Infected pancreatic pseudocyst following severe dengue infection

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SUMMARY

Severe dengue infection is life threatening as it can result in fatal complications such as intractable bleeding from coagulopathy, multiorgan failure from shock and haemophagocytic syndrome. There have been case reports of atypical manifestation of severe dengue infection such as pancreatitis, Guillian-Barre's syndrome, perforated viscus and myocarditis. However, to our knowledge, pancreatic pseudocyst from dengue-related pancreatitis has never been reported in the literature. We hereby report a case of infected pancreatic pseudocyst in a patient with persistent pyrexia, abdominal pain and raised inflammatory markers 10 weeks from the onset of severe dengue infection. Endoscopic ultrasound (EUS) guided transluminal drainage of the infected pancreatic pseudocyst with lumen-apposing metallic stent (LAMS) was performed with good clinical and radiological outcome.

INTRODUCTION

Dengue infection which is transmitted via the female Aedes aegypti mosquitoes remains a public health burden in tropical countries. The incidence around the world has increased in recent years with severe dengue infection as the leading cause of morbidity and mortality in the Asian continent.[1] Any dengue infection with either severe plasma leakage, severe haemorrhage or severe organ impairment is categorised as severe dengue. There have been case reports of dengue infection presenting with acute pancreatitis but the pathophysiology of pancreatitis in dengue infection is still not well understood till now despite several hypotheses being stated in the literature.[2] However, severe dengue infection with acute pancreatitis leading to pancreatic pseudocyst has never been reported.

In accordance to the revised Atlanta Classification 2012, pancreatic fluid collection (PFC) can be divided into acute peripancreatic collection, acute necrotic collection, pancreatic pseudocyst and walled-off pancreatic necrosis. Pancreatic pseudocysts are well-defined encapsulated homogenous fluid collections without necrotic debris that occur four weeks after the onset of interstitial oedematous pancreatitis. These fluid collections are termed acute peripancreatic fluid collection if they occur before four weeks from onset of pancreatitis. Both acute necrotic collection and walled-off pancreatic necrosis are the results of severe necrotising pancreatitis with the former occurring prior to four weeks from onset of pancreatitis and the latter, four weeks after. The indication of drainage of pancreatic pseudocyst includes abdominal pain, gastrointestinal obstruction, infection, obstructive jaundice and vascular compression. Modalities of PFC drainage include surgical cystgastrostomy, percutaneous drainage and endoscopic ultrasound (EUS) guided transluminal drainage with plastic or metallic stents.[3]

CASE REPORT

A 31-year-old woman with no past medical history was admitted to Hospital Kuala Lumpur, Malaysia with fever, malaise and vomiting. Dengue infection was confirmed in her with positive dengue non-structural protein-1(NS-1) and she was treated as severe dengue with multiorgan failure, hypotension and coagulopathy. In view of worsening organ failure and lactate acidosis, she was mechanically ventilated in the intensive care unit. She developed upper gastrointestinal bleeding during the critical phase of her dengue infection. Oesophagogastrodoudenoscopy was performed which revealed haemorrhagic gastric mucosa with multiple bleeding points throughout her stomach. Haemostatic powder was applied all over her stomach via gastroscope and bleeding resolved after two sessions of endoscopy. Her clinical condition improved with supportive treatment and was extubated after 54 days from onset of her illness.

At week 10 of the dengue infection, she however developed persistent pyrexia with abdominal pain. Abdominal examination revealed tenderness at epigastrium and left lumbar area with increased C-reactive protein (CRP) of 117.2mg/L and total white blood cell count (TWC) of 17 x 10^9/L. There was a drop of haemoglobin from 9g/dl to 7g/dl with no clinical evidence of gastrointestinal bleeding or hypotensive episode. She was treated as nosocomial sepsis and commenced on intravenous meropenem. Computed tomography (CT) of thorax, abdomen and pelvis was performed to locate the source of sepsis. CT showed large encapsulated homogenous peripancreatic collection around the head and uncinate process measuring 4.9x6.2x7.8cm (white arrow, Fig. 1A) with extension to the left intraabdominal cavity measuring 7.2x11.2x13.7cm (white arrow, Fig. 1B). We treated her for infected pancreatic pseudocyst from dengue-related pancreatitis in view of her symptoms of abdominal pain, persistent pyrexia and raised inflammatory markers.

