Epiploic appendagitis: a rare cause of abdominal pain

ABSTRACT

Background: Epiploic appendagitis is an atypical cause of abdominal pain whose knowledge could avoid diagnostic or treatment errors. Diagnosis has been performed with abdominal ultrasound or tomography with the only treatment being nonsteroidal anti-inflammatory drugs. The aim of the study was to analyze patients diagnosed in our hospital.

Methods: We performed a 4-year retrospective and descriptive study (March 2009-March 2013) of patients diagnosed with epiploic appendagitis in our hospital.

Results: Seventeen patients were included, 14 females and three males with a median age of 57 years. Symptom delay was 72 h. Abdominal pain was located in the left lower quadrant in 64.7% and right lower quadrant in 35.3% of patients. Blood test demonstrated leukocytes 6,300 (5,000-9,500), neutrophils 61.6% (57-65.8), and C-reactive protein 1.5 (0.85-2.92). Diagnosis was confirmed with abdominal ultrasound or tomography in 88.2% and intraoperatively in 11.8%.

Conclusions: Epiploic appendagitis was more frequent in females. Abdominal pain was located in the lower quadrant, more predominant in the left than right. Blood tests were normal except for increased levels of C-reactive protein. Diagnosis was made mostly preoperatively due to imaging tests, avoiding unnecessary surgical intervention.

Keywords: Acute abdomen, appendix epiploic, torsion, appendagitis.
ABSTRACT

Epiploic appendices are small pouches of the peritoneum filled with fat and situated along the surface of the colon. They are chiefly appended to the transverse and sigmoid parts of the colon; however, their function is unknown. Its localization on the rectum is rare. Epiploic appendages are vascularized by two arteries and one single, long, central and tortuous vein. These have a mean length of 3 cm (0.5-5 cm), a thickness of 1-2 cm, and number 50-100. It is believed that the epiploic appendix has a defensive function.1

Epiploic appendagitis is a rare cause of acute abdominal pain primarily caused by torsion or thrombosis of the vascular pedicle or secondary to inflammation of the adjacent organs. Recognition of the condition could avoid diagnostic or therapeutic errors as this condition is frequently confused with appendicitis or acute diverticulitis. It is common that patients are unnecessarily subjected to a surgical event.

Epiploic appendagitis is a little diagnosed disease that tends to be seen as part of a clinical scenario of unspecified abdominal pain.2 De Brito et al. in a radiological study using abdominopelvic tomography of adult patients with abdominal pain estimated a frequency of 1.3% and an incidence of 8.8 cases/100,000 inhabitants/year.3 According to Singh et al.,4 the term epiploic appendagitis was introduced for the first time by Lynn in 1956, and its radiological characteristics were defined by Danielson in 1986.4 According to Ozdemir et al.3 epiploic appendagitis was described from the anatomic point of view by Vesalius in 1543, although its surgical implication was not described until 1843 by Virchow who suggested that they may be due to overlooked intraperitoneal foreign bodies.

Epiploic appendagitis may appear at any age, although the condition is more common during the fourth and fifth decades of life. Cases have been reported of patients between 12 and 82 years of age with a slight predominance in males and obese patients or in patients with recent weight loss. Occasionally, the condition occurs after abrupt or unusual physical exertion. The main symptom is that of pain, characterized by its abruptness, fixed position, localized to the finger tip, and mainly in the left lower quadrant. It is not common in the upper quadrants because it tends principally to affect the sigmoid, cecum and ascending colon and rarely is found in the transverse colon. Occasionally it is accompanied by a palpable tumor. Vomiting, changes in intestinal rhythm, fever or data of peritoneal irritation are rare. The period of latency of symptoms to arrival for consultation in the Emergency Department is usually < 1 week. Laboratory reports often show few alterations. The most common laboratory finding is elevation of the acute-phase reactants.

