Appendicitis with pelvic abscess:
CT and MR evaluation

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Section: Abdominal imaging
Area of Interest: Abdomen
Procedure: Intraoperative
Procedure: Diagnostic procedure
Imaging Technique: Experimental
Imaging Technique: CT
Imaging Technique: MR
Special Focus: Inflammation Abscess
Case Type: Clinical Cases
Patient: 31 years, female

Clinical History:

A 31-year-old woman was admitted to our emergency department with a 1 week history of diarrhoea non-responsive to anti-diarrhoea medications with diffuse abdominal pain. No other symptoms were revealed. Laboratory test showed leukocytosis with blood white cell of 22, 3/mmc with 90, 2% of neutrophils and C-reactive protein of 22, 3 mg/dl.

Imaging Findings:

Abdominal ultrasound (US) was first performed highlighting the presence of a hypogastric abscess of undetermined significance. Enhanced computed tomography (CT) showed conglomerate ileal loops in lower abdomen with stratified wall thickening due to oedema of submucosa layer and hyperaemic mucosa; a pelvic abscess, 2x6cm in size, and a small amount of dense peritoneal fluid were demonstrated. A round calcification near the abscess was seen. Due to the presence of inflammatory imaging and laboratory sign, no typical clinical history and no evidence of inflamed appendix, Crohn and Pelvic inflammatory disease were taken into account. Magnetic resonance (MR) was then performed showing a blind-ending tubular swollen structure in the right iliac side close to the abscess, with thickened stratified walls layers with hypointense round image inside. The thickened small bowel loops, peritoneal fluid and mesenteric lymphadenophaty were also demonstrated. Appendicitis with appendicoliths and periappendiceal abscess was diagnosed and surgery confirmed.

Discussion:

Acute appendicitis is one of the major causes of periumbilical-lower quadrant pain with a lifetime prevalence of 7% [1]; it is defined as inflammation of the caecal appendix caused by the appendicular lumen obstruction due to bowel inflammation, infection or neoplasm.

It is considered a medical emergency, as first described by James Parkinson in 1812 [2], because of serious complications such as appendical perforation, suppurative or gangrenous appendicitis, peritonitis and sepsis.

Diagnosis is usually performed on clinical sign and symptoms, such as pain or tenderness in the right lower
quadrant or rebound tenderness, and is supported by complementary laboratory tests that usually reveal a value of leukocytosis > 15,000/mm³, with prevalence of neutrophils. Assessment with Alvarado score for predicting acute appendicitis can be useful [3].

More than 35% of patients show atypical clinical and laboratory findings [4]; in this case imaging plays an important role that can improve diagnostic accuracy and may avoid misdiagnosed. US is routinely performed being highly specific for diagnosis of appendicitis (93%) and allows fast and early evaluation although showing low sensibility (83%) [5].

CT with intravenous contrast medium administration is often the modality of choice to identify appendix location and to evaluate the severity of appendicitis; it show both higher sensitivity than ultrasound (83% vs 95%) [5] and higher specificity (98%) [6]. The typical findings include caecal and appendix wall thickening, pericaecal fat stranding as well as small bowel dilatation and mesenteric lymphadenopathy. Signs of perforated appendicitis, like abscess, free extraluminal air and pericaecal phlegmon, can also show. MR is not routinely performed but it is helpful in solving the problem of equivocal findings and avoiding misdiagnoses, helping in evaluation of complications, with its high sensitivity of 97%-100%, specificity of 92%-93, 6% and accuracy of 92%-94% [7].

The inflamed appendix is best detected on T2 weighted images with slightly hyperintense thickened wall and periappendical fat inflammation. In the presented case MR allowed both the diagnosis of appendicitis and an appropriate and correct approach to the disease.

Appendicitis can mimic many other conditions and it is extremely important to reach a correct and early diagnosis. Delayed diagnosis and thus a delayed management of the patient is primarily responsible of the increase of morbidity and mortality.

**Differential Diagnosis List:** Acute appendicitis with pelvic abscess, Pelvic inflammatory disease, Tubo-ovarian disease, Meckel’s diverticulum, Crohn disease, Right colonic neoplasia (appendicular carcinoma), Diverticular disease, Urinary tract infection

**Final Diagnosis:** Acute appendicitis with pelvic abscess

**References:**


Description: CT enhanced axial scan shows conglomerate ileal loops, increased bowel wall thickening cause to oedematous submucosa layer and adjacent fat stranding.

Origin: Radiology Unit, Department of Surgical and Medical Sciences and Translational Medicine, Faculty of Medicine and Psychology University of Rome, Sapienza, Italy. Sant'Andrea Hospital, Via di Grottarossa 1035, 00189, Rome, Italy
Description: A pelvic abscess formation (b), 2x6cm in size, with adjacent round calcification, is also demonstrated (arrow)(c) Origin: Radiology Unit, Department of Surgical and Medical Sciences and Translational Medicine, Faculty of Medicine and Psychology University of Rome, Sapienza, Italy. Sant'Andrea Hospital, Via di Grottarossa 1035, 00189, Rome, Italy.
Figure 2

Description: T2-Weighted axial MR images show a blind-ending swollen structure, with hypointense thickened wall suggestive of acute appendicitis close to the abscess formation. Irregular wall and appendicoliths were demonstrated (arrow)(b). Origin: Radiology Unit, Department of Surgical and Medical Sciences and Translational Medicine, Faculty of Medicine and Psychology University of Rome, Sapienza, Italy. Sant'Andrea Hospital, Via di Grottarossa 1035, 00189, Rome, Italy
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Figure 3

Description: Swollen appendicitis, 11 cm in size, close to suffering ileal loops

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