Asian Journal of Case Reports in Surgery

11(2): 1-5, 2021; Article no.AJCRS.71628

Clinical Challenges in Managing a Dengue Positive Patient Presenting as Perforated Duodenal Ulcer

Vethunan Tamalvanan[1*]

[1]Department of Surgery, Hospital Pakar Sultanah Fatimah, Muar, Johor, Malaysia.

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

Editor(s):
(1) Dr. Ashish Anand, GV Montgomery Veteran Affairs Medical Center, USA.
(2) Dr. Arun Singh, Rohilkhand Medical College & Hospital, India.
Reviewers:
(1) Quraysh S. Sadriwala, India.
(2) Tzu Chuan, Kaohsiung Medical University, China.
(3) Rita de Cássia Pontello Rampazzo, Brazil.
Complete Peer review History: https://www.sdiarticle4.com/review-history/71628

Case Study

Received 01 June 2021
Accepted 03 August 2021
Published 09 August 2021

ABSTRACT

Introduction: Acute abdomen in Dengue Fever patient poses a distinct and formidable challenge in diagnosis and management. Perforated duodenal ulcer is a rare presentation of Dengue Fever. Surgeons face formidable challenges in diagnosing, resuscitating and delivering optimum post-operative care for such patients.

Case Presentation: A 26 years old gentleman presented with acute abdominal pain for 3 days and peritonism over the right side of abdomen. His serology investigation and NS1 antigen was positive. Perforated duodenal ulcer was confirmed by a CECT abdomen.

He was taken for a laparotomy and the ulcer was repaired with the Heineke-Mikulicz pyloroplasty technique. Post-operative care was meticulous regarding the fluid status with account of the capillary leakage which occurs during defervescence phase of dengue fever. An oral contrast study was done on day 5 to confirm the integrity of the repair prior to commencement of oral feeds.

Conclusion: Managing this patient successfully highlights the importance of active participation from both physician and surgeon. An increased clinical vigilance to possible post-operative complications and close monitoring as the patient progresses to the defervescence phase of dengue fever are important to minimising the adverse physiological stress to this patient.

Keywords: Duodenal perforation; dengue fever; Heineke-mikulicz pyloroplasty; peptic ulcer disease; atypical dengue fever; acute abdomen; NS1- antigen; peptic ulcer perforation.

**Corresponding author: E-mail: vethunan@gmail.com;*

1. INTRODUCTION

Acute abdomen is uncommon in patients with Dengue fever. Common causes for acute abdomen in Dengue patients include cholecystitis, pancreatitis, appendicitis and hollow viscus perforation [1]. It is now known that Dengue fever itself can manifest with peritonism without other associated abdominal pathologies. Pathophysiology of these manifestations of Dengue fever is poorly understood but some postulation has that it can either be due to polyserositis and plasma leakage [2] or, just a mere incidence of two diseases coexisting at the same time. Literature on peptic perforation in Dengue fever is scarce; the first case reported was from our centre in 2017[3] and the other was a paediatric case reported from Gujarat, India in 2019 [4]. Here, we present a case of perforated duodenal ulcer in a serology proven Dengue fever patient during the early febrile phase of the disease.

2. CASE PRESENTATION

A 26 years of age Malaysian gentleman, presented with 3 days history of increasing right sided abdominal pain, 1 day history of fever and vomiting. He did not give history commonly seen in classical Dengue fever such as retro-orbital pain, headache, myalgia or skin rash. He had neither prior episode of Dengue fever to his recollection nor history of dyspepsia. He denied smoking, NSAID consumption or alcohol consumption. On examination he was tachycardic with a thready pulse and had a spike of temperature (39 degrees Celsius), otherwise his blood pressure and respiratory rate was normal. Abdomen was tender and guarded at the right hypochondrium and epigastric region.

His initial blood investigations showed; haemoglobin concentration of 14, he was leukopenia with a white cell count of 3, platelet count was 200 and haematocrit of 43. His liver renal and coagulation panel was normal. As Dengue was endemic in Malaysia and the presentation was during the surge of COVID 19 pandemic, a Dengue panel and RT-PCR for SARS-CoV-2 was done. His Non-structural 1 antigen assay, MAC-ELISA for IgM and IgG was positive which unexpectedly proved he was in the febrile phase of secondary dengue infection. COVID 19 screening was negative. Chest x-ray erect showed no pneumoperitoneum. Due to dilemma in diagnosis of whether it could be a *true* acute abdomen or mere manifestation of Dengue Fever, a CECT abdomen was done, which showed small pockets of pneumoperitoneum with contrast extravasation at D1.

At laparotomy a large ulcer was seen at anterior wall of D1 with fibrotic edges adherent to transverse colon. There was 100cc purulent contamination at subhepatic and subdiaphragmatic space as well. The ulcer edges were defined with sharp dissection and duodenum mobilised with Kocher's manoeuvre. The ulcer was repaired using the Heineke-Mikulicz pyloroplasty technique. The repair was tension free and placement of the interrupted 2/0 absorbable sutures was through healthy duodenal tissue. The Ryle's tube tip was placed in the jejunum for early enteral feeding commencement and a subhepatic drain was placed to control any leakage if it happens.