Diagnosis is almost always established based on a radiological or ultrasound test (ovoid hyperechoic tumor with surrounding hypoechoic halo, non-compressible with absence of flow in its central zone in Doppler mode, located adjacent to the colon) or tomography (hypodense tumor with hyperdense halo occasionally accompanied by a central hyperdense zone as a reflection of the central vein thrombosis). Occasionally, in late phases calcification is seen due to fat necrosis.1,6-12

Differential diagnosis should be established principally with the following conditions: a) Omental infarct, an uncommon entity due to the large quantities of collateral vessels of the greater omentum. Unlike epiploic appendagitis, it can also appear during childhood (15%). In the majority of cases the pain is located in the right quadrant, a circumstance that is associated with greater mobility and length of the greater omentum on this side. It is rare on the left side. Tomographically, the lesion is greater (average > 7 cm), located medially to the cecum or
ascending colon and inferior to the transverse colon with absence of the hyperdense ring.\textsuperscript{9,13} b) Acute diverticulitis. c) Acute appendicitis. d) Sclerosing mesenteritis characterized by inflammation and fibrosis of the mesenteric fatty tissue that tends to appear during the sixth and seventh decades of life with greater frequency in males. It is subdivided into mesenteric panniculitis (prevalence of chronic inflammation), mesenteric lipodystrophy (prevalence of fat necrosis) and retractile mesenteritis (prevalence of fibrosis, which is sometimes radiologically indistinguishable from a neoplasm). Tomographically, it is characterized by a hypodense lesion surrounded in half of the cases by a pseudocapsule located around the mesenteric vessels, without displacing them\textsuperscript{13} (Figure 1). e) Primary mesenteric tumors (liposarcoma, angiomyolipoma) or metastasis with involvement of the mesocolon.\textsuperscript{14} f) Mesenteric adenitis. g) Gynecological problems: hemorrhage or ovarian torsion, or pelvic inflammatory disease.\textsuperscript{1,4,9,15,16} 

According to Ozdermir et al.,\textsuperscript{5} treatment is surgical excision because the majority of cases were diagnosed during the surgical procedure based on the suspicion of an acute abdomen. Conservative treatment was proposed for the first time by Epstein and Lempke in 1968 but not published until 1992. The majority of the cases are currently diagnosed with the assistance of imaging techniques. Treatment is based on symptomatic control with nonsteroidal anti-inflammatories with a good response in 1 to 2 weeks. Prescription of antibiotics is not necessary because an aseptic fat necrosis is produced during the evolution, although the radiological changes may take some time to disappear, even up to 6 months.\textsuperscript{5,6-8,16} Some authors have reported a rate of recurrence or persistence of pain in up to 40% of cases; therefore, they recommend surgical excision at the time of diagnosis to avoid complications.\textsuperscript{17} Complications described associated with epiploic appendagitis are intestinal occlusion due to adhesions, abscess formation and simulation of a tumor mass.\textsuperscript{5}

The objective of this study was to analyze the cases diagnosed as epiploic appendagitis in the Department of Surgery of the University Hospital San Juan de Alicante, Spain.

**METHODS**

A retrospective descriptive study was carried out including a series of patients with diagnosis of epiploic appendagitis in the Department of Surgery of the University Hospital San Juan de Alicante, Spain during a 4-year period (March 15, 2009 to March 25, 2013) with a population of 240,000 inhabitants. Descriptive statistics were used with frequency and percentage for qualitative variables and median and range (minimum-maximum value) for quantitative values.

**RESULTS**

Of the 17 cases found, 14 were females (82.4%) and three males (17.6%) with a median age of 57 years (range: 12-80 years) with 35.3% \((n = 6)\) with some type of comorbidity, most common being high blood pressure (29.4%, \(n = 5\)). The
incidence was 1.8 cases/100,000 inhabitants per year. The time of symptom progression was 72 h (range: 33-92 h). There was constant monitoring of vital signs on admission: temperature 36.6ºC (range: 36.1-36.9ºC), heart rate 80 beats/min (range: 78-91 beats/min), systolic blood pressure 133 mmHg (range: 120-139 mmHg), and diastolic blood pressure 72 mmHg (range: 65-75 mmHg). Abdominal pain was localized in the left lower quadrant in 64.7% (n = 11) and right in 35.3% (n = 6). Laboratory results are shown in Table 1.

