

Idiopathic Segmental Infarction of the Greater Omentum: A Rare Cause of Acute Abdomen

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Idiopathic segmental infarction of the greater omentum is a rare cause of acute abdomen. Patients, typically children or obese males in their fifties, present with abdominal pain located in the right upper or lower quadrant, mimicking cholecystitis and appendicitis. CT scanning and ultrasound imaging both may show a well-circumscribed soft tissue mass. Retrospective review of all patients treated for idiopathic segmental infarction of the greater omentum occurred from January 1993 to December 2001. Nine patients were treated successfully, six surgically and three medically. Conservative management of segmental infarction of the greater omentum can be proposed when correctly diagnosed by ultrasound imaging or CT scanning and the patient's condition is stable. If not, laparoscopic removal of the involved segment of the greater omentum is the treatment of choice. (*J GASTROINTEST SURG* 2003;7:805–808) © 2003 The Society for Surgery of the Alimentary Tract, Inc.

KEY WORDS: Acute abdomen, greater omentum, necrosis, laparoscopy

Idiopathic segmental infarction of the greater omentum (ISIGO) is a rare cause of acute abdomen mimicking acute appendicitis and cholecystitis. Less than 350 cases have been published¹ since its first description by Bush² in 1896. ISIGO is mainly observed in children³ and in 40- to 50-year-old obese men.⁴ Patients present with acute abdominal pain and localized signs of peritonitis. Blood parameters usually show a mild inflammation with elevated white blood cell count and C-reactive protein.⁵ The radiological appearance of omental infarction is characteristic when present, and diagnosis can be made by ultrasound or CT-scanner.^{1,6–10} We report nine cases of ISIGO with emphasis on diagnostic and treatment modalities.

MATERIAL, METHODS, AND RESULTS

From January 1993 to December 2001, nine patients, seven males and two females with a mean age of 40 years (range 27–78 years) were admitted because of acute abdominal pain localized to the right lower quadrant (6/9, 66%), left upper quadrant (2/9, 22%) and right upper quadrant (1/9, 12%) (Table 1).

Guarding and low-grade fever were present in 8 patients (89%) and 5 patients (56%), respectively. Laboratory findings included elevated C-reactive protein (8/9, 89%) and white blood cell count (4/9, 44%). Abdominal ultrasound showed no abnormality in two patients. CT-scanner was conclusive for segmental infarction of the greater omentum in 4 out of 5 patients. Three patients with typical clinical and radiological findings were treated conservatively with success. Six patients were operated on (laparoscopy 5/6, laparotomy 1/6) because of unclear diagnosis or steadily worsening pain. Laparotomy was performed in one patient because of multiple previous abdominal surgeries. The diagnosis was confirmed in all patients (6/6), and the infarcted omentum was removed. Microscopic examination of the omentum showed ischemic infarction. The postoperative course was uneventful, and the mean hospital stay was 4.7 days (range: 3–7).

DISCUSSION

Primary idiopathic segmental infarction of the greater omentum is a rare cause of acute abdominal

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Table 1. Clinical features of nine patients with idiopathic segmental infarction of the greater omentum

| Patient Sex Age | Pain (yr) | Guarding | Fever (° C) | WBC (/mm ³) | CRP (mg/L) | Surgical history | Clinical diagnosis | Treatment |
|-----------------|----------------------|----------|-------------|-------------------------|------------|-------------------------------|--------------------|-------------|
| M 38 | RLQ | + | 37.7 | 16,800 | 88 | No | Appendicitis | Laparoscopy |
| M 32 | RLQ | + | 37.8 | 11,400 | 36 | Appendectomy | ISIGO | Laparoscopy |
| M 27 | RLQ | + | 37.2 | 9,500 | 20 | No | Appendicitis | Laparoscopy |
| M 27 | RUQ | + | 37.2 | 12,300 | <5 | No | ISIGO | Laparoscopy |
| F 78 | LUQ + epigastric | + | 36.0 | 9,100 | 56 | Appendectomy gastric ulcer | Peritonitis | Laparoscopy |
| M 59 | RLQ + right flank | + | 37.1 | 9,400 | 132 | No | ISIGO | Medical |
| M 33 | RLQ | + | 36.9 | 13,500 | NA | No | Appendicitis | Laparotomy |
| F 34 | RLQ | - | 36.3 | 9,800 | 10 | No | ISIGO | Medical |
| M 34 | LUQ | + | 37.5 | 9,100 | 34 | Appendectomy | ISIGO | Medical |

CRP = C-reactive protein (normal value <10 mg/L); M = male; F = female; RLQ = right lower quadrant; RUQ = right upper quadrant; LUQ = left upper quadrant; NA = not available; WBC = white blood cell count (normal value <10,000/mm³); ISIGO = idiopathic segmental infarction of the greater omentum.