Fig. 1. Axial cut of the Ct abdomen showing pneumoperitoneum and contrast extra vasation at D1

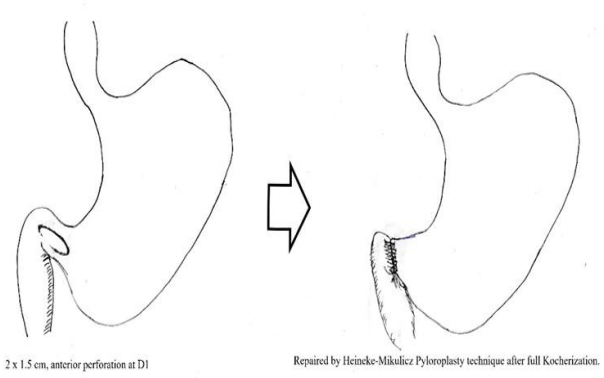

Fig. 2. Graphic representation of the surgical technique used to repair the ulcer

Post operatively patients was managed by a multidisciplinary team in intensive care. His fluid management was goal-directed with “hard” end point like lactate, haematocrit and urine output, anticipating ‘third space loss’ due to increase capillary permeability in the defervescence phase of Dengue fever. Serial blood parameters such as white cell count and platelets were monitored. In addition, IV antibiotics was given for 5 days and proton pump inhibitors was commenced. He was commenced on jejunal feeding on day 1 post-operation and oral feeds commenced after a normal contrast study at day 5. He was well and was discharged home on day 7.

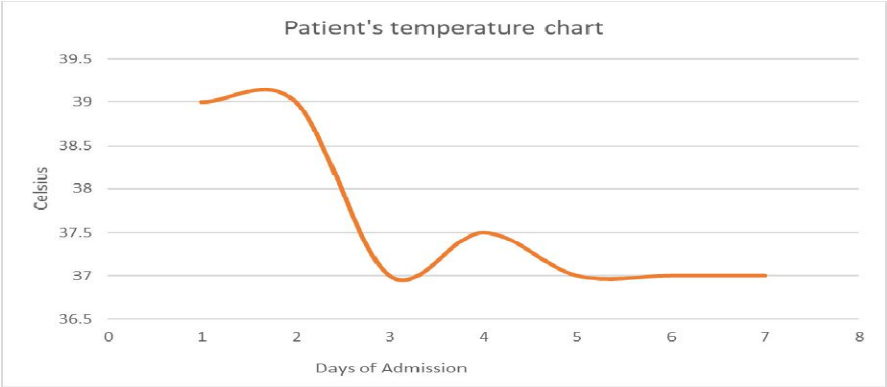

Fig. 3. Graph of patient’s temperature during the hospital stay

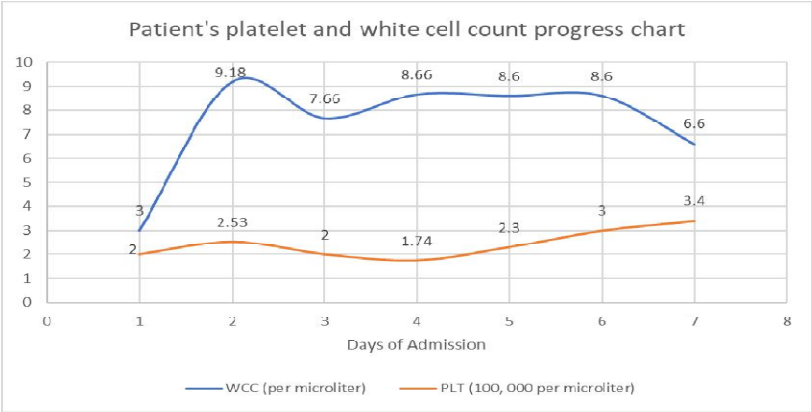

Fig. 4. Graph of patient’s blood panels throughout the hospital admission

3. DISCUSSION

Dengue patients with acute abdomen is a clinical conundrum as to its evaluation and management. A “negative laparotomy” will have a negative impact on these patients as the stress induced by surgery will further aggravate the increased capillary permeability by inducing a *second hit* of systemic inflammatory response [1,5,6]. On the other hand, a delayed source control of any surgical related pathology will exponentially increase the dysregulated inflammatory response leading to decompensation of the patient physiology [7]. Hence early and vigilant clinical evaluation of these patients are always required. Early imaging studies such as CECT abdomen or endoscopy is often beneficial for these patients [8].

The intra operative management from a surgeon’s perspective for patients with dengue fever in no different from any other patient with perforated duodenal ulcer. Commonly employed techniques include primary repair alone, omentum patch repair alone, a combination of both patch and primary repair, pyloroplasty techniques, serosal patch repair, *triple-tube* technique or distal gastrectomy(9). The technique selected for each repair depends on surgeon preference, degree of anatomy distortion, patient physiology status and quality of tissue at surgery [9]. Regardless to which technique is chosen, the common principle of perforated duodenal ulcer repair that is, *to do the safest and simplest, at quickest time possible* should be followed [10].

