

Junction. Another important use of this device can be in the management of uncontrolled fundal variceal bleeds as emergency salvage till TIPS or surgery. Linton's tube ideally indicated in such cases is again limited by its availability. As condom on further inflation balloons up and can store more than 2 liters of fluid. This property can be utilised to tamponade Fundal varices and varices of rest of the stomach.

The method requires standardisation and validation in larger groups but has promise particularly in a resource poor place with limited availability of advanced medical care. Our experience, though small offered salvage to a patient who might have succumbed while being referred or waiting for surgery.

## Conclusion

Status of patient at presentation is an important determinant of outcome. Ryle's tube and condoms are widely available, cheap and requires little training for placement. It's use can reduce significant morbidity and mortality especially in resource poor places.

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# Acute Pancreatitis due to Dengue: Report of an Uncommon Complication and Literature Review

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Dengue is a mosquito-borne viral infection which is endemic in tropical and subtropical countries. Reports of dengue fever (DF) and dengue hemorrhagic fever (DHF) presenting with atypical manifestations due to hepatic, renal, cardiac or nervous system involvement (expanded dengue syndrome) are available in literature.<sup>1,2</sup> Acute pancreatitis is a very infrequently reported complication of DF and the published literature is in the form of case report or small case series.<sup>3-20</sup> We report a case of acute pancreatitis complicating dengue fever and review the published literature on acute pancreatitis related to dengue and its course and outcomes.

## Case Report

A 32 years old male patient presented with sudden onset severe epigastric pain with radiation to back lasting for six days. Pain abdomen was associated with 2-3 episodes of vomiting at the onset. Subsequently he developed abdominal distension and decreased bowel movements. Four days prior to the onset of pain abdomen patient had developed high grade fever with rigor which was associated with malaise, bodyache and headache. Patient denied any co-morbidities or any history of trauma. Patient was treated conservatively by a local physician

with intravenous fluids, antipyretics (paracetamol) and fever subsided within 4 days. During the work up for fever dengue serology and serum NS1 antigen were found to be positive and work up for other causes of febrile illness including viral hepatitis (IgM Anti HAV, IgM Anti-HEV, HBsAg, IgMantiHbc, and Anti-HCV), malaria (peripheral smear and parasite lactate dehydrogenase antigen test), enteric fever (blood culture and Widal test), and scrub typhus (PCR for scrub typhus) were non-contributory.

On physical examination at emergency patient had mild tenderness in epigastrium and left hypochondrium with abdominal distension. His bowel sounds were sluggish; sensorium and vitals were within normal limits and was afebrile. He had enlarged palpable liver on abdominal examination. In view of elevated serum amylase (1184 IU/L: Normal <100 U/L) along with abdominal pain a diagnosis of acute pancreatitis was made. On investigations patient was found to have thrombocytopenia (platelet-90000/mm<sup>3</sup>) whereas the rest of his hematological parameters were normal. Patient had normal renal function tests (urea 27 mg/dL, serum creatinine 0.8 mg/dL) whereas he had mild hypertransaminemia (AST 61U/L, ALT 48U/L) and low albumin (2.8 gm/dL). Ultrasound (USG) abdomen revealed bulky pancreas with moderate ascites, normal gall bladder without calculi or sludge. Rest of the etiological work up including lipid profile, serum calcium, USG neck to rule out parathyroid adenoma, IgA anti tissue transglutaminase levels were unremarkable. Patient's ascitic fluid was tapped which was suggestive of low serum ascites albumin gradient (0.2 gm/dL) with elevated fluid amylase at 1139 IU/L. His initial contrast enhanced computed tomography (CECT) revealed heterogeneously enhancing pancreas with peri-pancreatic fat stranding with a peripherally enhancing loculated collection in the lesser sac suggestive of acute pancreatitis (**Figure 1**). Patient was managed conservatively within intravenous fluids, analgesics and was allowed oral feeding after his pain subsided. As he had no organ failure and tolerated oral feed well, he was discharged after 7 days in stable condition. However, six weeks post discharge patient again developed repeated episodes of non projectile vomiting associated with increased abdominal pain

