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A Rare Complication of Dengue Fever: Posterior Duodenal Perforation Leading to Peritonitis

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Abstract

Dengue fever is a common infection in tropical and subtropical locations, characterized by fever, headache, muscle and joint pain, and bleeding signs. This was the case of a 52-year-old male patient who arrived to the emergency department with a 3-day history of high fever and abdominal pain. He had tested positive for the Dengue NS-1 antigen the day before admission. Upon examination, the patient showed disorientation, unstable hemodynamics, and a hard abdomen.An abdominal X-ray revealed pneumoperitoneum, which indicates the presence of air in the abdominal cavity and necessitates an emergency laparotomy. During the surgery, a posterior duodenal perforation and widespread peritonitis were detected. The perforation was closed by a modified Graham's patch technique, followed by omental patching and a gastro-jejunostomy with pylorus exclusion. Unfortunately, despite medical treatment, the patient died on the third day of stay.If such consequences are not detected and treated immediately, they might be fatal.

Keywords: Dengue fever complicated by perforation of the posterior duodenum and resulting peritonitis

Introduction:

Dengue is a viral disease. The Flavivirus, which causes the infection, is spread by the Aedes aegypti mosquito in tropical and subtropical locations of the world (1,2). The Dengue virus has five serotypes and is a leading cause of vector-borne illnesses worldwide (3). As dengue and dengue hemorrhagic fever become more common, uncommon signs emerge, often being unreported due to a lack of knowledge. Gastrointestinal symptoms, formerly thought to be uncommon, are becoming more commonly recognized, most likely as a result of ongoing dengue epidemics. These manifestations include hepatitis, acute pancreatitis, acute acalculous cholecystitis, non-specific peritonitis, febrile diarrhea, and, in rare cases, acute appendicitis (4). The exact mechanism underlying this relationship is unknown, however it has been postulated that the dengue virus may cause mucosal injury and ischemia, potentially leading to perforation, either directly or by the production of endotoxins (5).

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Case presentation:

A 52-year-old male patient presented with a three-day history of fever, generalized body pains, loss of appetite, and stomach pain, mainly in the epigastric region. The stomach pain was reported as non-radiating, non-shifting, and did not include signs of abdominal distension, constipation, or gastrointestinal bleeding.

The patient tested positive for dengue NS-1 antigen the day before admission and had no recent travel history. Upon investigation, he was discovered to be conscious but confused. He was afebrile and exhibited no pallor or jaundice. A physical examination showed a firm abdomen with normal hernial orifices.

Laboratory tests revealed substantial abnormalities, including thrombocytopenia (platelet count of 42,000/µL) and a hemoglobin level of 16 g/dL. The prothrombin time international normalized ratio (INR) was raised to 1.8. Renal function tests indicated potassium at 5.9 mEq/L, creatinine at 277 µmol/L, and urea at 19 mmol/L. The acid-base study revealed a metabolic acidosis, with a hydrogen ion concentration (pH) of 7.19 and bicarbonate (HCO3) of 9.9 mEq/l.Liver function tests revealed significant abnormalities, with AST at 549 U/L, ALT at 248 U/L, and total bilirubin at 24.4 µmol/L. Inflammatory indicators revealed a considerable rise in C-reactive protein (CRP) at 183 mg/L, as well as markedly high troponin I levels at 111,009.100 ng/mL, indicating probable cardiac stress. Furthermore, the patient's dengue test was redone, showing positive results for IgM and IgG antibodies, combined with PCR positivity, indicating that the patient is having an acute dengue infection.

His clinical picture implies a serious case of dengue, with significant complications affecting the liver, kidneys, and perhaps the heart, as suggested by high troponin levels.

A chest radiographic examination revealed substantial free intraperitoneal air, as suspected.

Both lung fields: Bilateral lower zone ground glass veiling; otherwise, no consolidative patches or mass lesions. Erect abdominal radiographic examination for further evulation indicated pneumoperitoneum.

