**ORIGINAL ARTICLE**

# Acute Abdominal Pain in Dengue Fever

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## ABSTRACT

**Objective:** To find out the various causes of acute abdomen in patients suffering from acute dengue illness and its correlation to the disease severity.

**Material and method:** In this study, confirmed dengue patients with severe acute abdominal pain admitted to Mayo Hospital and Services Hospital, Lahore, were included for analysis. The severity of DF was categorized in accordance with the World Health Organization definition. Informed consent was taken from all patients. In each patient, details such as symptoms, signs were recorded. Investigations including full blood counts, aspartate aminotransferase (AST), alanine aminotransferase (ALT), serum amylase, serum lipase, prothrombin time (PT), blood urea, serum creatinine level, blood culture, ascitic fluid analysis and culture, ECG, chest radiograph and ultrasound and CT scan of the abdomen were done to help establish diagnosis.

**Results:** Out of 350 patients admitted in the wards as dengue fever, 112(32%) suffered from acute abdominal pain. Patients presented in ages from 17 to 69 years (mean 30.5) 98 (86.7%) were males and 14(12.4%) were females. About 66(58.4%) presented with DF, 39 (34.5%) with DHF and 7(6.2%) with DSS. Commonest presentation was due to hepatic involvement in 64(57.1%). Other causes for acute abdominal pain in the study group were acalculous cholecystitis(10.7%), peptic ulcer disease(9.8%), ascites(5.4%), pancreatitis (5.4%), appendicitis (5.4%) and calculous cholecystitis (3.6%), no cause could be found in 2.7%.

**Conclusion:** A significant proportion of patients suffering from dengue infection suffer from acute abdominal pain. Hence it is important to look for the cause for abdominal pain in dengue infection so that it can be appropriately and timely managed prior to onset of complications.

**Keywords:** Dengue infection, acute abdominal pain

## INTRODUCTION

Dengue viral infections are one of the most important mosquito borne diseases in the world. They may be asymptomatic or may give rise to undifferentiated fever, dengue fever (DF), dengue haemorrhagic fever (DHF), or dengue shock syndrome (DSS). Early recognition and prompt initiation of appropriate treatment are vital if disease related morbidity and mortality are to be limited[1]. Dengue is widely distributed in many countries in southeast and southern Asia, Central and South America, and the Western Pacific regions[2].

The common symptoms in dengue infection are fever, malaise, headache, musculoskeletal pain, nausea and vomiting. Nonetheless, a significant number of patients develop one or more complications that include bleeding, effusions, acute hepatic failure, seizures, acute myocarditis, dengue encephalitis, acute renal failure, dengue shock syndrome (DSS)[3-7].

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The abdominal pain in dengue infection can be either specific or non-specific. Of the specific cases, surgical emergencies like acute pancreatitis[8], acute acalculous cholecystitis[9] and gastrointestinal bleeding[10] are found in literature. In addition, there are reports of dengue enteritis mimicking appendicitis[11-12]. However, in many cases of severe abdominal pain, no cause can be found[13].

Pakistan has faced a severe epidemic of dengue infection with the highest mortality and morbidity in 2011. In this epidemic, among other clinical manifestations, a variety of gastrointestinal symptoms and signs, including acute abdomen, were observed. Acute abdomen in these patients made the clinical diagnosis and management challenging for the physician. This study was carried out to find out the various causes of acute abdomen in patients suffering from acute dengue illness and its correlation to the disease severity.

## MATERIAL AND METHODS

In this study, out of 350 patients with the definitive diagnosis of DF admitted to Mayo Hospital and Services Hospital, Lahore, those with severe acute abdominal pain were included for analysis. The diagnosis of DF was made based on supportive

clinical findings and a positive enzyme-linked immunosorbent assay (ELISA) result for specific dengue IgM in acute-phase serum. The assay for dengue IgM was performed using IgG/IgM capture ELISA kits. If only dengue virus-specific IgM antibodies were detectable in the test sample, the patient was considered to have primary infection, whereas the presence of both IgM and IgG was considered as secondary dengue infection. The severity of DF was categorized in accordance with the World Health Organization definitions; grade III DHF and grade IV DHF were grouped as dengue shock syndrome (DSS)[1].