Endoscopic ultrasound (EUS) guided transluminal drainage of pseudocyst was performed with electrocautery enhanced

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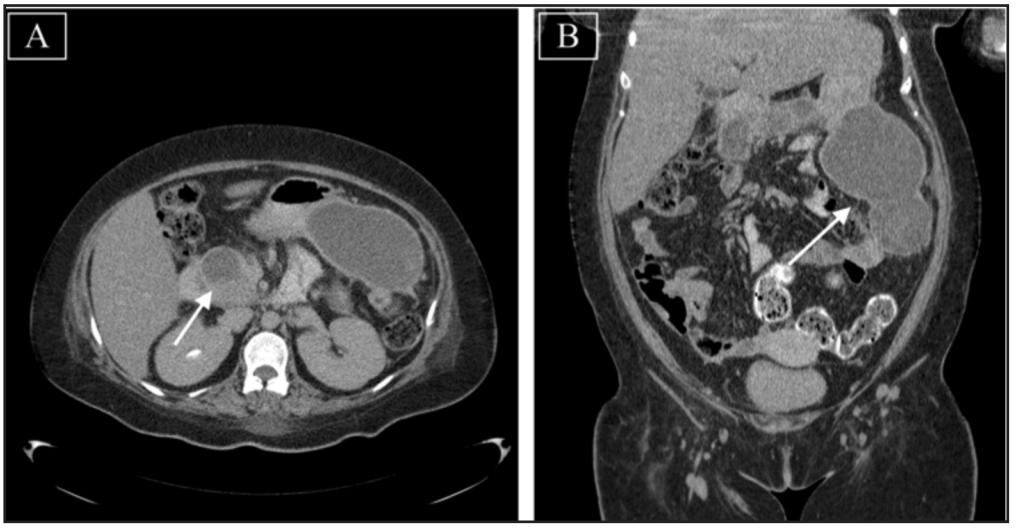

Fig. 1A and 1B: Axial and coronal CT showed well-defined and encapsulated homogenous collection at the head of pancreas extending into the left intraabdominal cavity and compressing the stomach anteriorly.

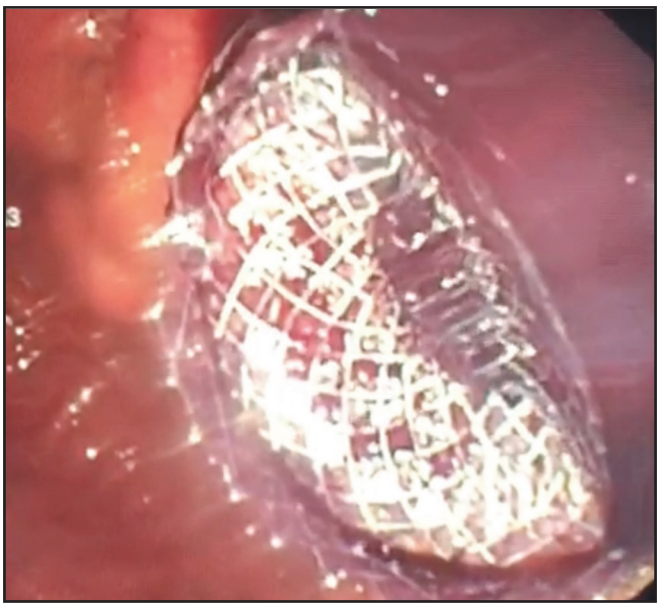

Fig. 2: Haemopurulent fluid was seen draining from the collection into the gastric lumen via the Lumen Apposing Metallic Stent (LAMS).

Lumen Apposing Metallic Stent (LAMS) (AXIOS; Boston Scientific) and haemopurulent fluid was seen draining from it (Fig. 2). Her fever and abdominal pain resolved five days after procedure. The LAMS was removed after four weeks, and she was discharged well from the hospital. Magnetic resonance cholangiopancreatography performed after 1 month following LAMS removal showed complete resolution of pancreatic pseudocyst. She remained well during her latest clinic follow-up.

