

Acute Appendicular Torsion

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CASE SUMMARY

A 29-year-old was admitted to the emergency department with an acute right lower quadrant (RLQ) abdominal pain. A physical examination demonstrated a blood pressure of 109/68, heart rate of 109, and fever (37.5 °C). The patient was tender to palpation in the RLQ with signs of peritoneal irritation. The examination was suggestive of acute appendicitis.

IMAGING FINDINGS

Ultrasound (Figure 1) showed a tubular image with concentric layered structure and a peripheral hyperechogenicity, with alteration of periappendicular fat and periappendicular free fluid. Contrast-enhanced CT shows the same tubular structure, with hypodense content (25 HU) and peripheral calcifications, as well as free liquid (Figure 2), suggestive of a dilated appendix with an associated appendicular mucocele. Cranial to the mucocele another tubular structure with a lower caliber was observed, which appeared to be the proximal portion of the appendix, twisted on its axis (Figure 2). In addition, a hypodense and irregular area connecting the two structures is

observed, suggestive of the congestive and twisted mesoappendix (Figure 2).

An emergency open surgical intervention revealed appendicular dilation in the distal two-thirds, with ischemic signs, twisted three times (Figure 3). Macroscopic pathological study showed a congestive mesoappendix and an appendix of 9 × 2.5 cm (longitudinal x transverse). A normal-appearing appendicular portion 3 × 1 cm (longitudinal x transverse) was attached to the mesoappendix. Microscopic study revealed mucous material and abundant calcifications, with hemorrhagic necrosis of the wall. The sediments showed only a mucous background with macrophages, lymphocytes, and polymorphonuclear leukocytes.

DIAGNOSIS

Appendicular torsion secondary to a simple mucocele

DISCUSSION

Acute appendicitis is the most frequent surgical emergency. There are appendicular pathologies that can mimic acute appendicitis, causing the same typical RLQ pain, including appendicular torsion,¹ which is a rare

pathology, first described in 1918.² Despite the condition's rarity there are some published cases.²⁻⁸

Torsion may be primary or secondary to other abnormalities. Several factors contribute to primary torsion: a long appendix, a "fan-shaped" mesoappendix, and/or a narrow base.⁹ Secondary torsion is rarer and includes a broad spectrum of anomalies: appendicolith, lipoma, simple mucocele, mucinous cystadenoma, carcinoid tumor, and adhesions. To date, 2 cases of appendicolith,² 2 lipomas, 8 mucocèles,⁶ 8 mucinous cystadenomas,^{3-5,7,8} 1 carcinoid and 1 adhesion have been published

Theoretically, these anomalies would cause congestion of the appendix, leading to a greater tendency to twist.

The clinical presentation is nonspecific. Symptoms are similar to those of acute appendicitis, with pain in the RLQ, nausea, and vomiting.¹

The diagnostic test of choice for acute abdominal pain in the RLQ is abdominal ultrasound. Caspi et al¹⁰ described the appendicular mucocele as a layered cystic mass, visualized as a heterogeneous lesion with hyperechogenic layers, naming it "onion

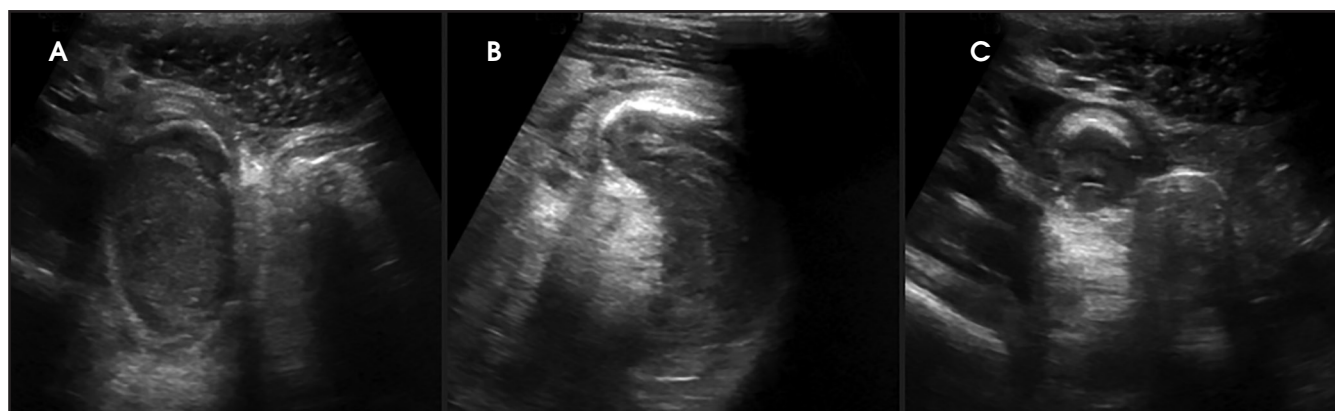


FIGURE 1: Abdominal ultrasound. (A-C) A heterogenic and concentric layered lesion is seen in the abdominal RLQ. The lesion shows peripheral hyperechogenicity and slight acoustic shadow. Hyperechogenicity of the adjacent fat and free fluid are also seen.

