

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.

References

1. Longwreth GF. Epidemiology of acute upper gastrointestinal hemorrhage. *Am J Gastroenterol.* 1995;20(2): 206-10
2. Roberto de Franchis *et al.* Expanding consensus in portal hypertension Report of the Baveno VI Consensus Workshop: Stratifying risk and individualizing care for portal hypertension. *Journal of Hepatology.* 2015; 743-752
3. Sarin SK, Kumar A, Peter W. A, Baijal SS, Baik SK, Bayraktar Y, Chawla YK *et al.* Diagnosis and management of acute variceal bleeding: Asian Pacific Association for study of Liver Recommendations. *Hepatology Int.* Jun 2011;5(2): 607-624
4. Upper Gastrointestinal Bleeding Toolkit, Academy of Medical Royal Colleges (October 2010). <http://www.aomrc.org.uk/projects/item/upper-gastrointestinalbleeding-toolkit.html>
5. Jay Khadpe, Tausif Thangalvadi, Parivalavan Rajavelu, Richard Sinert. Survey of the current state of emergency care in Chennai, India. 10.5847/wjem.j. 1920-8642.2011.03.002-

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

Dibya Jyoti Sharma, Vishal Sharma, Sobur Uddin Ahmed, Ravi K Sharma, Rajesh Gupta, Surinder S Rana

Department of Gastroenterology and Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh, India.

*Corresponding Author: Dr Vishal Sharma
Email: docvishalsharma@gmail.com*

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.^{1,2} 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.³⁻²⁰ 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/mm³) 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 hypertransaminasemia (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 pigtailed 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.²¹⁻²³ In a retrospective study of 8,559 patients with dengue fever, abdominal and

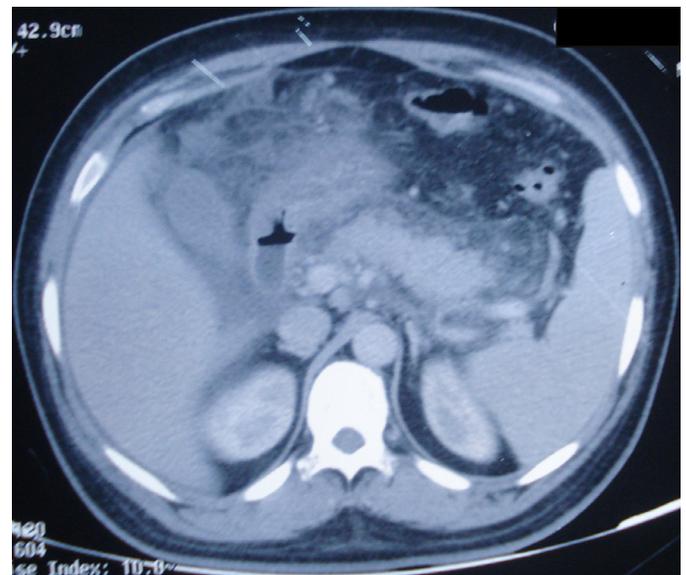


Figure 1: CT showing heterogenous pancreas, peripancreatic fluid and fat stranding.

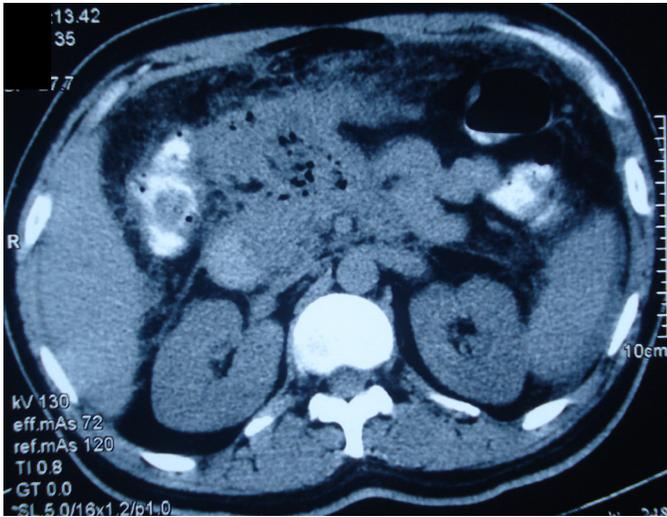


Figure 2: CT showing collection with air foci.



