Viral Hemorrhagic Fever and Surgery

A Report of One Case

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ABSTRACT

Severe dengue infections in an emergency patient may lead to significant derangement in the body's homeostasis resulting in morbidity and sometimes even mortality. In 9th of September 2021, at Mosul General Hospital, Iraq, we describe here a 24-year-old male with atypical presentation and late detection of dengue haemorrhagic fever. On presentation he complained from abdominal pain and fever for four days duration. Examination at time of presentation there was a guarding abdomen, tender right lower quadrant, positive bowel sounds, rapid pulse and fever. His ultrasound and CT scan of the abdomen revealed free fluid in the abdominal cavity and no clear pneumoperitoneum. Therefore, a diagnosis of acute abdomen was made (suspesion of complicated appendix). Intensive care was given and was managed with intravenous antibiotics; targeted fluid therapy, supportive care and observation. Eight hours later, he complained from abdominal distention and respiratory distress. Re-assessment with chest x-ray and US revealed free fluid in the abdomen and right side pleural effusion. Laparotomy revealed hemoperitoneum with no active source of bleeding, appendectomy was done and a sample of collected blood was taken for investigation. PCR was positive for viral hemorrhagic fever and diagnosis was made. The patient not recovered from the general anesthesia. This case was unique because during the preoperative period, he went into critical phase with significant fluid leakage and developed bleeding manifestations without a clear febrile phase and deterioration in the haemodynamic parameters.

Keywords: Acute appendicitis, Acute abdomen, Hemorrhagic fever, Dengue.

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Hemorrhagic fever (HF) is the commonest vector borne viral infection worldwide. The World Health Organization (WHO) considers dengue to be the most rapidly spreading arthropod-borne viral infection of the globe. There would be around 50 million reported cases per year around the world disseminated over 100 countries, mainly in tropics. This has resulted in a significant health, economic and a social burden to the affected countries[1,2]. Worldwide there would be at least 24,000 deaths attributed to dengue annually[3]. Dengue fever (DF) has been endemic in most parts of Sri Lanka and there have been several outbreaks during the last decade. There were 29,777 reported cases of dengue in 2015 in Sri Lanka and the count has exceeded 31,500 during the first seven months of 2016, with western province accounting for more than 45% of cases[4].

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Clinical spectrum of dengue may range from undifferentiated self-limiting febrile illness to HF leading to hemorrhagic shock syndrome (HSS)[1-3]. Although abdominal pain or severe gastrointestinal involvement is a recognized feature during the critical phase of dengue hemorrhagic fever (DHF) from the 3rd to 7th day from the onset of fever[1,3,5], DF presenting as a surgical emergency with abdominal pain is rare. There are a limited number of case series and sporadic case reports of patients with DF/DHF presenting as acute abdomen to surgical emergency units, misleading the clinicians resulting in complicated outcomes[6-17]. Dengue hemorrhagic fever creates significant derangements to body's homeostasis with microvascular changes resulting in high morbidity and even mortality. In such background, misdiagnosing DHF as a surgical acute abdomen may potentially result in significant negative outcomes. Therefore,

early identification of patients with DF/DHF presenting as acute abdominal emergencies to the surgeons is of great importance to prevent unnecessary surgical interventions which may result in added morbidity, costs and even mortality.

——————————Case Report

In the 9th of September 2021, at Mosul General Hospital, Iraq, we were called to a patient in the medical ward complaining from fever, generalized malaise and abdominal pain. The pain was vague, mild in nature not associated with other symptoms. History was taken from the patient, he was working a butcher, no history of trauma, no history of blood disease, no history of drug taking nor allergy to any drug, no history of previous admission and no history of surgical intervention. On examination, generally the patient looked ill, oriented, pale with cold extremities, pulse rate 92 bpm, temp. 38.5 ^{o}C, blood pressure 80\50 mmHg. Chest examination revealed poor air entry in the right lower zone with crepitations. On abdominal examination there was guarding all over the abdomen with tender right lower quadrant, positive bowel sound sluggish in intensity, came two times\minute. Ultrasound examination (US) of the abdomen revealed free fluid in the peritoneal cavity, chest x-ray (CXR) showed no air under diaphragm and CT-scan revealed free fluid in the peritoneal cavity. Assessment in the medical ward, hematology parameters showed leukopenia, thrombocytopenia, and increased alanine transferase (ALT) and aspartate aminotransferase (AST). No clear diagnosis at time other than pyrexia of unknown origin was made. Intensive care was given and was managed with intravenous antibiotics, targeted fluid therapy, and supportive care with observation. Eight hours later, he developed abdominal distention and respiratory distress, on examination low blood pressure (70\40 mmHg), rapid pulse (110 bpm) and tender abdomen with negative bowel sounds. Reassessment with CXR and US of abdomen revealed right lower zone pleural effusion and free fluid in the peritoneal cavity, tapping the right side of the chest and abdomen revealed blood. A decision was made to explore the patient. A right-sided intercostal tube was inserted and the patient was prepared for exploratory laparotomy. Exploration finding was hemoperitoneum, punctuate hemorrhage scattered in the mesentery of small bowel and subserosal bleeding in multiple area of small bowel with small trivial perforation in the terminal ileum. No active source of bleeding detected, appendectomy and a sample of collected blood was taken for investigation. PCR was positive for viral hemorrhagic fever and diagnosis was made. The patient remained on the endotracheal tube post operation, during this period no improvement in the vital signs was detected and the patient, unfortunately, died next day.

