

Dengue fever and Scrub typhus co-infection deteriorating Severe Acute Cholangitis: A rare case report

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Abstract

Co-infection of acute cholangitis with dengue fever and scrub typhus is rare and life threatening. We present a case of 74-years-female known case of chronic obstructive pulmonary disease (COPD) who had epigastric pain, fever and vomiting for 3 days. She was found to have shock with altered sensorium and icterus. She tested positive for scrub typhus and dengue fever. She was managed conservatively as biliary drainage were not done due to thrombocytopenia and patient party denial. Early diagnosis and treatment are of paramount value in severe acute cholangitis along with dengue fever and scrub typhus.

Keywords : Acute cholangitis, dengue, scrub typhus

Introduction

Acute cholangitis, also known as ascending cholangitis, is a life-threatening systemic condition that results from a biliary tree infection and obstruction.¹ Severe acute cholangitis was reported to have a mortality rate between 11 and 27% in the 1990s.¹ Acute cholangitis is usually associated with translocation of gastrointestinal flora but co infection with other organisms is rare like scrub typhus and dengue fever. Scrub typhus is a rickettsial disease caused by *Orientia tsutsugamushi*, it is sometimes accompanied by severe systemic complications. Acute cholangitis has been previously reported as a complication just in a single case report but not as co infection. Although the exact mechanism of the development of acute cholangitis and its association is unknown, systemic vasculitis or perivasculitis caused by *Orientia tsutsugamushi* has been suggested.² Likewise, Dengue fever (DF) is a viral infection transmitted by vector *Aedes aegypti* mosquito with primary clinical features such as high fever and intravascular fluid and albumin leakage, which provokes pleural effusion, hypoproteinemia, and blood hemoconcentration. However, the incidence of abdominal pain as a clinical manifestation of DF is rare.³

Herein we report a rare and potentially fatal case of 74 years female of acute severe cholangitis with cholelithiasis and choledocholithiasis with dengue fever and scrub typhus co-infection.

This case report has been reported in line with the SCARE 2020 criteria.⁴

Case presentation

74-years-female, known case of chronic obstructive pulmonary disease (COPD) and referred case to our centre had complains of pain abdomen and fever for last 3 days. The pain was acute on onset, localized in epigastric

region, burning in type, radiating to back, continuous in nature with no known aggravating and relieving factors. Pain was associated with nausea and one episode of vomiting which was non-bilious and non-blood stained. She also gives history of fever without documentation of maximum recorded temperature. She was passing stool and flatus. There was no history of loss of consciousness, any trauma, and weight loss. On her past medical history, she was diagnosed with COPD. She hasn't gone any surgical intervention in the past. Her family history and allergic history were non-significant. She is non-smoker, doesn't consume alcohol and has normal bowel habits. On clinical examination and assessment, the patient looks critically ill with icterus, dehydration, irrelevant talk with tenderness and guarding at epigastric region.

On examination her vital parameter showed low blood pressure (70/40 mmHg) and increase in pulse rate (146 beats/min) with low blood glucose level of 40 mg/dl. Laboratory analysis showed leucocytosis of 66,500 cells/cumm, thrombocytopenia with 26,000 cells/cumm, elevated urea and creatinine: 91/2.1 mg/dl and total bilirubin/direct bilirubin : 4.7/2.7 mg/dl. Arterial blood gas analysis interprets metabolic acidosis. Patient was tested positive for dengue infection and IgM Positive for Scrub typhus. Serology was non-reactive for HIV, Hepatitis B and C .

Ultrasonography of abdomen and pelvis was ordered which showed mild intrahepatic biliary radicals dilatation with multiple cholelithiasis; largest measuring 5.4 mm, and common bile duct is dilated- 14.2mm with multiple calculi largest measuring 6.4mm.

Immediately 50 ml 25% dextrose was given as patient was in hypoglycemia. Her blood pressure was also in lower side with tachycardia thus fluid resuscitation with 2 pint Normal saline fast was given. Antibiotics tazobactam and piperacillin was also administrated in emergency ward of our centre.

With prior information to anaesthesia team for further management and future need of centre line insertion, patient was immediately shifted to surgical intensive care unit (SICU). Patient was kept in close monitoring with nil per oral (NPO) with intravenous fluids. Do not resuscitate (DNR) consent was given by the patient party at the day of admission. Injection meropenem along with doxycycline was started at the same day. Inotropic support with injection nor adrenaline was started to maintain mean arterial pressure >65mmHg and urine output > 0.5 ml/kg/hour. Four-pint platelet rich plasma (PRP) was transfused for low platelets count after which counts elevated from 25000 to 40000 cells/cumm. With a thought of need of multidisciplinary team approach and care for regaining optimal health of patient gastro medicine and physiotherapy consultation was done. Central venous line was secured by modified seldingers technique on first day of admission after transfusion of platelets.

