

A Diagnosis to Keep in Mind: Primary Omental Torsion in Children

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Abstract

Omental torsion is an uncommon cause of acute abdominal pain in the pediatric population, most often misdiagnosed as acute appendicitis. It occurs when the omentum twists around its long axis, causing venous obstruction, edema, and vascular compromise. Symptoms are nonspecific. Ultrasound scanning is not sensitive enough for the diagnosis and diagnosis is frequently made while operation. Omental surgical resection is considered as the gold standard.

We report a case of a primary torsion of the lesser omentum in a 5-year-old girl and discuss contemporary methods in diagnosis and management of the condition.

Keywords: Omental; Torsion; Acute; Abdominal

Introduction

Omental torsion can be either primary (idiopathic) or secondary, depending on the predisposing factors that cause it [1]. It's an unusual cause of acute abdomen and commonly mimics acute appendicitis [2]. It's found in 0.1% of children undergoing abdominal exploration for acute appendicitis [3]. In the majority of cases, the diagnosis is made intra operatively. However, preoperative diagnosis is important on the part of the surgeon [1]. It can be accomplished using ultrasound (US) and computerized tomography (CT). Excision of the tormented omentum significantly reduces complications such as adhesion and abscess formation [4].

We reviewed the clinical presentation, imaging features, surgical findings and outcomes of the case of a five-year-old girl presenting with abdominal pain and that abdominal ultrasonography (US) suggested appendicitis.

Reported case

A 5 years girl was examined for localized abdominal pain of the right lower quadrant since 24 hours. Her past medical history was unremarkable, weight was normal for age. Abdominal examination showed localized guarding and fever to 38°. Laboratory tests, including a full blood count and a basic biochemical profile, were normal except for leukocytosis (13,900/mm³) and a mild elevated C-reactive protein level.

Abdominal ultrasound showed a hyperechoic hypervascular well-defined mass in the upper right side of the abdomen of 40*15 mm mimicking appendicitis. At laparotomy, through a Mac Burney incision, appendix was normal. After a thorough examination of the abdomen, a necrotic, tormented omentum was observed. The omentum was found rotated, on the long axis, 5 times in a clockwise manner. The omentum was ischemic after distortion (Figure 1-3). The rest of the abdominal organs were normal. The tormented omental structure was re-

sected, and an appendectomy was also performed. The pathological examination of the resected material revealed hemorrhagic necrotic fatty tissue. The patient's postoperative recovery was uneventful, and she was discharged 2 days later.



Figure 1: Preoperatif omentum torsion.



Figure 2: Ischemia of omentum after distortion.

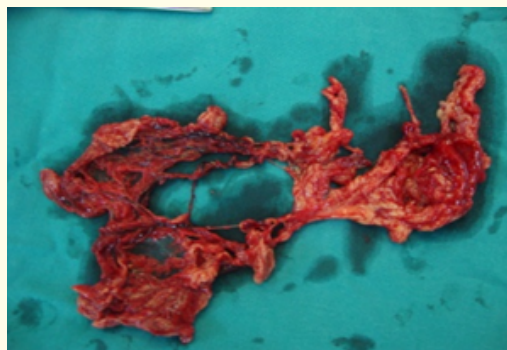


Figure 3: Resected omentum.

Discussion

Omental torsion is a kind of volvulus due to a twist in the omentum along its long axis and may result in ischemia and necrosis [1]. Approximately 15% to 20% of cases of OT occur in children, but accurate incidence has not been determined yet [5]. A retrospective Mexican

study reported an incidence of omental torsion of 0.37%. It is more common in males than females and usually occurs in the 4th and 5th decades of life [6]. Omental torsion is responsible for 0.1% of laparotomies performed for acute appendicitis in children [7].

Because the greater omentum is free of any attachment on three sides (inferior, right, and left), it is highly mobile. This mobility predisposes the omentum to torsion and infarction [8]. Most authors endorse the hypothesis that the etiology of omental infarction is an embryonic variant of the blood supply to the omentum, making it susceptible to infarction, kinking and torsion [4].