Table 1: Various causes of abdominal pain presenting in different stages of dengue infection

| Diagnosis | Stage of Dengue Infection | | | %age |
|---|---|---|---|---|
| | DF | DHF | DSS | |
| Hepatitis | 57 | 7 | 0 | 57.1 |
| Calculous cholecyctitis | 0 | 4 | 0 | 3.6 |
| AAC | 0 | 10 | 2 | 10.7 |
| peptic ulcer disease | 5 | 4 | 2 | 9.8 |
| Ascites | 0 | 6 | 0 | 5.4 |
| Pancreatitis | 0 | 3 | 3 | 5.4 |
| Appendicitis | 4 | 2 | 0 | 5.4 |
| Nonspecific | 0 | 3 | 0 | 2.7 |

Informed consent was taken from all patients. In each patient, details such as symptoms, signs were recorded. Investigations such as full blood counts, aspartate aminotransferase (AST), alanine aminotransferase (ALT), serum amylase, serum lipase, prothrombin time (PT), blood urea, serum creatinine level, blood culture, ascitic fluid analysis and culture, ECG, chest radiograph and ultrasound scan (USG)of the abdomen were done to detect complications. Abdominal computed tomography (CT) scan was performed where indicated. The data was analysed using SPSS version19 for Windows by applying descriptive statistics and cross tabulation. Frequency and percentages were calculated. Mean and standard deviation were estimated. A two-tailed $P<0.05$ was considered statistically significant.

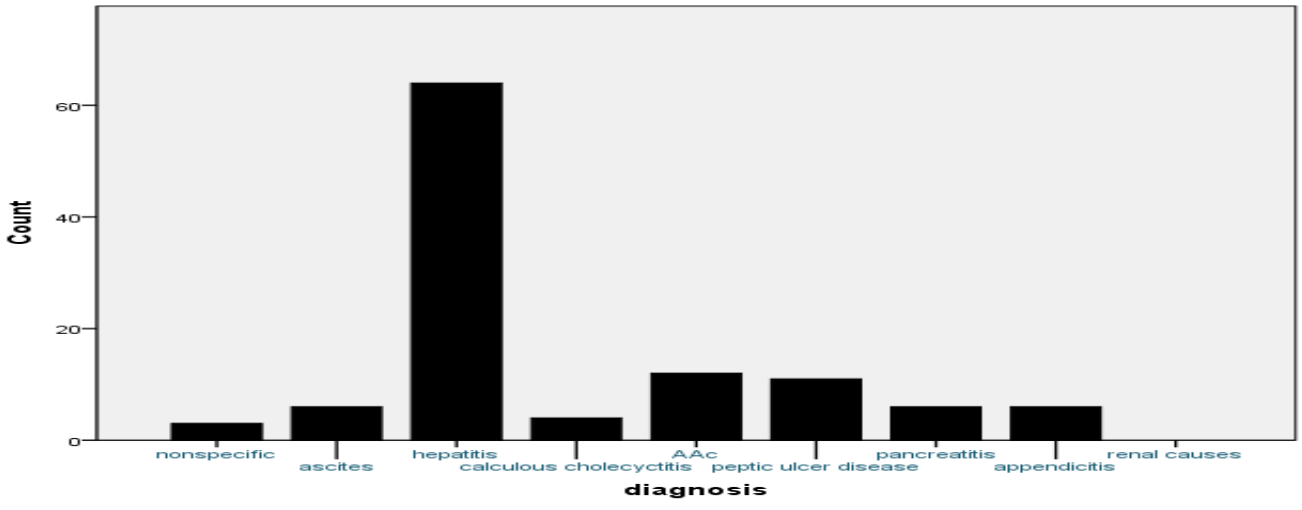
Table 2 Laboratory findings in dengue patients with acute abdominal pain

| Laboratory Test | Finding | =n |
|---|---|---|
| Platelet | >100000 | 0 |
| | 20-100000 | 61 |
| | <20000 | 51 |
| Hct | Low | 19 |
| | Normal | 67 |
| | High | 26 |
| TLC | Leucopenia | 79 |
| | Leucocytosis | 22 |
| | Normal | 11 |
| ALT | Normal | 8 |
| | 1-3 times | 14 |
| | 3-5 times | 9 |
| | >5 | 81 |
| AST | Normal | 2 |
| | 1-3 times | 10 |
| | 3-5 times | 8 |
| | >5 times | 92 |
| PT | Prolonged | 71 |
| S. Amylase | Raised | 6 |