Figure 3: CT showing perisplenic 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%).²² In dengue fever, abdominal pain can be caused by hepatitis, acalculous cholecystitis, pancreatitis or peptic ulcer disease.^{2,21-23} 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.²¹

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

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**).^{4,23-27} 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.²³

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 ⁸ | India | 1 | 56 | Male | No | Mild | 2 | Interstitial | No | No | No | 1 |
| Agrawal et al 2011 ⁷ | India | 1 | 38 | Male | No | Severe | 6 | Necrotising | No | Yes | No | 1 |
| Karoli et al 2012 ⁹ | India | 1 | 35 | Female | No | Moderately Severe | NA | Necrotising | Yes | No | No | 1 |
| Iqbal et al 2012 ¹⁰ | India | 1 | 40 | Female | Scrub Thyphus | Mild | NA | Interstitial | No | No | No | 1 |
| Jain et al 2014 ¹¹ | India | 1 | 27 | Male | Sickle Cell Trait | Severe | NA | Na | NA | Yes | No | No |
| Kumar et al 2016 ¹² | India | 1 | 10 | Female | Aiha | Moderately Severe | NA | Na | NA | No | No | 1 |
| Sudulagunta et al 2016 ¹³ | India | 1 | 30 | Male | No | Severe | 6 | Necrotising | No | Yes | No | 1 |
| Wijekoon et al 2010 ³ | Sri Lanka | 1 | 47 | Male | Alcohol | Moderately Severe | 2 | Interstitial | Yes | No | No | 1 |
| Jayasundara et al 2016 ¹⁴ | Sri Lanka | 1 | NA | Na | Alcohol | Mild | NA | Na | NA | No | No | 1 |
| Anam et al 2017 ²⁰ | Bangladesh | 1 | 44 | Male | No | Mild | NA | Interstitial | No | No | No | 1 |
| Anam et al 2016 ¹⁵ | Bangladesh | 1 | 20 | Male | No | Severe | NA | Na | NA | Yes | Yes | 1 |
| Chen et al 2004 ¹⁹ | Taiwan | 1 | 66 | Female | No | Moderately Severe | 6 | Necrotising | Yes | No | No | 1 |
| Lee et al 2013 ¹⁶ | Taiwan | 1 | 47 | Male | Hbv | Moderately Severe | 8 | Necrotising | Yes | No | No | 1 |
| Jusuf et al 1998 ¹⁷ | Indonesia | 1 | 25 | Female | No | Severe | NA | Na | No | Yes | No | 1 |
| Simadibrata et al 2012 ⁶ | Indonesia | 1 | 59 | Male | No | Mild | 4 | Interstitial | No | No | No | 1 |
| Fontal et al 2017 ¹⁸ | 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 ²⁴ | India | 180 | 4 (2.2%) | 63 (35%) |
| Chakravarti et al 2012 ²⁵ | India | 107 | 1 (0.93%) | NA |
| Mazumdar et al 2012 ²⁶ | India | 300 | NA | 45 (15%) |
| Setiawan et al 1998 ²³ | Indonesia | 142 | 10 (7.04%) | 20 (14%) |
| Lee I et al 2007 ²⁷ | Taiwan | 71 | 3 (4.20%) | 14 (19.7) |
| Shamim et al 2010 ⁴ | Pakistan | 357 | 3 (0.8%) | 10 (2.8%) |