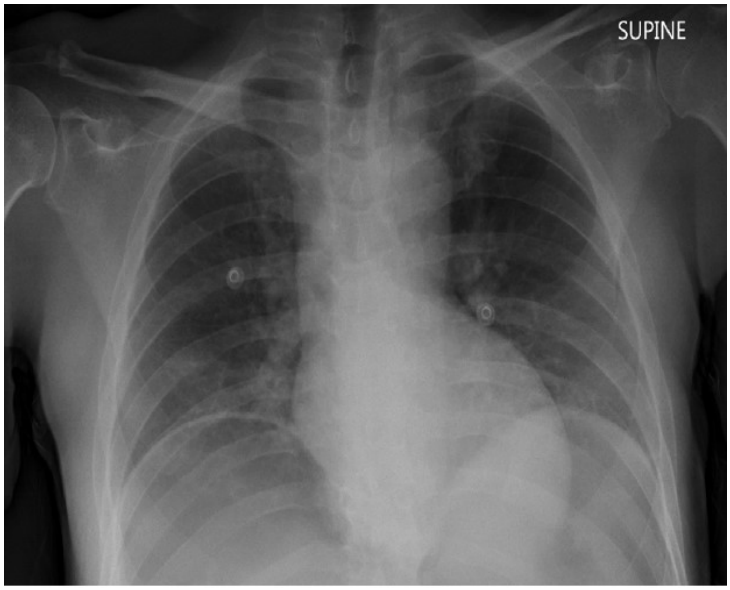

Figure-1: X-ray chest showing bilateral free gas under diaphragm

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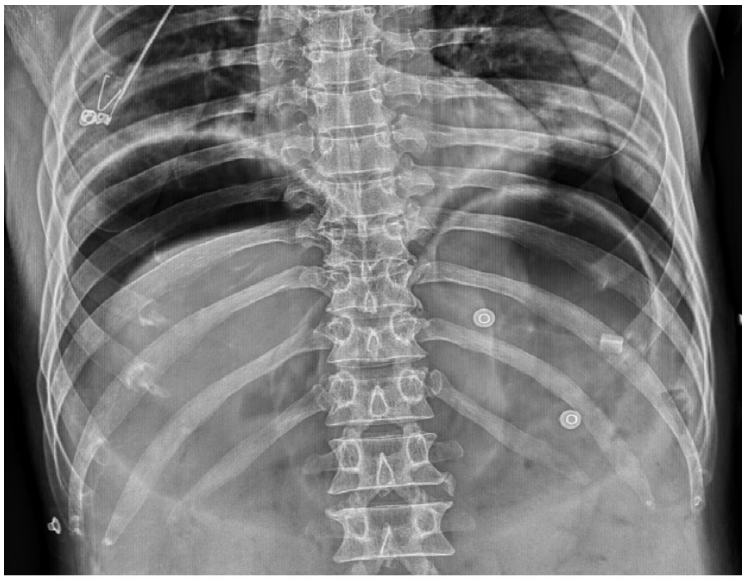

Figure-2: Plain X ray abdomen erect Postero-anterior view showing radiolucent shadow under the right hemidiaphragm, suggestive of pneumo-peritoneum

Radiological findings are consistent with a perforation of the posterior wall of the first section of the duodenum, which appears ignored and is linked with severe acute peritonitis.

Figure-3:CT abdomen revlead posterior wall of the first part of the duodenum, appearing neglected with associated severe acute peritonitis

The patient underwent an emergency laparotomy as a result of the clinical and laboratory findings. The surgical surgery revealed a ruptured duodenal ulcer, as well as substantial abdominal problems. The results revealed a 2 cm perforated posterior duodenal ulcer with no apparent thickening, indicating that it could have been acute.Turbid fluid and food content throughout the abdominal cavity, indicating contamination from the

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perforation.Gangrenous fascia and fat retroperitoneal to the right of the midline, spreading from the cecum to the area above the inferior vena cava, gallbladder, and right kidney. This signals a serious retroperitoneal infection or necrosis.Easily bleeding regions near the duodenum, indicating substantial vascular compromise or damage in that location.Use an omental patch to repair a ruptured duodenal ulcer.Peritoneal washout is used to clear the abdominal cavity of any diseased or necrotic material.Gastrojejunostomy and pylorus exclusion are used to regulate stomach drainage and avoid future problems.

Following surgery, the patient was brought to the intensive care unit and required mechanical ventilation due to respiratory distress, which was most likely caused by sepsis and multiorgan failure. He was also taking large amounts of inotropes and vasopressors, indicating severe cardiovascular instability.Nonetheless, his condition deteriorated despite careful monitoring and treatment. A repeat full blood count revealed that hemoglobin had dropped to 8 g/dL, indicating serious bleeding or hemolysis.Platelets dropped to 5,000 (severe thrombocytopenia, potentially caused by disseminated intravascular coagulation or sepsis).Further changes in renal and hepatic function tests indicated iver involvement, most likely due to septic shock.Tragically, the patient died on the third postoperative day, emphasizing the severity of his illness and the difficulties of managing such complex surgical situations, especially in the presence of perforated abdominal viscera and extensive systemic infection.

