

Dengue hemorrhagic fever as a rare cause of bleeding following percutaneous nephrolithotomy

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Received: 5 March 2011 / Accepted: 25 May 2011 / Published online: 10 June 2011
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Abstract Post percutaneous nephrolithotomy (PNL) bleeding is an uncommon yet serious complication and is almost always related to a surgical cause. Nevertheless, medical cause of bleeding is rarely encountered as a cause of this dangerous complication. Dengue has been rarely reported as a cause of post operative bleeding. Bleeding diathesis in dengue occurs not only due to thrombocytopenia but also due to dysfunctional surviving platelets and increased fibrinolysis. We report a patient who developed bleeding after an uneventful PNL due to dengue hemorrhagic fever. Medical causes of bleeding such as locally endemic viral hemorrhagic fevers should also be kept in mind and evaluated especially when a surgical cause of the bleed is not found or suspected in bleeding after any surgery.

Keywords Percutaneous nephrolithotomy · Bleeding · Dengue hemorrhagic fever · Thrombocytopenia

Introduction

Post percutaneous nephrolithotomy (PNL) bleeding is an uncommon yet serious complication and is almost always related to a surgical cause. Nevertheless, medical cause of bleeding is rarely encountered as a cause of this dangerous complication. Dengue hemorrhagic fever (DHF) as a cause of post PNL bleeding is not yet reported. We present a patient who developed catastrophic bleeding after an

otherwise uneventful PNL secondary to dengue fever-induced thrombocytopenia.

Case report

A 48-year-old male presented with right renal calculi lying in the middle and inferior calyces. He was a diabetic and hypertensive on regular treatment. His preoperative routine workup including complete hemogram, coagulation profile and biochemical profile were within normal limits. He underwent right PNL which was uneventful. Complete endoscopic and radiological clearance of calculi was achieved through a supracostal superior calyceal puncture. On post-operative day 1, he was hemodynamically stable, afebrile, and had clear urine output per nephrostomy. On the 2nd post-operative day, he developed fever, headache, body ache, diarrhea and recurrent vomiting. Gradually, he became drowsy, developed abdominal distension with absence of bowel sounds and started to bleed through nephrostomy tube. Initially, nephrostomy tube was not clamped in view of suspected urosepsis. His hemoglobin dropped from 11.8 to 7.1 g/dL. Investigations showed normal total leucocyte count and thrombocytopenia. His platelet counts reduced gradually from 103,000/mm³ on day 1 of fever to 37,000/mm³ on day 4 and remained low for 7 days. His coagulation parameters (including prothrombin time, activated partial thromboplastin time, fibrinogen and D-dimer), renal parameters and electrolytes were within normal range. Blood and urine cultures were sterile. CECT abdomen did not show any intra-abdominal focus of sepsis. His liver enzymes were elevated; aspartate transaminase was 343 U/L (normal: 0–45 U/L), alanine transaminase was 80.22 U/L (normal: 0–45 U/L). In the absence of a surgical cause, other medical conditions were

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sought for and in view of dengue endemicity in Northern India, IgM anti-dengue antibody for dengue was done which was positive. He received multiple platelet concentrate transfusions, broad spectrum antibiotics and other supportive treatments. Gradually, his fever settled and his platelet counts normalized on day 8 of illness with clearing of bleeding per nephrostomy. He was discharged on post-operative day 12 in a stable condition. At 1 month follow-up, he is doing well.

Discussion

Post PNL bleeding is a well-recognized complication of the procedure and is almost always related to a surgical cause. The incidence of major post-operative bleeding requiring angiography and embolization is around 0.8%. Most commonly, such bleeding results from arteriovenous malformation (60%) or pseudoaneurysm (40%) [1]. Renal venous laceration has also been rarely reported [2]. Rarely, the bleeding can be due to some medical cause. DHF as a cause of post-operative bleeding has been reported in only one patient so far [3]. This complication was reported in a post-renal transplant patient [3]. One case report of a pregnant patient with DHF who underwent an emergency cesarean section has been reported [4]. In an area where this disease is endemic, it can occur even in hospitalized patients and should be considered as one of the differential diagnoses when bleeding is associated with fever and thrombocytopenia. Dengue fever is endemic in India and has a year-round prevalence with peak in the post-monsoon period and occurs equally frequently in rural and urban areas. About 21% of all patients present with acute febrile illness without localizing signs and test positive for dengue antibody [5, 6].

Dengue, the most common arboviral illness transmitted worldwide, is caused by infection with one of the four serotypes of dengue virus, family Flaviviridae, genus Flavivirus (single-stranded nonsegmented RNA viruses). Dengue is transmitted by mosquitoes of the genus *Aedes*, which are widely distributed in subtropical and tropical areas of the world, and is classified as a major global health threat by the World Health Organization (WHO). Dengue can present as dengue fever, DHF or dengue shock syndrome. Leukopenia and thrombocytopenia are common findings in dengue fever and are believed to be caused by direct destructive actions of the virus on bone marrow precursor cells. Bleeding diathesis in dengue occurs not only due to thrombocytopenia but also due to dysfunctional surviving platelets and increased fibrinolysis [3]. Supportive care is the only known therapy effective in any form of dengue. When dengue occurs in the early post-operative period, it can be very dangerous because hemorrhage can ensue from the raw tissue surfaces. In our patient, the

bleeding through the nephrostomy tube led to significant drop in hemoglobin and necessitated platelet concentrate transfusion. There is also strong evidence to suggest an increased risk of DHF with secondary dengue virus infection. The presence of pre-existing anti-dengue antibodies increases viraemia titers by a phenomenon known as antibody-dependent enhancement of infection (ADE) [7, 8]. Having lived in an endemic area, our patient may have been infected previously but was asymptomatic or had subclinical infection.

The mean duration of illness described with dengue is 2–7 days and duration of thrombocytopenia is 3.6 ± 1.6 days [9]. The critical stage in DHF is usually around the time of defervescence when viraemia is detectable, occurring between 24 h before and after the temperature falls to normal. This is the time when circulatory collapse and hemorrhagic manifestations usually occur [10]. In our patient, the rise of fever and thrombocytopenia and bleeding started at about the same day. Although fever subsided after the first 2 days, thrombocytopenia persisted for 7 days after onset of fever. Raised serum liver transaminases especially aspartate aminotransferase more than three times normal is also usually present in these patients and was seen in our patient also [10]. Various predictors of bleeding in dengue fever have been reported, which include: age between 12 and 45 years, rash, vomiting, temperature $>38^{\circ}\text{C}$, leucocyte count $<4,500/\text{mm}^3$ and platelet count $<90,000/\text{mm}^3$ [11]. Out of these, our patient had at least four features. Our patient did not develop circulatory failure, which could have been due to the in-hospital setting with prompt detection and early resuscitation efforts. Drug-induced post-operative thrombocytopenia should also be considered especially when fever is absent [12]. Our patient was not on any drug which could potentially cause thrombocytopenia.

Surgical causes of post PNL bleeding are certainly more commonly reported in clinical practice and usually are entertained first in the differential diagnosis. But this patient highlights the fact that medical causes like dengue or other locally endemic viral hemorrhagic fevers should also be kept in mind and evaluated especially when a surgical cause of the bleeding is not identified or when there are features suggestive of a medical cause.

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