Omental infarction and anterior wall adhesion presenting as surgical abdomen in a paediatric patient.

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Abstract

Omental infarction is a rare cause of acute abdomen that can present in both the pediatric and adult populations causing adhesions or abscesses. Presentation may mimic appendicitis; however, ultrasonography may not be sufficient. We discuss the importance of CT imaging for the pre-surgical diagnosis to avoid serious port-site injuries.

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Key clinical message:

Omental infarction is a rare cause of acute abdomen that may mimic appendicitis. Complications such as adhesions may occur and hence CT imaging should be considered for the pre-surgical diagnosis to avoid serious port-site injuries.

Introduction:

Omental infarction is an uncommon cause of acute abdomen often mimicking the presentation of acute appendicitis in the pediatric population[1]. It occurs in 0.1% to 0.5% of children undergoing surgery for suspected appendicitis[2]. Omental infarction is caused by two main pathological mechanisms either secondary to vascular pedicle torsion on its own axis or hypercoagulable states. One third of torsion cases can be idiopathic, with two thirds being due to the presence of intra-abdominal pathology causing distal anchorage of the omentum[3]. It has been shown that obesity is a risk factor for this disease[4].

This article describes the management of a case of omental infarction in a 6-year-old patient presenting to the hospital with an acute surgical abdomen and discusses the condition's relevance in paediatric surgery. The need for awareness about the condition and pre-operative imaging is emphasized.

Case history / examination:

A 6-year-old patient presented to the hospital with acute abdominal pain and constipation, having passed dry, hard motions every three days. He was given analgesia and daflon (450mg diosmin, 50mg hesperidin) to relieve the constipation in hopes of relieving the symptoms and was discharged. He then re-presented to the hospital a week later, where his situation had severely deteriorated presenting with a surgical abdomen (rigid and tender with guarding). The patient had a BMI of 22.22, putting him in the 99^{th} centile for age, and classed as "very overweight". The patient has no surgical history. Differentials that were considered included a small bowel obstruction, however the patient had no vomiting, and the lack of a loss of appetite or a fever discouraged a diagnosis of appendicitis.

Investigations:

Routine bloods were acquired prior to surgery showing an elevated white blood cell count (WBC) of 17.8 x10ˆ9/L, and neutrophilia with 85.7% neutrophils. CRP was also elevated at 35.

An ultrasound was requested on suspect of appendicitis; however, it was deemed inconclusive. Further an abdominal x-ray was requested which showed faecal and gaseous distension of the large bowel and no evidence of free air under diaphragms. There was no radio-opaque calculus or abnormal calcification, which did not lead to any conclusive pathology (figure 1). Prior to undergoing explorative laparoscopic laparotomy, Computed Tomography (CT) imaging was utilized in hopes of discovering the pathology. Here the CT showed an ill-defined region of ground glass haziness involving the omentum in the anterior supraumbilical region measuring 5.5 x 1.7cm (figure 2). There was also multiple enlarged and sub-centimeter sized right sided mesenteric lymph nodes. This pointed towards a diagnosis of omental necrosis.

Treatment:

The patient was then taken for laparoscopic surgery where port sites were carefully chosen to avoid an umbilical insertion as to not pierce the adherent oementum. Open technique was used to enter the peritoneal cavity. Then the laparoscope was inserted into the abdomen under direct vision and 10 mm port was inserted. Subsequently the following ports were inserted under direct visualization along with local anaesthetic in the typical fashion: a left lower quadrant 5 mm port and a 5 mm right lower quadrant port.

After a general inspection of the organs and the abdomen, the omental adhesion was carefully released from the umbilicus (figure 3). It was noted that there was severe congestion of the large omental mass, and it was necrosed and twisted once round, suggesting that primary idiopathic torsion of the omentum as the cause (figure 4). The omental mass was then resected, and sent to histopathology, which showed mature adult type adipose tissue with acute and chronic inflammation, granulation tissue, dilated vessels and fibrosis. No significant increase in pleomorphism or mitosis was seen. This confirmed the diagnosis of omental necrosis secondary to infarction. Post operatively the patient assumed spontaneous recovery, the WBC returned to normal levels within two days and the patient was discharged.

Discussion:

Omental infarction is a serious condition that can be relatively easily misdiagnosed, and patient presentation ascribed to other causes of acute abdomen such as appendicitis. Though it is a rare condition, the importance lies in the need of adequate imaging and diagnosis prior to surgery, as we have shown how omental infarction may lead to / be concomitant with anterior abdominal wall adhesions[5]. Irreflective laparoscopic laparotomy in said causes may cause penetration of the omental adhesion, resulting in heavy bleeding in the patient[6].

Though it is believed that conservative management may be sufficient in some cases, our case showed that it resulted in deterioration of the patient's state and hence surgical intervention was necessary. Moreover it has been shown that both a younger age and an elevated white blood count [?] 12x10ˆ9/L were predictive

of conservative treatment failure – which our case has reaffirmed[3]. Surgery has also been shown to have a significantly reduced hospital stay length for patients with 2.5 days average as opposed to 5.1 days[3]. The feared complication of the conservative management of a case of omental infarction is the development of an omental abscess, which can lead to severe deterioration of the patient and peritonitis[7]. As such we recommend that in the paediatric population, the need for surgical intervention should not be neglected.

Some literature suggests ultrasound as the modality of choice in the diagnosis and management of omental infarction[8], however another study has shown that it to have a sensitivity of 64%[9]. Moreover, the operator dependant nature of ultrasonography and lack of awareness of the condition limits it's success[10]. In our case, the ultrasonographer may not have had omental infarction with adhesion to the abdominal wall as a differential, and hence may not have investigated the appropriate area. Findings which can be present on ultrasonography can include a complex mass, a mixture of solid material, and hypoechoic zones[11] – however this was not found on our report. As such we recommend that whilst ultrasonography should be used as initial imaging to exclude obvious causes of acute abdomen such as appendicitis, if inconclusive CT should be followed as it has a much greater sensitivity of around 90%, and its use in cases of acute abdomen have resulted in the ability to perform a perioperative diagnosis much more often[9,12].

Conclusion:

In conclusion, while there have been previous case reports on omental infarction mispresenting as appendicitis, our case indicates the importance the consideration of surgery in the paediatric population, as well as the necessity for preoperative diagnosis prior to laparoscopic laparotomy in order to avoid port-site injury and heavy omental bleeding.

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