports) and 20.4% (case series).<sup>[5]</sup> There are case reports of cesarean deliveries complicated by hemorrhage secondary to uterine atony and thrombocytopenia with variable outcome<sup>[6,7]</sup> and the variable need for blood product transfusion.<sup>[8]</sup> Our patient received a transfusion of 36 units packed cells (red cell concentrate), 44 units FFP, 49 units of platelets, nine single donor platelet mega units, and 20 units of cryoprecipitate during her hospital stay. She also received two doses of activated factor VII, as a last resort before hysterectomy was considered. The potential for thrombotic complications is known with the use of factor VII<sup>[9]</sup> and this patient was diagnosed with pulmonary embolism after discharge from ICU and may have resulted from activated factor VII use. WHO

recommends that all patients with severe dengue should be admitted to a hospital with access to intensive care facilities and blood transfusion.<sup>[1]</sup> ICU admission may be required to manage thrombocytopenia ( $<20,000/\text{mm}^3$ ), systemic inflammatory response or severe sepsis, severe bleeding, respiratory distress, hepatitis or jaundice, altered sensorium, shock, severe dehydration, or decreased urine output, and the associated mortality reported is 6.1%.<sup>[10]</sup> Hemodynamic monitoring and support, massive transfusion of various blood products, need for mechanical ventilation, and management of unanticipated problems required an ICU stay of 16 days in this patient. Timely diagnosis and appropriate interventions, however, led to a positive outcome.

## Conclusion

As the incidence of dengue is rising among adults more cases of dengue fever are being reported during pregnancy and dengue serology should be part of the workup of unexplained fever in pregnancy in the endemic areas. Surgical intervention in patients with suspected severe dengue should be undertaken cautiously, and early referral to healthcare centers where technical, transfusion and intensive care facilities are available may prove lifesaving.

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## Conflicts of interest

There are no conflicts of interest.

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