DISCUSSION

Acute pancreatitis is considered one of the rare and atypical manifestation of dengue infection. In this case, pancreatitis was not suspected initially as the patient did not present with abdominal pain radiating to the back which is a typical feature of pancreatitis. We hypothesised that the pancreatitis in this case occurred during the critical phase of severe plasma leakage which had resulted in hypotension and multiorgan failure. The patient was already ventilated at that time and assessment for pancreatitis type of abdominal pain was not possible. Moreover, serum amylase may be elevated in dengue infection, and this also presents a challenge to the clinician in making the diagnosis of pancreatitis in dengue infection. Exact pathophysiology of pancreatitis in dengue infection remains unknown. Pancreatic acinar cell damage from viral invasion, pancreatic hypoperfusion from dengue shock syndrome, cellular injury from autoimmune process triggered by the virus and obstruction of pancreatic fluid outflow from oedematous ampulla of Vater are few hypotheses that have been mentioned as possible causes of pancreatitis in dengue infection.[4] The possibility of drug-induced pancreatitis could not be fully excluded in this case as there were multiple drugs administered to this patient throughout her admission. However, the drugs given to her have been reviewed and were thought to be of low risk in causing pancreatitis.

Clinical symptoms of persistent pyrexia, abdominal pain with raised inflammatory markers occurring weeks after dengue infection in this case indicated ongoing sepsis in the patient, likely from an intraabdominal source. This prompted radiological imaging in her which found an encapsulated peripancreatic collection. It takes more than four weeks for peripancreatic collection to have a well-defined wall and this correlated temporally with the patient's presentation of a symptomatic pancreatic pseudocyst 10 weeks following dengue infection. The maturity of the peripancreatic collection defined as the presence of a well-defined wall is one factor that needs to be considered before performing drainage. This allows easier access into the collection with reduction of risk of free perforation and greater adherence of collection to the gastrointestinal lumen for endoscopic drainage.[3]

The modality of choice in drainage of a pancreatic pseudocyst is dependent on factors such as the location of the cyst from the stomach or duodenum and availability of local expertise of therapeutic endosonographers, interventional radiologists and surgeons.[3] In our patient, drainage was preferred over surgical and percutaneous method as it is a minimally invasive method and the encapsulated collection was closely adherent to the stomach wall as illustrated in (Fig. 1A), allowing direct drainage into the stomach. A recent meta-analysis by Farias et.al., has shown that endoscopic drainage of pseudocyst was superior to surgical intervention in terms of cost-effectiveness and shorter hospitalisation.[5] Endoscopic drainage of pseudocyst can be performed using double pig tail plastic stents or metal stent such as the one illustrated in this case.[3]

CONCLUSION

Diagnosis of acute pancreatitis in severe dengue infection is challenging and may be missed given their overlapping features as well as being a rare presentation. Infected pancreatic pseudocyst from pancreatitis should be considered in a patient who develops persistent pyrexia, abdominal pain and raised inflammatory markers after recovering from severe dengue infection. Although EUS guided transluminal drainage is a feasible method of drainage in symptomatic pancreatic pseudocyst, a multidisciplinary approach is still necessary to manage such patients.

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REFERENCES

1. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL, et al. The global distribution and burden of dengue. Nature 2013; 496(7446): 504-7.
2. Correa R, Ortega-Loubon C, Zapata-Castro LE, Armién B, Culquichicón C. Dengue with Hemorrhagic Manifestations and Acute Pancreatitis: Case Report and Review. Cureus 2019; 11(6): e4895.
3. Bezmarević M, van Dijk SM, Voermans RP, van Santvoort HC, Besselink MG. Management of (Peri)Pancreatic Collections in Acute Pancreatitis. Visc Med 2019; 35(2): 91-6.
4. Jain V, Gupta O, Rao T, Rao S. Acute pancreatitis complicating severe dengue. J Glob Infect Dis 2014; 6(2): 76-8.
5. Farias GFA, Bernardo WM, De Moura DTH, Guedes HG, Brunaldi VO, Visconti TAC, et al. Endoscopic versus surgical treatment for pancreatic pseudocysts: Systematic review and meta-analysis. Medicine (Baltimore) 2019; 98(8): e14255.