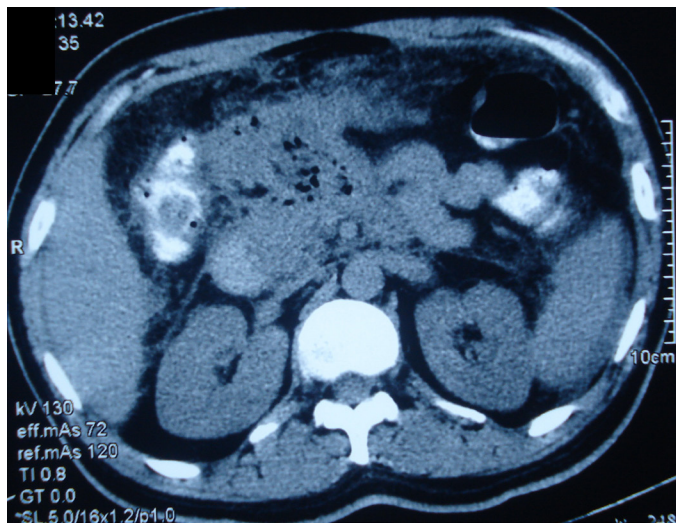
followed by high grade fever and shortness of breath. A repeat CECT abdomen showed heterogeneously enhancing pancreas with a collection in the lesser sac with air foci (**Figure 2**). In view of worsening sepsis he was started on broad spectrum antibiotics, oxygen inhalation and a 10F pigtail was inserted in the lesser sac collection which drained pus. Few days later he again started developing respiratory distress and sepsis and started to worsen for which CECT abdomen was done which showed presence of a large collection in splenic subcapsular region with air foci (**Figure 3**). Subsequently two additional 10 Fr pigtail catheters were inserted, one in left pleural effusion and another in the peri-splenic region, which drained purulent material. The patient symptomatically improved and the drain output in the pigtails reduced and eventually over two weeks these catheters were removed one by one. Patient improved to the above management and was discharged in a healthy state about two months after admission.

## Discussion

Although various gastroenterological symptoms are frequent in dengue, dengue is deemed to be an uncommon cause of acute pancreatitis.<sup>21-23</sup> In a retrospective study of 8,559 patients with dengue fever, abdominal and



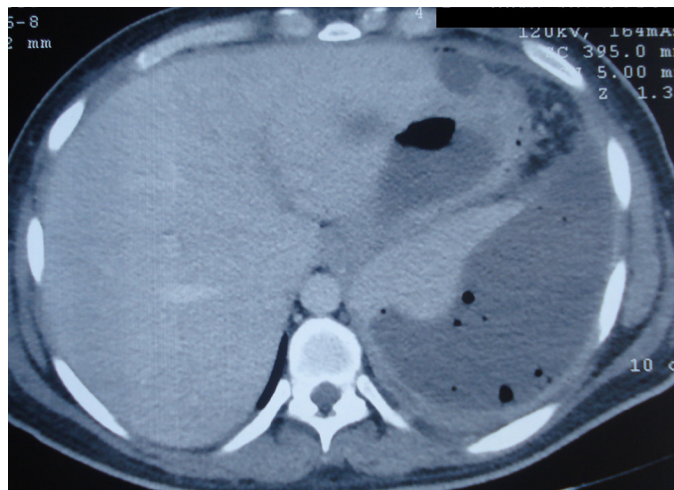
**Figure 1: CT showing heterogenous pancreas, peripancreatic fluid and fat stranding.**



**Figure 2: CT showing collection with air foci.**

gastrointestinal symptoms were present in 67% patients. Nausea (52%) was the most common symptom followed by abdominal pain (36%) and vomiting (29%).<sup>22</sup> In dengue fever, abdominal pain can be caused by hepatitis, acalculous cholecystitis, pancreatitis or peptic ulcer disease.<sup>2,21-23</sup> Khanna *et al* reported about 55 patients with dengue and abdominal pain from Delhi, India and found that common causes of pain were hepatitis in 20 (36.4%), cholecystitis in 9 (16.4%), pancreatitis in 8 (14.5%) and appendicitis in 3 (5.45%) while spontaneous bacterial peritonitis, enteritis, peptic ulcer and gastric erosions were other causes.<sup>21</sup>

We did a Pubmed search for “Dengue” AND “pancreatitis” in March 2017 and could retrieve 16 published cases of dengue related pancreatitis with full clinical details on course and outcomes. The clinical spectrum and outcomes in these 17 patients (including our case) are reported in **Table 1**. Majority of the reported cases were from Southeast Asian countries like India, Bangladesh, Taiwan and Indonesia as dengue is widely prevalent in these regions. Of these 17 cases, 11 were males (64.7%). The average age of the patients in these reports was 37.68 years (10-66 years). Among additional etiologies, alcohol intake was noted in two patients while other associated etiologies being end stage renal disease, drugs, hepatitis B and scrub typhus co-infection. When disease severity was analyzed (as per revised Atlanta definitions), six patients (35.3%) were noted to have



**Figure 3: CT showing perisplenic collection with air foci.**

mild disease, five (29.4%) had moderately severe and six (35.3%) had severe pancreatitis. Of the 12 patients in whom details were provided, six each had interstitial and necrotising disease. Of these patients five developed fluid collections related to pancreatitis and two needed interventions in the form of drainage. Organ failure developed in six patients with renal failure in two, respiratory in four and two had circulatory failure. None of the patients had undergone surgery while percutaneous drain (PCD) was inserted in two patients. One patient died due to circulatory and renal failure.