Discussion

The clinical and analytical findings necessitated an immediate laparotomy. The surgical procedure revealed a ruptured duodenal ulcer as well as substantial abdominal problems. The findings included a 2 cm perforated posterior duodenal ulcer with no apparent thickening, indicating that it was likely acute.Turbid fluid and food content were found throughout the abdominal cavity, indicating contamination from the perforation.Gangrenous fascia and fat retroperitoneal to the right of the midline, spreading from the cecum to the area covering the inferior vena cava and gallbladder, as well as the right kidney. This suggests serious retroperitoneal infection or necrosis.Easily bleeding spots around the duodenum, indicating a substantial vascular compromise or damage in that area.The ruptured duodenal ulcer is repaired with an omental patch.Peritoneal washing is used to rid the abdominal cavity of any diseased or necrotic material.Gastrojejunostomy and pylorus exclusion are used to control stomach drainage and avoid future problems.

The patient was admitted to the intensive care unit after surgery and required mechanical ventilation due to respiratory distress, which was most likely caused by sepsis and multi-organ failure. He was also taking substantial dosages of inotropes and vasopressors, indicating considerable cardiovascular instability.Despite intense monitoring and treatment, his condition worsened. A repeat full blood count revealed a reduction in hemoglobin to 8 g/dL (indicating serious bleeding or hemolysis).Platelet count falls to 5,000 (severe thrombocytopenia, possibly caused by disseminated intravascular coagulation or sepsis).Further abnormalities in renal and hepatic function tests indicated iver involvement, most likely due to septic shock.Tragically, the patient died on the third postoperative day, underscoring the severity of his illness and the difficulties of managing such complex surgical situations, especially in the presence of perforated abdominal viscera and extensive systemic infection.

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Table 1: Literature review of all the cases of dengue fever associated bowel perforation reported to date

S.No	Primary Author (year of publication)	Country	Age, (Gender)	Site of perforation	Diagnosis	Treatment	Outcome
1	Kumar P(2016)	India	10 years,(F)	Ileum	X-ray	Primary repair	Improved
2	Kumar P(2016)	India	7 years,(M)	Ileum	X-ray	Primary repair	Improved
3	Jain AKC(2014)	India	64 years,(F)	Jejunum	Exploratory Laparotomy	Resection and stoma	LAMA due to financial burden
4	Desai G(2014)	India	-	Appendix	Ultrasound	Exploratory laparotomy	Pleural effusion, SSI
5	Desai G(2014)	India	-	Appendix	CT scan with contrast	Appendicectomy	improved
6	Desai G(2014)	India	-	Appendix	Ultrasound	Exploratory laparotomy	Pleural effusion, SSI
7	Mandhane N (2015)	India	17 years, (M)	Stomach	-	Exploratory laparotomy	Improved
8	Jibril H	Pakistan	37 years (M)	Duodenum	X-ray	Graham patch omentopexy	Improved
9	Pillai M(2019)	India	12 years,(F)	Stomach	X-ray	Graham's omentopexy	-
10	Ng CY(2019)	Malayasia	39 years,(M)	Stomach	CT scan	Primary repair	Improved
11	Haseeb A (Current case)	Pakistan	14 years,(M)	Ileum	X-ray	Ileostomy	Improved

Visceral perforation is often diagnosed by analyzing clinical indications of peritonitis as well as imaging investigations. While an abdominal ultrasound and an upright abdominal X-ray can identify free gas in the peritoneal cavity, a CT scan of the abdomen has a higher sensitivity for detecting even small levels of pneumoperitoneum. (9). An exploratory laparotomy is recommended in extreme cases of peritonitis accompanied by sepsis, or when other diagnostic options are ambiguous or unavailable. In our case, the perforation was discovered with an abdominal X-ray and confirmed during the surgical surgery. The relationship with dengue illness was established by ruling out other possible causes, as all other tests yielded negative findings and dengue serology was positive. Perforations can occur in a variety of places, including the stomach, duodenum, jejunum, ileum, and appendix, with ileal perforation being more common in children (7).

Conclusion

This case highlights the necessity of recognizing rare signs of Dengue Fever, particularly in endemic locations, as evidenced by the unexpected relationship to duodenal perforation. The patient's successful therapy through quick diagnosis and surgery demonstrates the significance of a multidisciplinary approach. This article contributes to the medical literature by describing a rare incidence that occurred outside of India. Clinicians should be on the lookout for atypical presentations, as early detection is critical for the best possible patient outcomes, underlining Dengue Fever's broad clinical spectrum.

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