International Surgery Journal
Yu KL et al. Int Surg J. 2023 Feb;10(2):293-295
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20230268

Case Report

Perforated appendicitis after blunt abdominal trauma: a case report

Kah Ling Yu*, Aida Nadhirah Nor Azizan, M. Ammar Ahmad

Department of Surgery, Hospital Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

Received: 16 December 2022
Revised: 15 January 2023
Accepted: 16 January 2023

***Correspondence:**
Dr. Kah Ling Yu,
E-mail: klyu92@hotmail.com

ABSTRACT

Cases of acute appendicitis due to blunt abdominal trauma (BAT) are rare, and usually regarded as two separate entities. Although the exact mechanism of acute appendicitis after BAT is unknown, several literatures reported their causal relationship. Suspicion of appendicitis should be raised in presentation of abdominal pain after BAT. We present a case report of two patients who developed acute perforated appendicitis following BAT.

Keywords: Appendicitis, Abdominal trauma, Perforated appendicitis, Traumatic appendicitis, BAT

INTRODUCTION

Acute appendicitis is a clinical emergency that is typically encountered in the emergency department. The appendix arises from the base of caecum at confluence of taenia coli, below the ileocecal valve while the blood supply is from the appendicular artery which runs in the mesoappendix. Appendicitis is caused by obstruction of the lumen, commonly by faecolith.[1] The obstruction then results in bacterial overgrowth in the appendix, which triggers an active inflammatory response.[1] BAT has been reported sporadically as a rare cause of acute appendicitis, although the exact mechanism is still unknown.[2]

This case report highlights two patients who developed acute appendicitis >48 hours following BAT to the abdomen due to a fall and assault respectively.

CASE REPORT

Case 1

A 12-year-old girl presented to the emergency department with fever and generalised abdominal pain which started three days after a fall. She was playing with her siblings, suffered a fall at the roadside and sustained a blunt trauma to the abdomen. On arrival, her blood pressure (BP) was 101/67 mm Hg, heart rate 173 and body temperature 38.7°C. Her abdomen was tender with generalised voluntary guarding, but without bruises or wounds. Her leukocyte count was 16.4×10^9/l, haemoglobin 14.0 g/l, and platelets 604×10^9/l. Urine dipstick and serum amylase were normal. A focused abdominal sonography for trauma (FAST) scan revealed intraabdominal free fluid.

An urgent computed tomography (CT) abdomen shown in the Figure 1, revealed multiple fluid collections in bilateral paracolic gutters and pelvis, but no pneumoperitoneum or obvious organ injury. A delayed bowel injury was suspected and subsequently patient underwent an emergency exploratory laparotomy. A perforated appendix was discovered, with copious pus in right iliac fossa. Appendicectomy and washout were performed and drain inserted. The drain was removed after 3 days. The pus culture and sensitivity showed presence of *Escherichia coli* and responsive to cefuroxime. She was discharged well on the post-operative day six after completing antibiotics.

Figure 1: Arrows showing multiple intraabdominal fluid collections.

Case 2

A 25-year-old man sustained BAT after being assaulted by 2 drunk men, with punches to abdomen. Three days later, he was presented to the emergency department with BP 102/75 mm Hg, heart rate 142 and body temperature 36.9°C. His abdomen was tender and guarded. There was no hematoma or bruising observed. His leukocyte count was 10.53×10^9/L, haemoglobin 17.7 g/L, platelets 332×10^9/L. A FAST scan revealed fluid at Morrisons pouch. An urgent CT abdomen (Figure 2) revealed a thickened appendiceal wall and dilated appendiceal lumen, and haemo-pneumoperitoneum. Patient underwent emergency exploratory laparotomy and intraoperatively, there was pus in the right paracolic gutter. The appendix was found to be perforated and was removed. On postoperative day 1, he had a complication of atelectasis with severe respiratory distress, and was intubated for 2 days. Despite that, he managed to recover and discharged on postoperative day 7 after completing antibiotics.

Figure 2: Appendix wall is thickened and lumen dilated.

