

## Trauma Induced Appendicitis...A Real Entity

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**Abstract: Problem statement:** Appendicitis is a very common surgical problem. Sometimes, appendicitis and trauma coexist. There has been evidence that trauma may be an aetiology for acute appendicitis. We present the case history of one of our patients in which trauma was the only aetiological factor causing acute appendicitis. To highlight the importance of considering the diagnosis of appendicitis when a case of an acute abdomen with RIF presents, following trauma. **Conclusion:** Albeit a rare origin, trauma can be a cause for appendicitis as we show in our case study. In order to make this diagnosis, there are certain criteria that must be met. This is an important diagnosis to consider when presented with such cases. This will lead to prompt diagnosis and treatment, avoiding, delays which may lead to complications.

**Key words:** Trauma, paediatric, appendicitis, acute abdomen

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### INTRODUCTION

Traumatic injury and appendicitis are the two most common conditions of childhood seen on a general surgical take (Etensel *et al.*, 2005). The most common pathophysiological mechanism in appendicitis is obstruction of the lumen by a faecolith or foreign body. Subsequent inflammation may progress to the development of an appendicular abscess or perforation and consequent peritonitis. Occasionally, appendicitis and trauma coexist and there is debate over the role of trauma in appendicitis (Hennington *et al.*, 1991; Ramsook, 2001; Amir *et al.*, 2009). Traumatic appendicitis can be defined as a rare cause for inflammation of the appendix, resulting from an external mechanical force, thence excluding the presence of the above-mentioned aetiology. There are some reported cases in the literature; even though the subject is still controversial. Here we present a case to illustrate the rare aetiology of appendicitis that is blunt abdominal trauma.

**Case history:** A 15-year-old boy presented to the emergency department with severe abdominal pain. 6 h previously, he had been riding his stunt bicycle, performing tricks and fell from a height of approximately 2 metres onto concrete on the right side of his body. He did not sustain a head injury or lose consciousness at any point; he walked away from the accident. 30 min later he developed severe right sided abdominal pain. He presented in the emergency

department 7 h later with worsening, non-resolving abdominal pain. On examination, he was tender in the RUQ and RIF, with evidence of local peritonism. He was haemodynamically stable (HR 57, BP 105/47, O<sub>2</sub> stats 100% on air RR16 T 36.7C). A screening ultrasound scan was performed which showed no free fluid in the peritoneum. His blood results were WBC 16.2, Neutr 13.6, Hb 14.4, CRP 1 Amy 51 and normal LFTS and renal function. He was admitted under the care of the general surgeons for observation. At this time, traumatic injury to the liver was still suspected.

The following morning he complained of ongoing RIF pain, not settling, no nausea or vomiting. On examination he again had localised signs of peritonism. A formal USS was done and reported as normal liver, gallbladder, spleen and kidneys, with no evidence of free fluids. The blood tests were repeated and again showed an elevated white cell count. A urine dip was done which was clear. That evening he was further reviewed. Clinical concern included a mesenteric or bowel injury that was missed on ultrasound and so a laparoscopy was performed.

During laparoscopy, a necrotic, non-perforated appendix was found and removed in the standard fashion. The diagnosis of appendicitis was made macroscopically and was subsequently confirmed after histological examination.

### DISCUSSION

The most common cause of appendicitis is obstruction of the lumen by factors such as stool and

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foreign bodies, including infective organisms (Ciftci *et al.*, 1996). But other, more rare causes have been observed.

In 1892, the possibility of trauma as an aetiological factor for appendicitis was postulated, but it was not until 1905 that cases were described in the literature (Rhodes and Birnbaum, 1940).

Shutkin and Wetzler described the diagnostic criteria as (Rhodes and Birnbaum, 1940):

- There must have been absolute freedom from abdominal complaints associated with pain, nausea, vomiting and tenderness, before the trauma
- Direct trauma must be severe and forcible, involving the abdominal wall in the right half especially
- Indirect trauma must be violent, acute and unexpected
- Symptoms must appear immediately after the trauma
- Symptoms must be persistent and progressive, assuming the symptoms and signs of acute appendicitis
- The pathologic findings must indicate a suppurative destructive or necrotic process

Our case study complies with every one of these criteria and so the cause of this case of appendicitis can be concluded as the blunt abdominal trauma sustained by the patient.

There is much controversy over the subject. The main argument explains that if the appendix is a very small part of the bowel, quite mobile and a deep structure, therefore, if there has been enough force to damage the appendix, the surrounding bowel should have also been affected (1.9), that blunt abdominal trauma would not cause isolated appendicular damage. Upon review of the literature, this is not the case and there is no shortage of cases, which describe the diagnosis that complies with the criteria. Trauma may cause very varied injuries and appendicitis is one of them. Another argument proposed by the sceptics is that the appendicitis was developing prior to the trauma. In an asymptomatic energetic, stunt bike rider, this seems unlikely.

This brings about two main implications, a clinical and a medico-legal one. We are not trained to consider appendicitis in our list of differential diagnosis when we see, in this case, a paediatric patient after blunt abdominal trauma and so it can be missed, with catastrophic consequences. In this case and after discussion with the consultant on call, if the child had presented with the symptoms but no history of abdominal trauma he would have probably been diagnosed with appendicitis and appendectomy performed 24 h earlier. In conclusion, this should bring about a change in practice and demonstrates that we should have in mind the differential diagnosis of appendicitis when someone presents with RIF pain after blunt abdominal trauma.

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