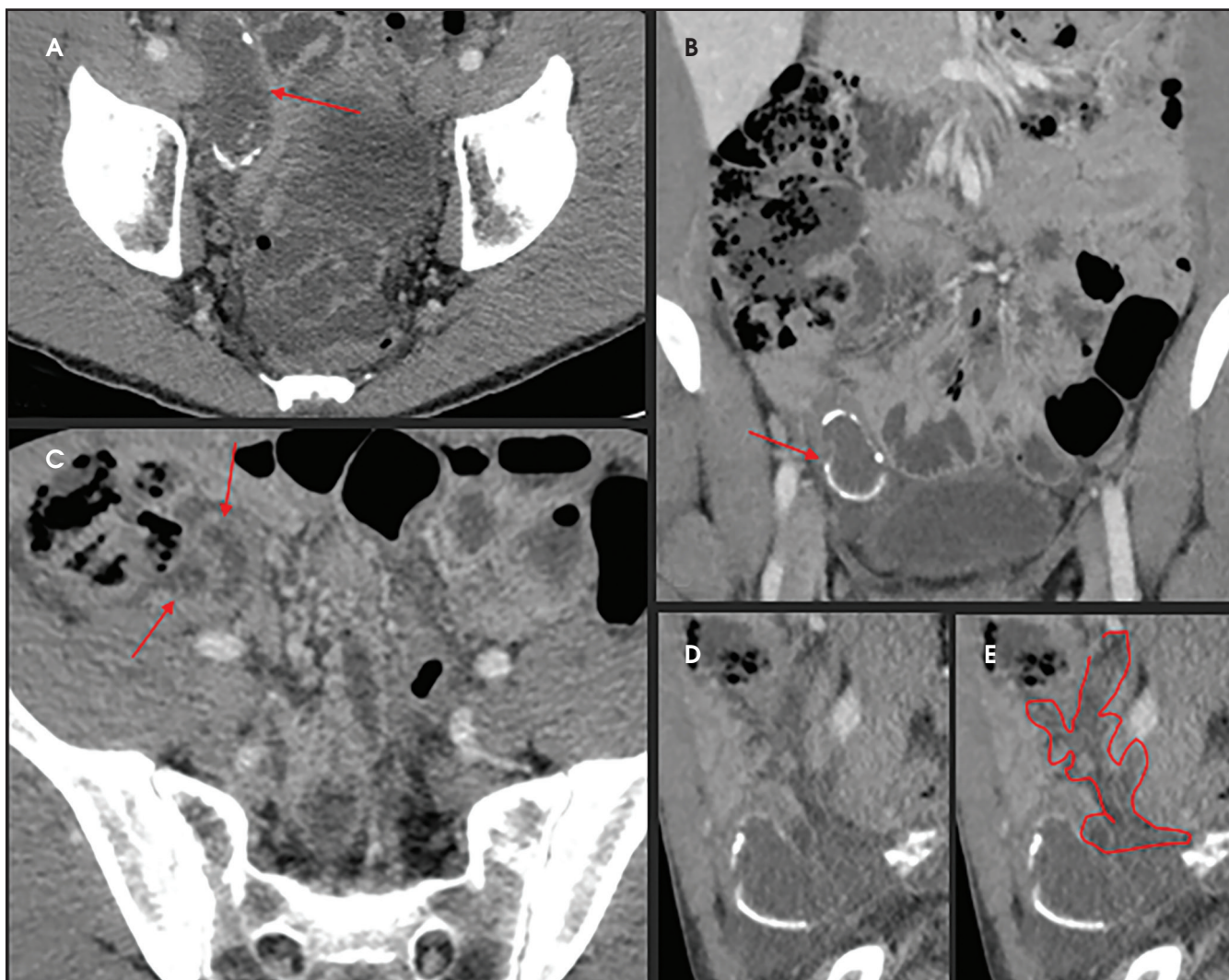


FIGURE 2: Abdominal CT with intravenous contrast (venous phase) that shows a mucocoele and an appendicular torsion. (A,B) A hypodense lesion with peripheral calcifications is observed in the abdominal RLQ. The lesion has oval morphology and appears to correspond to an appendicular mucocoele. (C) This axial image shows two hypodense structures (arrows) corresponding to the proximal portion of the appendix, which is rotated on its own axis. (D) The twisted mesoappendix is seen outlined in red. (E) The twisted mesoappendix is seen outlined in red.



FIGURE 3. Gross specimen of the appendix.

skin sign.” In the case of appendicular torsion, Hamada et al⁵ described a target-like appearance at the base of the appendix, similar to that shown in testicular and ovarian torsions and called it the “swirl sign.”

Findings at CT include appendicular dilatation with liquid density contents and peripheral calcifications. Periappendicular inflammatory changes are also associated.⁶ Hebert et al⁴ described a spiral of mesenteric fat and vessels around the appendicular axis. Torsion loops can be identified in some cases.⁶

Preoperative diagnosis is extremely difficult.⁴ Among the 22 published

cases of secondary appendicular torsion, torsion was suggested as a possible preoperative diagnosis in just three (13%).^{4,5,7} In our case the torsion was identified retrospectively on the CT after surgery.

The final diagnosis of appendicular torsion is made at surgery, where torsion loops are appreciated. Laparoscopic or open surgery may be performed. Radiological studies can help the surgeon select the most appropriate surgical approach.⁴

CONCLUSION

Acute appendicular torsion is a rare pathology that can be mistaken for an acute appendicitis because of the similarity of their clinical pictures. Therefore, the condition is diagnosed most often at surgery. However, raising the possibility of this diagnosis at imaging may help aid in selecting the most appropriate surgical approach.

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