References

1. World Health Organization Regional Office for South-East Asia. Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever. Revised and expanded edition. World Health Organization: 2011. 196p.
2. Samanta J, Sharma V. Dengue and its effects on liver. *World J Clin Cases* 2015;3:125-31.
3. Wijekoon CN, Wijekoon PW. Dengue hemorrhagic fever presenting with acute pancreatitis. *Southeast Asian J Trop Med Public Health* 2010; 41:864-866.
4. Shamim M. Frequency, pattern and management of acute abdomen in dengue fever in Karachi, Pakistan. *Asian J Surg* 2010; 33:107-113.
5. Khor BS, Liu JW, Lee IK, Yang KD. Dengue hemorrhagic fever patients with acute abdomen: clinical experience of 14 cases. *Am J Trop Med Hyg* 2006; 74:901-904.
6. Simadibrata M. Acute pancreatitis in dengue hemorrhagic fever. *Acta Med Indones* 2012; 44:57-61.
7. Agrawal A, Jain Nirdeh, Gutch Manish, Shankar Amit. Acute pancreatitis and acute respiratory distress syndrome complicating dengue haemorrhagic fever. *BMJ Case Reports* 2011;2011;bcr1020114891
8. Seetharam P, Rodrigues G. Dengue Fever presenting as acute pancreatitis. *Eurasian J Med.* 2010;42:151-2.
9. Karoli R, Fatima J, Singh G, Maini S. Acute pancreatitis: an unusual complication of dengue fever. *J Assoc Physicians India* 2012;60:64-5.
10. Iqbal N, Viswanathan S, Remalayam B, Muthu V, George T. Pancreatitis and MODS Due to Scrub Typhus and Dengue Co-Infection. *Trop Med Health.* 2012;40:19-21.
11. Jain V, Gupta OP, Rao T, and Rao S. Acute Pancreatitis Complicating Severe Dengue. *J Glob Infect Dis* 2014 ;6: 76-78.
12. Kumar KJ, Chandrashekar A, Basavaraja CK, Kumar HC. Acute pancreatitis complicating dengue hemorrhagic fever. *Rev Soc Bras Med Trop* 2016 ;49:656-659.
13. Sudulagunta SR, Sodalagunta MB, Sepehrar M, Bangalore Raja SK, Nataraju AS, Kumbhat M, Sathyanarayana D, Gummadi S, Burra HK. Dengue shock syndrome. *Oxf Med Case Reports.* 2016;2016:omw074.
14. Jayasundara B, Perera L, de Silva A. Dengue fever may mislead the surgeons when it presents as an acute abdomen. *Asian Pac J Trop Med* 2017;10:15-19
15. Anam AM, Rabbani R, Shumy F, Polash MM. Subsequent pancreatitis and haemothorax in a patient of expanded dengue syndrome. *Trop Doct.* 2016;46:40-2.
16. Lee CY, Tsai HC, Lee SS, Lin CK, Huang JS, Chen YS. Dengue hemorrhagic fever presenting with hemorrhagic pancreatitis and an intramural hematoma of the duodenal wall: a case report and review of the literature. *Southeast Asian J Trop Med Public Health* 2013;44:400-8.
17. Jusuf H, Sudjana P, Djumhana A, Abdurachman SA. DHF with complication of acute pancreatitis related hyperglycemia: a case report. *Southeast Asian J Trop Med Public Health.* 1998 ;29:367-9.
18. Fontal GR, Henao-Martinez AF. Dengue hemorrhagic fever complicated by pancreatitis. *Braz J Infect Dis* 2011;15:490-2.
19. Chen TC, Perng DS, Tsai JJ, Lu PL, Chen TP. Dengue hemorrhagic fever complicated with acute pancreatitis and seizure. *J Formos Med Assoc* 2004;103:865-8.
20. Anam AM, Rabbani R, Shumy F. Expanded dengue syndrome: three concomitant uncommon presentations in the same patient. *Trop Doct* doi:10.1177/0049475517696638.
21. Khanna S, Vij JC, Kumar A, Singal D, Tandon R. Etiology of abdominal pain in dengue fever. *Dengue Bulletin* 2005; 29:85-88.
22. Ramos-De La Medina A, Remes-Troche JM, González-Medina MF, Anitúa-Valdovinos Mdel M, Cerón T, Zamudio C, Díaz-Vega A. [Abdominal and gastrointestinal symptoms of Dengue fever. Analysis of a cohort of 8559 patients]. *Gastroenterol Hepatol* 2011;34:243-7.
23. Setiawan MW, Samsi TK, Wulur H, Sugianto D, Pool TN. Epigastric pain and sonographic assessment of the pancreas in dengue hemorrhagic fever. *J Clin Ultrasound* 1998; 26:257-259.
24. Chatterjee N, Mukhopadhyay M, Ghosh S, Mondol M, Das C, Patar K. An observational study of dengue fever in a tertiary care hospital of eastern India. *J Assoc Physicians India.* 2014;62:224-7.
25. Chakravarti A, Suresh K, Neha, Shweta, Malik S. Dengue outbreak in Delhi in 2009: study of laboratory and clinical parameters. *J Commun Dis.* 2012;44:163-8.
26. Majumdar R, Jana CK, Ghosh S, Biswas U. Clinical spectrum of dengue fever in a tertiary care centre with particular reference to atypical presentation in the 2012 outbreak in Kolkata. *J Indian Med Assoc.* 2012 Dec;110(12):904-6
27. Lee IK, Khor BS, Kee KM, Yang KD, Liu JW. Hyperlipasemia/pancreatitis in adults with dengue hemorrhagic fever. *Pancreas.* 2007;35:381-2.