All patients had some type of radiological test performed: abdominopelvic computed tomography in 70.6% (n = 12), abdominopelvic ultrasound in 11.8% (n = 2) and both in 17.6% (n = 3). Diagnosis was confirmed in 88.2% (n = 15) (Figure 2), in two cases intraoperatively and in one case with clinical suspicion and the other due to clinical and radiological suspicion of acute appendicitis. Of the 15 patients not operated, 80% (n = 12) were hospitalized for pain control with a hospital stay of 3.7 days (range: 2.5-4.4 days). There was one case of recurrence at the end of 32 months, which was treated conservatively without recommendation to undergo surgical excision.

**DISCUSSION**

Epiploic appendagitis is an uncommon cause of abdominal pain with an average of four cases annually in our series. It is probable that it is an underdiagnosed ailment due to the selective and nonsystematic use of imaging tests resulting in many patients being diagnosed with unspecified abdominal pain. The condition can occur at any age but is most frequent during the fourth and fifth decades of life with a slight male predominance. In our series, although the age range was similar, there was a clear female predominance.

Diagnosis was established by clinical suspicion based on abdominal pain, generally < 1 week

### Table 1. Laboratory results.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Reference values</th>
<th>Median (min-max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin (g/dl)</td>
<td>13.5-17.2</td>
<td>13.5 (13.1-14.1)</td>
</tr>
<tr>
<td>Hematocrit (%)</td>
<td>40-51</td>
<td>40.2 (38.5-41.8)</td>
</tr>
<tr>
<td>Leukocytes/mm³</td>
<td>3,500-12,000</td>
<td>6300 (5000-9500)</td>
</tr>
<tr>
<td>Neutrophils (%)</td>
<td>0-80</td>
<td>61.6 (57-65.8)</td>
</tr>
<tr>
<td>Platelets/mm³</td>
<td>140,000-500,000</td>
<td>218,000 (175,000-251,000)</td>
</tr>
<tr>
<td>Urea (mg/dl)</td>
<td>10-50</td>
<td>26 (17-34)</td>
</tr>
<tr>
<td>Creatinin (mg/dl)</td>
<td>0.7-1.2</td>
<td>0.8 (0.7-0.9)</td>
</tr>
<tr>
<td>Bilirubin (mg/dl)</td>
<td>0-1.2</td>
<td>0.5 (0.4-0.6)</td>
</tr>
<tr>
<td>C-reactive protein (mg/dl)</td>
<td>0-0.5</td>
<td>1.5 (0.85-2.92)</td>
</tr>
</tbody>
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in duration, localized in the inferior quadrants (especially left), and associated with normal vital signs and laboratory values (except for increase in C-reactive protein). Diagnosis was confirmed with the use of an imaging test, primarily abdominal tomography. Preoperative diagnosis allowed for conservative treatment with non-steroidal anti-inflammatory drugs, with a high rate of hospital admission as opposed to most of the series in which treatment is ambulatory. The authors believe that it is due to non-acceptance of this treatment by patients and the surgical team on duty because of the cumulative lack of experience. There were two diagnostic errors related with the clinical and radiological suspicion of acute appendicitis and the diagnosis was established intraoperatively.

Ozdemir et al. and Freitas et al. recommend excision of the twisted epiploic appendix at the time of the diagnosis due to the possible recurrence, persistence of symptoms or complications; however, we cannot support this because of our results with a recurrence rate of 5.9% ($n = 1$) and lack of complications.

In conclusion, epiploic appendagitis in the University Hospital San Juan de Alicante was more common in females with a median age of 57 years. The typical clinical picture was abdominal pain in the lower quadrants, most common on the left side. The condition was associated with normal vital signs and laboratory results with the exception of elevated C-reactive protein. For the majority of cases, diagnosis was established prior to surgical intervention due to the use of radiological tests that allowed for conservative treatment.

REFERENCES