

Research Article

## Incidence and management of acalculus cholecystitis in dengue fever - A retrospective study

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### Abstract

**Objectives:** To investigate the frequency, clinical features, prognosis, clinical response of acute acalculous cholecystitis in dengue fevers.

**Materials and Methods:** A study period from Jan 2010 to Dec 2012 in RLJH hospital, where patients diagnosed with dengue fever (DF), both clinically and with lab reports validating diagnosis with IgM antibody and IgG antibody positive for dengue antigen were included in the study. The incidence of acute acalculus cholecystitis among these patients was studied, acalculus cholecystitis diagnosed with clinical presentation and supported by USG abdomen. Fever, right upper quadrant (RUQ) pain and tenderness, positive murphy's sign being the clinical findings and thickened gallbladder wall (defined as wall thickness > 3.5 mm), positive sonographic Murphy's sign (defined as maximum tenderness of the sonographically localized gallbladder), pericholecystic fluid collection, and no stone(s) in the gallbladder being the USG findings. The patients satisfying the criteria were serially monitored for vitals – pulse rate and blood pressure with regular monitoring for development of any complication done. Treatment given with antibiotics, intravenous fluids, analgesics.

**Results:** Total no of patients with confirmed dengue fever by antibody testing - 955. Among these, number of patients who developed the complication of acute acalculus cholecystitis were 68. The incidence observed was 7.12%. Mean period of stay for patients developing this complication at hospital was 7.1 days as against 3.4 days who had no complication. All of these patients recovered fully with conservative line of management with none requiring any surgical intervention.

**Conclusion:** Acute acalculus cholecystitis is one of the common complications developing in patients with dengue fever. Conservative line of management with antibiotics, intravenous fluids, analgesics, regular monitoring is sufficient in managing this complication with no need for aggressive surgical intervention.

**Keywords:** Acute acalculus cholecystitis; Dengue fever; Positive sonographic Murphy's sign

### 1. Introduction

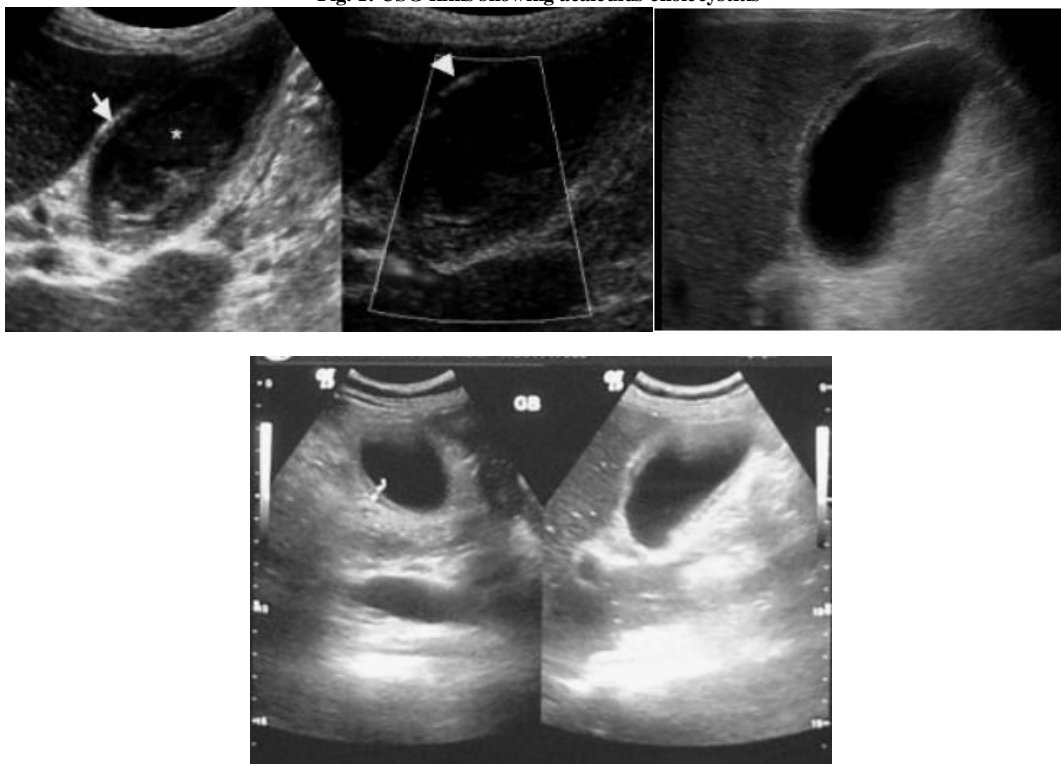
Dengue Fever (DF) is a tropical disease caused by single stranded RNA flavivirus that is transmitted by the bite of female *Aedes aegypti* mosquito<sup>1</sup>. Dengue fever is usually non-specific and self-limiting, biphasic febrile illness but the presentation may range from being asymptomatic to dengue fever, dengue hemorrhagic fever and dengue shock syndrome<sup>2</sup>. Typical dengue fever is characterized by high-grade fever, musculoskeletal pain, retrobulbar headaches, joint pain, nausea, vomiting and morbilliform rash<sup>2</sup>. Headache and abdominal pain are common manifestations<sup>2,4</sup>.

