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A Diagnosis of Omental Infarction in a Patient Presenting with Non-Specific Abdominal Pain

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Abstract

Omental infarction can present as an acute abdomen, but a low incidence and vague presentation mean it is only considered as a diagnosis when another more common pathology has been ruled out, e.g., appendicitis, diverticulitis, cholecystitis, peptic ulcer disease, colitis, etc. In earlier cases, diagnostic laparoscopy was used to diagnose this pathology, but improvements in CT imaging have led to this approach being questioned and abandoned by some. Much of the recent literature favours a conservative approach, with surgery being reserved for those patients who deteriorate or fail to resolve. In present case, a 76-year-old lady presented to ED with a 3-day history of gradual onset worsening right lower quadrant abdominal pain. She reported no other symptoms of note, and her past medical history included diverticular disease and type 2 diabetes. On examination, she was tender in the right lower quadrant with rebound tenderness and guarding, and appeared slightly dehydrated. Haematological and biochemical tests were performed with imaging to follow. Inflammatory markers of the patient were marginally raised, and intravenous antibiotics commenced with the booking of a CT Abdomen and Pelvis querying Acute Diverticulitis. However, CT demonstrated subtle fat stranding in the greater omentum in the anterior right flank, just inferior to the liver which given the history was likely to represent a focus of omental infarction. She was treated conservatively and was stable throughout her stay, and was discharged home after two days of regular analgesia with advice to keep well hydrated.

Keywords: Omental infarction; General Surgery; Radiology; Rare cases

Case Presentation

This 76-year-old lady presented to the Emergency Department in Mayo University Hospital with a three-day history of gradual onset vague abdominal pain in the right lower quadrant with no distinct character, which had worsened to the point where she felt the need to present to the ED. She reported no history of nausea, vomiting, change in bowel habit, rectal bleeding or genitourinary symptoms. She also denied any history of trauma, fever, recent weight loss or loss of appetite.

Past medical history

Hiatus hernia, Reflux oesophagitis and gastritis, diverticular disease of sigmoid colon diagnosed in 2013, Grade 2 hemorrhoids, Hypertension, Type II Diabetes Mellitus.

Past surgical history

Injection sclerotherapy for hemorrhoids in 2013, Transabdominal Hysterectomy & bilateral salpingo-oophorectomy for family history of uterine and ovarian cancer 15years ago.

Investigations

CT Abdomen & Pelvis with contrast: CT Abdomen & Pelvis with contrast: There was some subtle fat stranding in the greater omentum anteriorly in the right flank just inferior to the liver, which given the clinical context was taken to represent a focus of omental infarction, which was deemed likely to account for the patient's presentation (Figure 1,2,3).

Blood results on admission: White Cell Count 8.4x10⁹/L, Haemoglobin 13.7 g/dl, Haematocrit 0.409L/L, Platelet count 202 x10⁹/L, Prothrombin Time 10.2 Sec, International Normalization Ratio (INR) 1.0, Activated Partial Thromboplastin Time (APTT) 25.7 Sec, Plasma Lactate 0.8mmol/l, C. Reactive Protein (CRP) 14.7mg/l.

Treatment and outcome

The patient was kept fasting for 24 hours before the confirmation of diagnosis and commenced on intravenous fluids and regular analgesia. She was given intravenous antibiotics for 24hours to

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Figure 1: CT Abdomen & Pelvis with contrast (Axial section): Some subtle fat stranding in the greater omentum anteriorly in the right flank just inferior to the liver can be noted.



Figure 2: CT Abdomen & Pelvis with contrast (Sagittal section): Some subtle fat stranding in the greater omentum anteriorly in the right flank just inferior to the liver can be noted, rest of the findings are unremarkable.

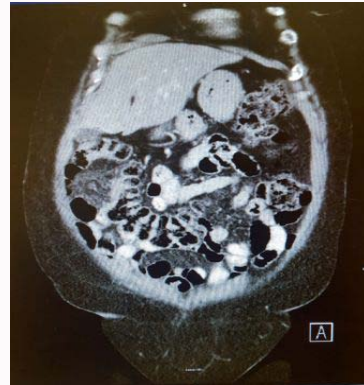


Figure 3: CT Abdomen & Pelvis with contrast (Coronal section): Some subtle fat stranding in the greater omentum anteriorly in the right flank just inferior to the liver can be noted.

the appendix not being inflamed, with the rationale that this approach would reduce the risk of omental abscess formation while having a low associated morbidity [2].

While having a small incidence overall - omental torsion itself has an incidence of 0.0016-0.37% - there have been several cases of Omental Infarction (OI) documented in the literature since the first cited in the late 1800's by Burke [3]. The pathogenesis of OI may be described as primary (idiopathic) or secondary, with secondary causes including omental torsion, hypercoagulability, polycythemia, and vasculitides [4].

Determining whether a patient has OI of primary or secondary pathogenesis is unlikely to impact management, and therefore a combination of patient history, physical examination and imaging may be sufficient to favor primary OI over secondary and vice versa. This patient's history of hysterectomy and bilateral salpingo-oophorectomy could potentially have led to the formation of adhesions, a known cause of omental torsion which in turn could have caused omental infarction. However, other documented cases of omental torsion (e.g., Naffa et al.) report CT evidence of the torsion such as streaking and concentric 'whirling' patterns in the greater omentum, whereas our patient's CT scan showed only subtle fat stranding (Figure 1,2,3), diminishing the likelihood of torsion as the etiology [5,6]. That being stated, only surgery can definitively reveal whether torsion or infarction in isolation is present [2].