Table 3: Radiological findings in dengue patients with acute abdominal pain

| Procedure | Finding | =n |
|---|---|---|
| USG | Ascites | 43 |
| | AAC | 19 |
| | Gallstones | 4 |
| Chest X-ray/ Chest USG | Pleural effusion | 36 |
| CT abdomen | Pancreatitis | 6 |

Chart 1: Final diagnosis in the study group



were females. About 66(58.4%) presented with DF, 39(34.5%) with DHF and 7(6.2%) with DSS (Table 1). Laboratory findings have been summarized in Table 2. Results of imaging studies including chest radiographs, abdominal ultrasonography and abdominal CT scan were as tabulated in Table 3. Commonest presentation was attributed to hepatic involvement i.e., in 64(57.1%) See chart 1

## DISCUSSION

Abdominal pain has commonly been reported as the presenting feature of acute dengue illness[13-15].The commonest cause of abdominal pain in our study group was due to hepatic involvement. Although dengue virus is nonhepatotropic, liver injury is quite common, ranging from mild dysfunction with elevation of liver enzymes alone to severe injury with jaundice and even fulminant hepatic failure in extreme cases. We observed in our study that derangement in AST was more pronounced than ALT, which is similar to observations made by other workers[16]. Hepatomegaly was observed in all patients of DHF and DSS. Amongst the three subgroups of dengue infection, we found that though the frequency and severity of liver dysfunction was maximum in DSS, it was also observed significantly in DF and DHF i.e., all DSS patients (100%) had AST >5 times while 92.4% of DF and 61.5% of DHF showed similar results. Similar observations have been reported from other studies[16-17].

AAC is another complication of dengue infection. The exact pathogenesis of AAC is obscure but proposed mechanisms include virus invasion of gallbladder wall, increased vascular permeability causing plasma leakage and serous effusion with high protein content into the gallbladder[14,18]. We diagnosed AAC in 12(10.7%) patients. This observation is similar those made by Keng-Liana Wu et al and Khanna et al who found 7.6% and 16.36% suffering from AAC in their study groups[18,19]. Also, 4(3.6%) were diagnosed with gallstones and calculous cholecystitis in our study.

Peptic ulcer disease resulted in severe abdominal pain in 11 of our patients 5(7.6%) in DF, 4 (10.3%) in DHF and 2(28.6%) in DSS. Out of these, 7 had gastric erosions and 4 had ulcers on upper GI endoscopy. No other cause of abdominal pain could be detected in these patients. Similar prevalence of acid peptic disease has been earlier reported in other studies[10].

Pancreatitis is a known complication of dengue infection[8,20]. In our study, we found pancreatitis as the reason for abdominal pain in 6 patients (7.7% out of DHF and 42.9% of total DSS patients), indicated by raised serum amylase and supportive ultrasonographic and abdominal CT findings. None of these patients were alcoholics or had gallstones.

Acute appendicitis was diagnosed in 6 patients, 4 were DF (6.1) and 2 in DHF (5.1%) Though occurrence of occasional cases has previously been observed, high prevalence of such cases has not previously been observed in dengue patients[11,12]. Thus, the diagnosis being present in 6 of our patients cannot be considered totally incidental.

In about 3(2.7%) patients, no specific cause could be identified. Similar observations have been previously reported[13].

## CONCLUSION

Many patients present with acute severe abdominal pain in dengue infection. Hence, it is important to look for the cause for the abdominal pain so that it can be appropriately and timely managed prior to onset of complications.

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