Daily chest physiotherapy and incentive spirometry was advised. Injection antibiotic vancomycin and hydrocortisone was added. Daily renal function test (RFT) was done and gradually acute kidney injury resolved. There was a issue of hypokalemia in between which was corrected by potassium supplementation. During stay in SICU neuropsychiatry consultation was done for irrelevant talk and disorientation which was managed with tab quetiapine.

Patient was allowed to have liquid diet from evening of second day of admission. Daily complete blood count (CBC) shows decrease in total count from 65000 cells/cumm to 26000 cells/cumm at day third of admission in SICU. With the gradual clinical improvement in patient health status she was step down to high care unit from surgical ICU where she was continued with iv antibiotics but after adjustment and continued chest and limb physiotherapy with daily vitals monitoring. Daily laboratory reports showed gradual improvement in total counts and other blood parameters as well as clinically better thus was planned to discharge on oral antibiotics.

Patient was asymptomatic and hemodynamically stable with normal laboratory parameters at the time of discharge. Patient was advised for follow up after 2 weeks for ERCP, however patient was lost to follow up.

Discussion

Acute cholangitis occurs when biliary stenosis results in cholestasis and biliary infection.⁵ Biliary obstruction leads to break down of defensive mechanisms of biliary tree. Intraductal pressure increases due to bile stasis

which causes widening of tight junctions, malfunction of Kupffer cells, decrease in local production of IgA, cholangiovenous reflux allowing pathogens to access intrahepatic canaliculi in addition to hepatic veins and lymphatics. This leads to bacteraemia, endotoxemia and ultimately a systemic inflammatory response.¹

Potential causes of biliary obstruction include choledocholithiasis, pancreatic cancer, metastatic tumour, primary sclerosing cholangitis, mirizzi syndrome, roundworm or tapeworm infestation of the bile duct, stricture of bilioenteric anastomosis, biliary stent obstruction, amyloidosis, AIDS cholangiopathy and post-ERCP-associated acute cholangitis. The most common cause of acute cholangitis is choledocholithiasis accounting 50% of the cases and second common cause being malignant obstruction accounting for 10% to 30% of cases.⁶

According to the TG18/TG13 diagnostic criteria, a diagnosis of AC can be made if the patient presents with the three pathologies of systemic inflammation (must be present), cholestasis, and bile duct lesions (from imaging findings).⁵

This was a rare case of severe acute cholangitis with co-infection of scrub typhus and dengue fever. Dengue infections may present as true or apparent surgical acute abdomen, sometimes misleading the surgeons.^{7,8} True acute abdomen may develop as a complication of dengue fever like ruptured splenic hematomas, upper and lower gastrointestinal bleeding, and abdominal wall hematomas due to coagulopathy. Furthermore, dengue infections may occur with simultaneous surgical disease as dual pathology either pathophysiologically unrelated to dengue (like perforation of a hollow viscus) or pathophysiologically related to it (like acute acalculus cholecystitis related to dengue).⁸ Likewise, our case presented as acute abdomen who was found to have choledocholithiasis induced acute cholangitis which is pathophysiologically unrelated to dengue infection. Our patient had thrombocytopenia with platelet count of 26000 /cumm, renal dysfunction with creatinine 2.1mg/dl, hypotension requiring nor-epinephrine, and disturbance of consciousness categorizing the case into severe acute cholangitis according to TG18/TG13 severity assessment criteria.⁵ Charcot's triad and Reynold's pentad of acute cholangitis were both present in our case which are specific tool but not sensitive.⁶ Severity of acute cholangitis in our case was contributed by both dengue and scrub typhus infection. Only two cases of dengue and scrub typhus coinfection has been reported from Nepal till date.^{9,10}

Abdominal ultrasonography is first-line diagnostic study because of its affordability, availability, and high specificity for detection of bile duct dilation and bile duct stones but its sensitivity is insufficient. Ultrasound findings suggestive of bile duct stones include direct visualization of a stone or filling defect, biliary tract dilation, or a dilated common bile duct greater than 8 mm.^{5,6} Our case had all the above findings.

Urgent biliary tract drainage in patients with severe acute cholangitis; however, it was not done in our patient because she was hemodynamically unstable and was on DNR status. So, she was planned for ERCP once the acute illness resolved.¹¹

Acute cholangitis can present with co-infection of dengue fever and scrub typhus leading to rapid deterioration of the hemodynamic condition especially in patients from endemic regions. Early diagnosis and treatment are of paramount value in severe acute cholangitis along with dengue fever and scrub typhus.

Author Contributions

Sabin Karki and Sunil Basukala led data collection, contributed in writing the case information and discussion. Sabin Banmala and Melina Shrestha contributed to the process of original draft preparation and introduction. Suman Maharjan and Rajesh Poudel contributed to conceptualization, methodology and discussion.

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CONFLICT OF INTEREST

The authors report no conflicts of interest.

ETHICAL APPROVAL

This is a case report; therefore, it did not require ethical approval from ethics committee.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying im-ages. A copy of the written consent is available for review by the editor- in- chief of this journal on request.

REGISTRATION OF RESEARCH STUDIES

Not applicable.

None

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