Post-operative management of a dengue patient with perforated duodenal ulcer differs considerably to other patients. Expect a longer hospital stay with more intensive clinical monitoring through-out the febrile and defervescence phase [11]. Vigilance should be given to clinical monitoring to detect complications at the earliest, as this prevent further aggravation of the dysregulated inflammatory response which is detrimental to patient with dengue fever. Leakage of the repair with peritonitis or fistula formation is a deadly complication after a perforated duodenal ulcer repair [8,12]. Hence, besides the usual white cell count and CRP monitoring, which is nonspecific in these cases, consideration should be given to perform a contrast study within a week of post-surgery and prior to commencing oral feeding [8,13]. Early ambulation and enteral feeding are important strategies to prevent postoperative ileus, respiratory complications and venous thrombosis [14].

4. CONCLUSION

In a nutshell, management of patients with serology positive Dengue fever presenting as perforated duodenal ulcer, should be by a combine effort from physicians and surgeons. There should be lower threshold than usual for utilisation of advance investigative and monitoring techniques to detect complication of the disease. Every effort should be taken to minimise the physiology stress exerted on these patients as they march on from febrile to defervescence phase of Dengue fever, with the aim to discharge them well during the recovery phase.

CONSENT

Informed consent was taken from the patient for reporting and publishing this case.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

ACKNOWLEDGEMENTS

I am grateful to my surgical colleagues who assisted me during the surgery and management of this patient. No funding to be declared.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. 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 [Internet]. 2017;10(1):15–9. Available:http://dx.doi.org/10.1016/j.apjtm.2016.12.010
2. Shashirekha A, Sreeramulu N, Ravikiran R, Pawan K. Surgical presentations with abdominal pain in dengue fever. Int Surg J. 2016;3(2):754–6.
3. Ng CY, Lee SL, Foo SL. Perforated gastric ulcer in severe dengue infection: A case

report. Med J Malaysia. 2017;72(4):244–5.
4. Pillai M, Rao G. Peptic perforation in paediatric case of dengue: rare presentation. Int Surg J. 2019;6(9):3418.
5. Lord JM, Midwinter MJ, Chen Y-F, Belli A, Brohi K, Kovacs EJ, et al. The systemic immune response to trauma: an overview of pathophysiology and treatment. Lancet (London, England) [Internet]. 2014/10/17. 2014;384(9952):1455–65. Available:https://pubmed.ncbi.nlm.nih.gov/25390327
6. Wang W-H, Urbina AN, Chang MR, Assavalapsakul W, Lu P-L, Chen Y-H, et al. Dengue hemorrhagic fever – A systemic literature review of current perspectives on pathogenesis, prevention and control. J Microbiol Immunol Infect [Internet]. 2020;53(6):963–78. Available:https://www.sciencedirect.com/science/article/pii/S1684118220300670
7. Martínez ML, Ferrer R, Torrents E, Guillamat-Prats R, Gomà G, Suárez D, et al. Impact of Source Control in Patients With Severe Sepsis and Septic Shock*. Crit Care Med [Internet]. 2017;45(1). Available:https://journals.lww.com/ccmjournal/Fulltext/2017/01000/Impact_of_Source_Control_in_Patients_With_Severe.2.aspx
8. Chung KT, Shelat VG. Perforated peptic ulcer - an update. World J Gastrointest Surg [Internet]. 2017 Jan 27;9(1):1–12. Available:https://pubmed.ncbi.nlm.nih.gov/28138363
9. Bertleff MJOE, Lange JF. Perforated Peptic Ulcer Disease: A Review of History and Treatment. Dig Surg [Internet]. 2010;27(3):161–9. Available:https://www.karger.com/DOI/10.1159/000264653
10. Unver M, Fırat Ö, Ünalp ÖV, Uğuz A, Gümüş T, Sezer TÖ, et al. Prognostic Factors in Peptic Ulcer Perforations: A Retrospective 14-Year Study. Int Surg [Internet]. 2015 May 1;100(5):942–8. Available:https://doi.org/10.9738/INTSURG-D-14-00187.1
11. Scott TW. Dengue. Encycl Insects. 2009;257–9.
12. Sharma SS, Mamtani MR, Sharma MS, Kulkarni H. A prospective cohort study of postoperative complications in the management of perforated peptic ulcer. BMC Surg [Internet]. 2006;6(1):8. Available: https://doi.org/10.1186/1471-2482-6-8
13. Moriwaki Y, Sugiyama M, Yoshida K, Yamagishi S, Tomita H, Kanaya K, et al. Healing process in the early phase after the simple closure/omental patch for perforated duodenal ulcer: endoscopic direct evaluation. Crit Care [Internet]. 2004/03/15. 2004;8(Suppl 1):P164–P164. Available:https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4099751/
14. Masood A, Viqar S, Zia N, Ghani MU. Early Oral Feeding Compared With Traditional Postoperative Care in Patients Undergoing Emergency Abdominal Surgery for Perforated Duodenal Ulcer. Cureus [Internet]. 2021 Jan 7;13(1):e12553–e12553. Available:https://pubmed.ncbi.nlm.nih.gov/33564545

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/71628