Omental torsion may be classified (1952, Leitner, *et al.*), as either primary, when any obvious cause is not found, or more commonly secondary [9]. The latter form is mostly associated with intra-abdominal pathology such as omental cyst, hernia, adhesion, neoplastic lesion, appendicitis, cholecystitis, salpingitis, cyst, inflammatory process, or even a ventriculoperitoneal shunt catheter, hypercoagulopathy and even congestion of the mesenteric vein due to systemic diseases such as right-sided heart failure [6,7,9,10].

On the other hand, factors predisposing to primary omental torsion may include anatomic and vascular abnormalities, fragile blood vessels (bifid omentum), accessory or tongue-like omental structures, redundant omental veins and local variations in omental fat distribution (obesity) [11,12]. Obesity has been identified as a predisposing factor. Most reported series in children occurred in obese patients [13]. However, there have been several cases of omental infarction that developed in children with a body mass index less than 30 as in our case [9].

The clinical feature of omental torsion is not specific. The primary symptom associated is pain, with varying degrees and locations, depending on the extent and location of ischemic compromise within the abdomen. It is frequently localized in the right lower quadrant of the abdomen (omentum is longer and more mobile on the right side than on the left side) [6,11]. In many cases, pain reveals signs of peritoneal irritation, which mimic acute appendicitis or cholecystitis [14,15].

Ultrasound (US) and computed tomography (CT) play an important role in making an accurate diagnosis. Typical US findings are hyperechoic, non-compressible, intra-abdominal mass with central hypo-echoic changes [14]. It's always seen between the umbilicus and right colon, corresponding to the point of maximal tenderness. In our case this inflammatory mass was interpreted as omental inflammation in rapport with appendicitis. US also eliminate other acute surgery emergency [13,16,17].

Reported CT findings of greater omental torsion include the classic 'whirl' pattern. It's a well-circumscribed and oval with slightly higher Hounsfield Units in comparison to normal fat, due to the inflammation. This mass with heterogeneous attenuation, containing strands of soft tissue attenuation probably corresponding to fibrous bands and/or dilated thrombosed veins [6,10,15]. However, it should be noted that this characteristic whirling pattern may not be apparent if the axis of rotation is not perpendicular to the transverse scanning plane [3]. A similar whirling pattern may also be seen in small bowel volvulus but it is usually associated with small bowel obstruction and is centrally located in the mesentery [14].

Management of primary omental torsion is controversial. Some authors advocate conservative management, whereas others feel that surgical intervention is advantageous either open or laparoscopic [8].

Surgery remains the gold standard for diagnosis and management of primary omental torsion. Treatment of choice is resection of the affected omental part with or without appendectomy. The mode of resection regarding open or laparoscopic approach depends on the available equipment and the surgeon's experience [10,13,16]. Manual distortion is discouraged, owing to the risk of vessels thrombosis and late necrosis [4]. Complete excision of the torsed omentum would be the obvious treatment of choice. The appendix can be removed at the same time, to avoid future confusion with appendicitis or other abdominal surgical conditions, including possible recurrent omental infarct [3].

The presence of sterile serosanguineous fluid in the peritoneal cavity with the absence of any intra-abdominal pathology is almost a universal finding and should bring to mind the possibility of omentum torsion especially for children whose general appearance and physical findings are not as bad as expected [11,12,18].

We strongly recommend surgical management of primary omental torsion, or if malignancy is suspected, because delayed or conservative treatment may lead to several complications such as intra-abdominal abscess, sepsis, and adhesion formation which may result in prolongation of the abdominal pain and hospital stay [19,20].

Conclusion

Omental infarction is an uncommon clinical entity with a wide variety of clinical manifestations. A high index of suspicion should be present in patients with minimal gastrointestinal symptoms or having pain out of proportion to objective clinical findings on examination. It is difficult to diagnose torsion of omentum before performing an operation but a preoperative diagnosis can be achieved by keeping the disease in mind. In the majority of cases, the surgical removal of the diseased omentum remains the treatment of choice for immediate relief of symptoms and avoidance of potential complications.

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