Dengue fever is one of the commonest arbo-viral diseases around this part of the world with sudden surge in the number of cases observed between the years 2010-12. In most of the cases it is asymptomatic, or presents with features common to any viral infection. Only some time though it presents with unusual presentations where it may be interpreted as a surgical emergency. Acute acalculus cholecystitis is one such atypical presentation<sup>5</sup>, where patient presents with features typical of cholecystitis like right upper quadrant pain, with tenderness over RUQ, murphy's sign positive. On investigating: USG shows increased wall thickness, pericholecystic collections etc. Acute cholecystitis is usually treated by cholecystectomy, in this setting of cholecystitis with dengue is it wise to go ahead with routine procedure of surgery?, especially keeping in mind thrombocytopenia, hemorrhage, shock associated with dengue fever which may complicate the situation further<sup>6</sup>.

### 2. Patients and Methods

This is a retrospective study done from period Jan 2010 to Dec 2012. Patients diagnosed with dengue fever (DF) on clinical assessment, blood samples were collected and tested for antibodies against dengue antigen for confirmation. Either IgM antibody or serial testing with 4-fold increase in IgG antibody levels were taken as criteria for confirmation for dengue fever. These patients were serially monitored for vitals – pulse rate and blood pressure and development of any other symptoms. The patients, who developed abdominal pain over RUQ with tenderness and positive Murphy's sign, were subjected to USG abdomen. If sonological evidence of acalculus cholecystitis - thickened gallbladder wall (defined as wall thickness > 3.5 mm), a positive sonographic murphy's sign (defined as maximum tenderness of the sonographically localized gallbladder), pericholecystic fluid collection, and no stone(s) in the gallbladder were also noted, and then diagnosis of acute acalculous cholecystitis was made. Treatment given with antibiotics, intravenous fluids, analgesics, with regular monitoring for development of any complication was done. The patients were followed till they recovered completely and discharged. Duration of admission was noted in all patients with DF.

Fig. 1: USG films showing acalculus cholecystitis



### 3. Results

Total numbers of patients with confirmed dengue fever by antibody testing were 955. Number of patients with the complication of acute acalculus cholecystitis on clinical grounds and confirmed USG abdomen reports were 68. The incidence observed was 7.12%. Mean period of stay for patients developing this complication at hospital was 7.1 days as against 3.4 days who developed no complication. All of the patients recovered fully with conservative line of management with none requiring any surgical intervention. The study thus validates the conservative line of management for patients with acute acalculus cholecystitis in DF, instead of going ahead with cholecystectomy, which can be challenging in the given setting with possible thrombocytopenia, hemorrhage, shock seen with dengue fever.

Year	No. Dengue fever positive	Mean duration of stay at hospital	No. of acute acalculus cholecystitis	Incidence	Mean duration of stay at hospital
2010	354	3.6 days	25	7.06%	6.9 days
2011	278	3.2 days	20	7.19%	7.1 days
2012	323	3.4 days	23	7.12%	7.3 days
TOTAL	955	3.4 days	68	7.12%	7.1 days

### 4. Discussion

Dengue fever is a common arbo-viral disease, presenting as febrile illness with constitutional symptoms. More serious form of presentation being – dengue hemorrhagic fever and dengue shock syndrome. Sometimes though the disease presents in an unusual mode of presentation – fulminant hepatitis, encephalopathy, cardiomyopathy, acute pancreatitis, acute acalculus cholecystitis.

Our study focused on one of such unusual presentation of DF – acute acalculus cholecystitis - the frequency, clinical features, prognosis, clinical response of acute acalculus cholecystitis in dengue fever. DF presenting with pain abdomen being the one which strongly raises the possibility of acute acalculus cholecystitis. On examination fever, right upper quadrant pain and tenderness, positive murphy's sign, on further evaluation with USG findings noted - positive sonographic murphy's sign (defined as maximum tenderness of the sonographically localized gallbladder), pericholecystic fluid collection, and no stone(s) in the gallbladder, these findings help diagnose the condition. Confirmation of the diagnosis done by identification of IgM antibody against dengue antigen or by demonstrating four-fold increase in serial IgG antibody testing. In our study 7.12 percent of patients developed this complication.

The pathogenesis of acute acalculus cholecystitis proposed: cholestasis and increased bile viscosity from prolonged fasting, spasms of the ampulla of Vater, infection, endotoxemia, microangiopathy, and ischemia-reperfusion injury. The pathophysiologic change in DF being - increased vascular permeability, causing plasma leakage and polyserositis.

Cholecystitis typically presents with fever, RUQ pain and tenderness, positive murphy's sign. On USG positive sonographic murphy's sign, pericholecystic fluid collection, thickened gall bladder wall. If these findings are reached, it warrants cholecystectomy. But when same features along with dengue positive are present, the course usually resolves by itself, not requiring any surgical intervention. Conservative management is sufficient to manage this condition. If without proper diagnosis surgery is undertaken then chances of it landing in complication is pretty high as DF can be associated with thrombocytopenia, shock, hemorrhage, which can complicate the clinical situation.

In our series all the patients were managed conservatively and all of them responded well without any complication. Thus we want to deduce that management of acute acalculus cholecystitis in dengue fever patients is to be along conservative line.

### 5. Conclusion

Acute acalculus cholecystitis is one of the most common atypical presentations in patients with dengue fever being seen in about 7.12 percent of patients. Conservative line of management with antibiotics, intravenous fluids, analgesics, regular monitoring is sufficient in managing this complication with no need for surgical intervention<sup>6</sup>.

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