pain mimicking conditions such as appendicitis, cholecystitis, and colitis. The disease has first been described by Bush in 1896.² Less than 350 cases have been published in the current literature.¹ Most of the patients are children (15%)³ and 40- to 50-year-old males with a sex ratio male:female of 2:1.⁴ Most patients present with abdominal pain localized mainly in the right lower or upper quadrant (90%) based on the involved part of the omentum.¹¹⁻¹³ Local guarding and rebound tenderness are common findings.¹⁴ Laboratory tests usually show elevated white blood cell count and C-reactive protein.⁵ Preoperative diagnosis can be made by radiological imaging. Computed

tomography and ultrasound both may show a well-circumscribed, ovoid or cake-like soft tissue mass characteristically located in the superficial paraumbilical region (Fig. 1 A and 1 B).^{1,6-10,15-17} The clinical presentation of ISIGO often leads to false diagnosis of acute appendicitis in 66%, and acute cholecystitis in 22%.¹⁸⁻¹⁹ Differential diagnosis includes acute appendicitis, acute cholecystitis, pancreatitis, duodenal ulcer, colon diverticulitis, strangulated hernia, ovarian torsion, mesenteric thrombosis, aortic aneurysm, omental metastases, and primary liposarcoma of the omentum.^{10,17,21}

The pathogenesis of ISIGO is unknown. Most authors agree with the hypothesis of anomalous arterial

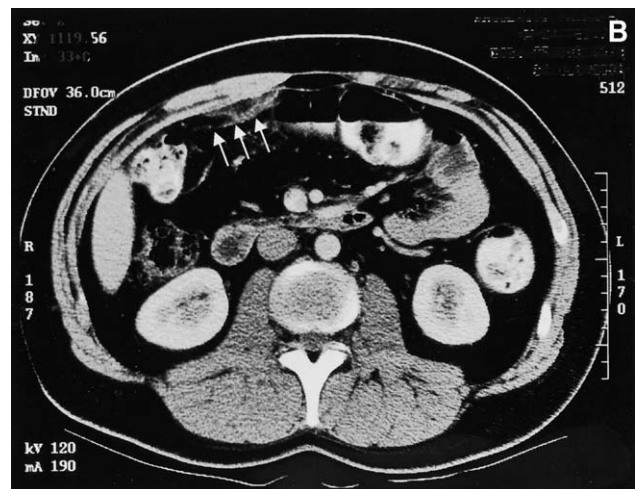
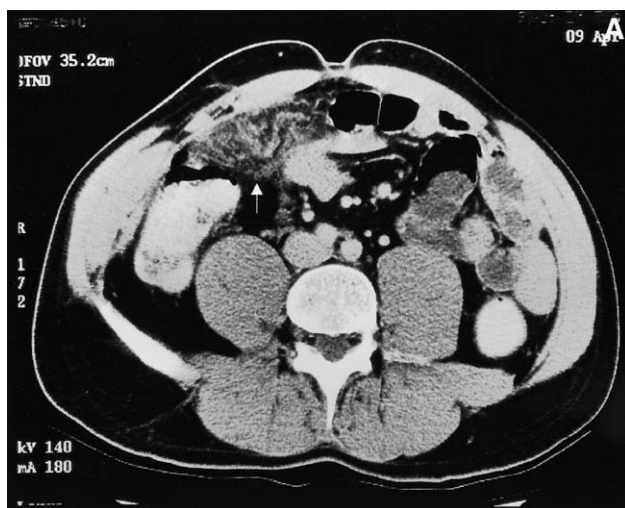


Fig. 1. Abdominal CT scan: A) fat interspersed with hyperattenuating streaks (arrow), and B) ovoid tissue mass in the paraumbilical region (arrows), two typical findings of idiopathic segmental infarction of the greater omentum.



Fig. 2. Laparoscopic view of idiopathic segmental infarction of the greater omentum (arrow).

blood supply to the omentum,^{18–20} mainly its right lower side, associated with mechanical factors. Those include venous kinking secondary to abdominal pressure increase, compression of the greater omentum between the liver and the abdominal wall,²² vascular congestion after large meals or during cough, especially in obese patients,^{6,21} and congestion of mesenteric veins caused by right-sided heart failure with secondary dilatation and hemorrhagic ischemia of the omentum.¹⁴

Patients presenting typical imaging findings of ISIGO may be treated conservatively.^{1,6,7,9,10,23,24} Rare complications of medical treatment such as septic shock,^{12,25} peritoneal adhesion,¹⁴ and peritoneal abscess¹ have been reported. Patients with unclear radiological findings or deteriorating conditions mandate surgical exploration of the abdomen. Bloody ascites with normal appendix and segmental necrosis of the omentum are usually found (Fig. 2). The laparoscopic approach for suspected ISIGO is efficient and safe with a low morbidity and no mortality.^{4,8,19,26–28}

Preoperative diagnosis was made in five out of our nine patients (55%) based on computed tomography. Three patients with image-based diagnosis were treated medically. Surgery was the treatment because of suspected acute appendicitis or peritonitis of unknown origin in four patients, and ISIGO with deteriorating conditions in two patients. Uneventful recovery was the rule for all nine patients.

CONCLUSION

Idiopathic segmental infarction of the greater omentum is a rare cause of acute abdomen of unknown etiology. The right side of the omentum is

affected in the majority of patients (90%) leading to initial false diagnosis of acute appendicitis and cholecystitis. Clinical and laboratory findings are non-specific. When ultrasound or computed tomography establishes the diagnosis, patients can be managed conservatively providing the patient's condition is stable. Unclear findings or deterioration in the patient's condition mandate surgical exploration, preferably by laparoscopy.

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