In our patient, no past medical history of polycythemia or vasculitides was reported, but a potential contributing factor to this presentation could be dehydration, with the patient's history of diabetes mellitus a possible precipitating factor. Polyuria associated with DM may have led to dehydration in this instance and a subsequent hypercoagulable state. However, while it was recorded that this patient exhibited signs of mild dehydration, it is debatable whether this would be sufficient to induce a hypercoagulable state in isolation. Therefore it is contrary to definitively say if this was a case of primary or secondary omental infarction.

As mentioned above, the vague presentation of OI may be misleading [7]. The patient in this case presented with a non-specific pain in the right lower quadrant, where other more common pathology would be considered first. Indeed there is a significant predisposition for right-sided presentations of OI in previous case reports, and several authors have inferred that this relates to the anatomy of the greater omentum [8]. OI secondary to torsion can be

cover the differential diagnoses above until a definitive diagnosis was reached. The patient's pain resolved with simple analgesia in the form of regular intravenous paracetamol and as per required oxycodone for 24 hours, which were then switched to oral preparations. A lidocaine patch was applied to the site of tenderness over the right iliac fossa. Intravenous antibiotics were stopped after confirmation of diagnosis. She was discharged home after two days of regular analgesia with an outpatient follow-up in 2 weeks time. The diagnosis and disease process was explained to her, that the condition should settle with routine analgesia and hydration. She was also advised that if the pain persisted or she became symptomatic again in the future to come to return to the Emergency Department.

Discussion

A similar case of non-specific abdominal pain in an otherwise well patient was published in 2011 by Kushal and Knight [1]. A 32-year-old man presented with three separate admissions to the Emergency Department before finally undergoing a CT scan due to escalating concerns over worsening pain and possible organ perforation. Just as in our case, the patient had findings on CT indicative of an omental infarction, and in the absence of evidence of other causative pathology a diagnosis was made, with the patient being discharged nine days later after conservative treatment. In contrast, Aziz et al. reported a similar case of omental infarction undergoing a diagnostic laparoscopy with omental mass excision and appendectomy, despite

explained by the fact that the right half of the omentum is longer and also more mobile, predisposing it to a higher risk of twisting on itself and causing obstruction to vasculature, with subsequent venous stasis and thrombosis [9]. Primary OI is more difficult to explain, though it is proposed that the more unconventional vasculature present on the right half of the omentum is more vulnerable to spontaneous venous stasis and thrombosis of the omental veins [8].

Given the low incidence of OI, it would be unusual to be considered in a primary differential diagnosis of a patient with generalized abdominal pain, but would instead be picked up while imaging for other pathologies such as diverticulitis or appendicitis [4]. The vague presentation of this OI is challenging as findings on imaging may be subtle and if missed, may result in unnecessary exploratory surgery. However with improvements in the quality and availability of CT imaging the recognition of omental pathology has improved, with signs such as fat stranding and increase in fat density [8]. Therefore the primary focus of discussion centers on the management of OI once it is diagnosed.

A study by Itenburg et al. recommended a conservative approach initially, withholding surgery only if the patient deteriorated clinically while monitoring the patient for 24-48 hours [7]. The conservative approach involves the use of analgesia and optimisation of the patient's fluid balance, with or without anti-inflammatory medication. While there may be no definitive course of action, OI is considered a self-limiting condition, indicated by data collected from CT imaging at 1-3 years follow-up, and so conservative management is viable in the majority of cases [1,10]. With more accurate CT imaging, the need for exploratory surgery is reduced, and avoiding risks of general anesthetic and surgery for both exploratory and therapeutic surgery is a vital advantage of this approach. Park et al. questioned the surgical management being the first choice especially in the era of modern imaging with detailed disease explanation [9].

The main arguments in the inclination to surgery relate to reducing secondary complications, recurrence and hastening symptom relief. Amongst those favoring surgical management, a minimally invasive approach, i.e., diagnostic laparoscopy which allows through intra-abdominal exploration and omental necrosectomy, is the preferred option. According to Goti et al., with conservative management symptoms can persist for an average of 13.5 days [9]. It could be argued that expediting surgical management speeds up symptom resolution and decreases overall hospital stay of patients with OI, though there is inconsiderable data to confirm this. Besides, managing this pathology conservatively entails a theoretically higher risk of secondary peritoneal abscess formation [5,11]. However, Fragozo et al. debate that there are no reported cases of risks associated with conservative management and that therefore such risks are theoretical [12].

In conclusion, at present, there is no comparative study documenting a significant disparity between both treatment options. After radiological diagnosis, Itenburg et al. advocates close monitoring of a patient for first 1-2 days of admission, avoiding surgical intervention till clinical deterioration or rise in inflammatory markers [7]. Meanwhile, Park reviewed 14 reported cases of OI, with 11 of these being successfully managed conservatively, and three progressing to surgery due to deterioration or lack of resolution of symptoms [9]. Our patient recovered clinically with conservative

management, was discharged after two days, and was pain-free long before her outpatient follow-up at two weeks. On this basis and in light of the literature reviewed, the most logical approach to primary omental infarction would seem to be a conservative approach with surgery being held for those patients with clinical deterioration or failure of symptoms to resolve. This method also minimises risks associated with the surgical and anesthetic intervention, especially in patients with multiple co-morbidities. However comparative data would be needed to state this definitively.

Learning Points/Take Home Messages

- Omental infarction is a relatively rare phenomenon and is challenging to diagnose in the clinical background.
- There is, at present, no official course of action for managing omental infarction.
- Accurate recognition of omental pathology on CT imaging means diagnosis can be attained without exploratory surgery and in turn conservative management has become a viable option.
- A conservative approach is likely to be sufficient initially, but if the patient's condition deteriorates then laparoscopy is the most appropriate next step in management with thorough abdominal exploration and omental necrosectomy.

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