Figure 1: (A): Punctate hemorrhage in the mesentery. (B): Retroperitoneal hemorrhage. (C): Trivial perforation and subserosal hemorrhage in the terminal ileum.

Discussion

Although development of abdominal pain are known features in DHF. There are limited number of case series and isolated case reports proving this clinical entity[6-17]. Out of them, some patients have been subjected to invasive surgical procedures leading to added morbidity and prolonged hospital stay[6-8,16,17]. DHF creates significant derangements to body's homeostasis, thus mis-diagnosing dengue as a surgical acute abdomen may result in negative outcomes in several ways. Firstly, the time window of the early critical phase of DHF which can be used for targeted fluid management would be missed and secondly, the use of drugs for a perceived acute abdomen may aggravate bleeding manifestations of DHF. Thirdly, subjecting a patient to a surgical intervention for a suspected acute abdomen during the critical phase of DHF may potentially lead to disastrous outcomes. Therefore, early identification of such patients is important in order to avoid negative end results. All such patients belonging to the latter category are at risk of being considered as pure surgical candidates. The current case highlights the fact that misinterpretation of the acute abdominal signs and symptoms of DF/DHF may happen at different levels of medical triage. Presence of a previous surgical disease like gallstones or pancreatitis would have easily deceived the clinicians by making them biased at decision making. A neutropenia, thrombocytopenia would be generally expected in DF/DHF, but these changes may not be apparent in all early samples. Initial hematological findings may be equivocal worsening the diagnostic dilemma. Greatest risk associated with the misdiagnosis of DF/DHF as an acute abdomen is subjecting of them to surgical intervention. Consideration for surgery would not just be 'wrong treatment' but would open up a pathway for complications due to multiple organ system instability and coagulopathy seen in DHF patients. Khor et al reported one patient and Shamim et al reported five cases underwent appendicectomy in their respective series, later necessitating blood product transfusion[6,8]. Premaratna et al reported a series of twelve patients with DHF presenting as acute appendicitis and one patient in his series underwent appendicectomy with a prolonged hospital stay[7]. To complicate the matters further, the patient who underwent appendicectomy in the this series had histological evidence of acute appendicitis with trans-mural neutrophil infiltration in the background of DHF[7]. Senanayake and Samarasinghe have recently described a case of appendicitis with mass formation in the background of serologically proven dengue infection[18]. Such presentations could easily mislead the clinicians. Exact mechanism of acute abdomen and peritonism seen in DHF is unclear. Current case highlights the dilemma created by equivocal clinical picture of DHF when it presents as an acute abdomen. Despite being aware that abdomen related clinical features may occur in a reasonable percentage of patients with DHF, clinicians of various levels including primary care practitioners, physicians and surgeons were misled by the cases of DF/DHF that presented as acute abdomens. That led to potentially avoidable surgeries, blood product transfusions and prolonged hospital stays which could have been avoided. Therefore, it is important that all medical practitioners in dengue endemic areas to be vigilant on this matter and understand the ambiguous nature of DHF leading to peritonism. Especially the surgeons, they have to be cautious on managing acute abdomens with fever in dengue affected areas as subjecting such a case for surgery can lead to disastrous outcomes, HF once diagnosed no role of surgery in the treatment. All cases must be treated in high technology hospitals. These hospitals must be equipped with adequate means for healthcare provider's protection. All members of the healthcare team should practice thorough simulation prior to caring for a possible HF patient. The surgical protocol should be based on international

guidelines of the use of personal protective equipment, protocols of other scientific societies, and specific recommendations for the operating room environment.

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