DISCUSSION

Appendicitis can be a difficult diagnosis as seen in the two cases presented and trauma is no exception. Acute appendicitis and blunt trauma are common entities therefore their association even coincidental is certainly plausible.[3,4]

BAT can cause the appendix to perforate from direct crush injury or indirect trauma from increased intraabdominal pressure. Passive congestion and accumulation of secretions lead to obstruction of circulation with secondary infection that result in gangrene of the appendiceal wall.[5] The presentation of appendicitis caused by BAT generally mirrors that of non-traumatic appendicitis with fever, right lower quadrant abdominal tenderness and peritonitis.[2]

The approach of a patient with trauma should adhere to the latest ATLS guidelines. Patients with history of blunt trauma to the abdomen, with abdominal pain or tenderness, and intraabdominal free fluid, if they are hemodynamically stable should undergo CT to determine the causative injury and the extent of injury.[6]

According to Fowler in 1938, the evaluation of traumatic influence upon developing appendicitis are based on five prerequisites; the history (any history of past attacks), the force (blunt force trauma over abdominal region), the mechanism (increase intraabdominal pressure), the elapsed interval between injury and symptoms (longest interval admissible is within 48 hours), the pathology demonstrated at operation (presence of superimposed acute inflammation of appendix without evidence of chronic pathology).[7]

A systemic study conducted by Shuaib et al, stated from the year 1978 till 2019, there were 39 articles reported on traumatic appendicitis.[8] Nevertheless, 6 articles consisted of 8 cases presented with >48 hours of time interval between trauma and symptoms of severe abdominal pain. All these 8 cases presented with either suppurative, gangrenous or perforated appendicitis. This study challenged Fowler's view on the admissible duration of <48 hours between injury and symptoms.

The two cases we presented are suggestive that BAT is highly accountable towards the development of acute perforated appendicitis even after 48 hours of the traumatic incident. Even though direct causative relationship between BAT and appendicitis cannot be proven in these two cases presented, but the temporal relationship would reasonably support the causality.[3]

CONCLUSION

Acute appendicitis induced by abdominal trauma is rare and debatable. This case report does not serve as a definitive proof of existence of traumatic appendicitis but to provide an additional insight of the association

between BAT and appendicitis. Emergency physicians should practice high suspicion of appendicitis in presentation of abdominal pain after trauma with appropriate diagnostic evaluation to prevent delay of treatment.

These two cases represent unusual but crucial example of traumatic appendicitis. Even though the exact pathophysiology of the association between BAT and appendicitis is unclear, these cases suggest strong causal relationship.

ACKNOWLEDGEMENTS

Author would like to thank the Ministry of Health, Malaysia for kindly giving us permission to publish this article.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Jones MW, Lopez RA, Deppen JG and Kendall BA. Appendicitis (Nursing), reasure Island (FL): StatPearls Publishing. 2021.
2. Cobb T. Appendicitis following blunt abdominal trauma. Am J Emergency Med. 2017;35(9):1386-e5.
3. Hennington MH, Tinsley Jr EA, Proctor HJ, Baker CC. Acute appendicitis following blunt abdominal trauma. Incidence or coincidence? Ann Surg. 1991;214(1):61.
4. Ramsook C. Traumatic appendicitis: fact or fiction? Pediatric emergency care. 2001;17(4):264-6.
5. Fiorini GT. Acute appendicitis following motor vehicle accident. Can Family Physician. 1974;20(6):59.
6. American College of Surgeons. Advanced Trauma Life Suport ATLS: Student Course Manual. 10th Edi. American College of Surgeons. 2018.
7. Fowler RH. The rare incidence of acute appendicitis resulting from external trauma. Ann Surg. 1938;107(4):529.
8. Shuaib A, Alasaousi M, Gawali AM, Sallam MA. Traumatic appendicitis: Is it a fairy tale? A literature. Int J Surg. 2020;4(2):158-63.

Cite this article as: Yu KL, Azizan ANN, Ahmad MA. Perforated appendicitis after blunt abdominal trauma: a case report. Int Surg J 2023;10:293-5.