Further, some observational studies documented the occurrence of pancreatitis and lipase/amylase elevation in patients with underlying dengue fever (**Table 2**).<sup>4,23-27</sup> The incidence of pancreatitis was reported from 0.8%-7.04% in various reports whereas the frequency of elevated pancreatic enzymes (amylase or lipases) was higher (2.8-35%). Most of these studies have not reported about the mortality and outcomes in these patients thereby making interpretation of the severity difficult. In one report the authors sought to look for enlargement of pancreas on ultrasound and found that this finding is fairly common. Of a total 142 cases, diffuse pancreatic enlargement was documented in 41 patients (28.8%) of whom 20 (14.1%) had elevated amylase levels.<sup>23</sup>

Acute pancreatitis may be under diagnosed as a manifestation of dengue due to lack of awareness and it



**Table 1: Clinical profile and outcomes of reported cases of Dengue related pancreatitis.**

Reference	Country	No of cases	Age (Year)	Gender	Additional Etiology	Severity	CTSI	Type	Collection	Organ Failure	PCD	Survival
Seetharam et al 2010 <sup>8</sup>	India	1	56	Male	No	Mild	2	Interstitial	No	No	No	1
Agrawal et al 2011 <sup>7</sup>	India	1	38	Male	No	Severe	6	Necrotising	No	Yes	No	1
Karoli et al 2012 <sup>9</sup>	India	1	35	Female	No	Moderately Severe	NA	Necrotising	Yes	No	No	1
Iqbal et al 2012 <sup>10</sup>	India	1	40	Female	Scrub Thyphus	Mild	NA	Interstitial	No	No	No	1
Jain et al 2014 <sup>11</sup>	India	1	27	Male	Sickle Cell Trait	Severe	NA	Na	NA	Yes	No	No
Kumar et al 2016 <sup>12</sup>	India	1	10	Female	Aiha	Moderately Severe	NA	Na	NA	No	No	1
Sudulagunta et al 2016 <sup>13</sup>	India	1	30	Male	No	Severe	6	Necrotising	No	Yes	No	1
Wijekoon et al 2010 <sup>3</sup>	Sri Lanka	1	47	Male	Alcohol	Moderately Severe	2	Interstitial	Yes	No	No	1
Jayasundara et al 2016 <sup>14</sup>	Sri Lanka	1	NA	Na	Alcohol	Mild	NA	Na	NA	No	No	1
Anam et al 2017 <sup>20</sup>	Bangladesh	1	44	Male	No	Mild	NA	Interstitial	No	No	No	1
Anam et al 2016 <sup>15</sup>	Bangladesh	1	20	Male	No	Severe	NA	Na	NA	Yes	Yes	1
Chen et al 2004 <sup>19</sup>	Taiwan	1	66	Female	No	Moderately Severe	6	Necrotising	Yes	No	No	1
Lee et al 2013 <sup>16</sup>	Taiwan	1	47	Male	Hbv	Moderately Severe	8	Necrotising	Yes	No	No	1
Jusuf et al 1998 <sup>17</sup>	Indonesia	1	25	Female	No	Severe	NA	Na	No	Yes	No	1
Simadibrata et al 2012 <sup>6</sup>	Indonesia	1	59	Male	No	Mild	4	Interstitial	No	No	No	1
Fontal et al 2017 <sup>18</sup>	Colombia	1	27	Male	Esrd,Drugs	Mild	NA	Interstitial	No	No	No	1
Current case	India	1	32	Male	No	Severe	6	Necrotising	Yes	Yes	Yes	1

is likely that mild forms without any local and systemic complications may be missed. Therefore, clinicians might not request serum amylase or lipase or suspect the diagnosis despite patient having abdominal pain or vomiting. In patients with dengue fever who develops abdominal pain, it is helpful to estimate and monitor serum lipase and amylase levels and to perform abdominal imaging to rule out acute pancreatitis. Similarly, if the etiology of pancreatitis is not found and in the setting of fever and thrombocytopenia, it may be worth while working up for dengue fever even when fever has subsided.

**Table 2: Frequency of elevated pancreatic enzymes and pancreatitis in dengue.**

Reference	Country	Total	Pancreatitis	Raised Amylase/Lipase
Chatterjee et al 2014 <sup>24</sup>	India	180	4 (2.2%)	63 (35%)
Chakravarti et al 2012 <sup>25</sup>	India	107	1 (0.93%)	NA
Mazumdar et al 2012 <sup>26</sup>	India	300	NA	45 (15%)
Setiawan et al 1998 <sup>23</sup>	Indonesia	142	10 (7.04%)	20 (14%)
Lee I et al 2007 <sup>27</sup>	Taiwan	71	3 (4.20%)	14 (19.7)
Shamim et al 2010 <sup>4</sup>	Pakistan	357	3 (0.8%)	10 (2.8%)

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