Acute appendicitis in subhepatic location
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Patient: 50 years, male

Clinical History:
A 50-year-old male patient presented with acute, diffuse abdominal pain during the past two hours.

Imaging Findings:
A 50-year-old male patient with a history of gastric ulcer under treatment, presented at the emergency department with acute, diffuse abdominal pain. The pain had started two hours before his admission to our hospital and was accompanied by vomiting and low fever.
The clinical examination revealed diffuse contraction of the abdominal muscles, with severe resistance in palpation. Apart from a mild elevation of the white blood cells (10.500/mm3), there was no other remarkable abnormality in his laboratory tests. Based on the medical history of the patient, there was a high clinical suspicion of perforated ulcer and with this indication he underwent an emergency CT.
The abdominal non-enhanced CT (NECT) was negative for pneumoperitoneum; it revealed though a long, distended appendix in a tortuous, retrocaecal and mostly subhepatic course. A large appendicolith was identified in the appendiceal lumen. There was also a severe pericaecal and periappendiceal fat stranding. As all the NECT findings were strongly indicative of acute appendicitis, the patient did not receive intravenous contrast agent and was immediately led to the operation room, where he underwent an appendectomy.
The surgery confirmed the initial diagnosis of acute appendicitis. The inflamed appendix was found to be 20cm long and in a subhepatic location.

Discussion:
The appendix is a long diverticulum with an average length of 10 cm and arises from the posteromedial wall of the caecum, approximately 3 cm below the ileocaecal valve. The relationship of the base of the appendix to the caecum is constant, but the free end of the appendix is mobile, which accounts for its variable location in the abdominal-pelvic cavity. The appendix may be located in a retrocaecal, subcaecal, retroileal, preileal or pelvic site. The tip of the appendix rarely extends into the subhepatic space. The variability in location may greatly influence the clinical presentation in patients with appendicitis.
The lumen of the normal appendix appears at CT either totally collapsed or partially filled with gas or fluid. The normal diameter is variable, ranging from 3 to 11 mm.
Acute appendicitis can occur at any age, although it is rare in infants and in the elderly. The primary pathogenic event in the majority of patients with acute appendicitis is luminal obstruction. This may result from a variety of causes, which include faecaliths (appendicoliths), lymphoid hyperplasia, foreign bodies, parasites, primary tumours (adenocarcinoma, Kaposi sarcoma, carcinoid) and metastatic tumours (colon and breast). Once luminal obstruction
occurs, the continuous secretion of mucus results in elevated intraluminal pressure and luminal distention. Increasing intraluminal pressure eventually exceeds capillary perfusion pressure, which results in venous engorgement, arterial compromise and tissue ischemia. As a result, bacteria multiply and invade the appendiceal wall, which causes transmural inflammation. Continued ischemia results in appendiceal infarction and perforation. The optimal CT technique in patients with suspected appendicitis remains controversial. A variety of methods have been advocated, the most commonly used of which continues to be CT with intravenous and oral administration of contrast material. The fastest CT protocol though has been promoted by Lane et al., who have advocated the use of NECT of the entire abdomen and pelvis. This examination may be performed in 10 min, does not expose the patient to the potential risks associated with iodinated contrast agents, requires no bowel preparation, represents the most cost-effective imaging alternative to US and seems to be an accurate technique for establishing an alternative diagnosis in patients suspected to have appendicitis.

The typical CT findings in acute appendicitis include the following: 1) enlargement of the appendix (diameter > 11 mm), 2) thickened wall with enhancement, 3) periappendiceal fat stranding, 4) identification of an appendicolith, 5) focal thickening of the terminal ileum and caecum. A definite CT diagnosis of acute appendicitis can be made if an abnormal appendix is identified or if a calcified appendicolith is seen in association with pericecal inflammation. Perforation of an inflamed appendix usually manifests at CT as defects in the enhancing appendiceal wall or abscess.

The differential diagnosis of acute appendicitis includes mesenteric adenitis, caecal diverticulitis, infectious ileocolitis, Crohn disease, right colonic tumour, pelvic inflammatory disease, ovarian torsion, ectopic pregnancy and urolithiasis.

**Differential Diagnosis List:** Acute appendicitis in subhepatic location

**Final Diagnosis:** Acute appendicitis in subhepatic location

**References:**


**Figure 1**

**Description:** Intraluminal appendicolith at the base of the appendix. **Origin:**
Description: At a more cranial level the distended appendix is surrounded by severe fat stranding.
Origin:
Description: The appendix at a higher level. Origin:
Description: The inflamed appendix at a subhepatic level.

Origin:
Description: Appendiceal and periappendiceal inflammation at an again higher level. Origin:
**Description:** The subhepatic location of the tip of the appendix with intraluminal gas. **Origin:**
Description: The tip of the appendix. Origin:
Figure 2

Description: The appendix is shown at its full length, along with the intraluminal appendicolith, the intraluminal gas, and the periappendiceal fat stranding. Origin:
Description: The base of the appendix at the posteromedial wall of the caecum. Origin:
Description: The intraluminal appendicolith. Origin:
Description: The inflamed appendix and the periappendiceal fat stranding at a more posterior plane.
Origin:
Description: The tip of the appendix with intraluminal gas. Origin:
Description: Intraluminal appendicolith. Origin:
**Description:** The inflamed retrocecal appendix and the pericecal fat infiltration. **Origin:**
Description: The tip of the appendix with intraluminal gas, located in the subhepatic space. Origin: