Case 13021

Abdominal wall actinomycosis associated to rib osteomyelitis
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Section: Abdominal imaging
Area of Interest: Abdominal wall Abdomen
Procedure: Diagnostic procedure
Technique: CT
Technique: CT-High Resolution
Technique: Ultrasound
Special Focus: Abscess Trauma Case Type: Clinical Cases
Patient: 82 years, male

Clinical History:

A 82-year-old patient reported the presence of a growing mass on the right abdominal flank associated with abdominal discomfort and mild redness of the skin. A blood test revealed a mild leukocytosis. Previous medical history included benign prostatic hyperplasia, chronic obstructive pulmonary disease, cholecystectomy (7 months ago) and diabetes mellitus type 2 (well controlled).

Imaging Findings:

A heterogeneous lesion in the right flank was observed. The lesion was divided in two main components:

Abdominal wall: A predominantly solid, heterogeneous and non well-defined lesion located in the abdominal wall, showing enhancement. This lesion was affecting the rib, note the erosion of the superior margin of the rib, as well as the infiltration of abdominal wall muscles (Fig.1; Fig.4).

Intrabdominal: A non-enhancing lesion showing at least two internal hypodense foci with multiple air bubbles (Fig.2), suggesting the appearance of two small perihepatic micro-abscesses which were deforming the hepatic contour (Fig.3). Note the intraperitoneal extension of the lesion associated to subhepatic fat-stranding and a non-enhancing solid lesion in the right iliac fossa (Fig.1; Fig.5). Adenopathies and ascites were not visualized. No findings suggesting terminal ileitis were visualized.

Discussion:

Background:

Actinomycosis is a chronic infectious disease caused by Actinomyces species, a slow-growing gram-positive anaerobic filamentous bacteria [7]. Poor orodental hygiene, intrauterine devices [8] and bisphosphonate therapy are risk factors.

Clinical Perspective:

The clinical presentation is characterized by a fibrotic mass-like lesion which tends to spread beyond fascial and...
tissue planes (proteolytic enzymes). It could present multiple central abscesses, which lead to sinus tracts extending to the skin or adjacent organs (they tend to relapse in different locations after their healing) [1]. Actinomycosis is also characterized by the finding of "sulfur granules" in the abscess or in exudates from the sinus tracts [2, 3]. The previously described densely fibrotic lesions are frequently confused with malignant disease; which is why imaging is needed to rule-out neoplastic disease [4, 5].

Imaging Perspective:

The radiologic findings of actinomycosis depend on the primary site of involvement (50-65% cervicofacial, 15-30% thoracic, 20% abdomino-pelvic and 2-3% central nervous system) and the duration of the disease [1]. On contrast-enhanced CT, we will find a predominantly solid mass which has infiltrative borders invading adjacent tissue planes and organs (muscle infiltration, rib osteomyelitis, inflammatory changes of adjacent fat) and internal hypodense areas with rim enhancement (abscesses). The finding of regional adenopathies on contrast-enhanced CT is uncommon because Actinomices does not spread via lymphatic system due to its size. Ascites is not present [1, 5, 9].

Outcome:

High-dose penicillin G treatment for a long-term (up to 1 year) is the drug of choice and was the recommended treatment for our patient. In our case, after 6 months of oral treatment with amoxicillin 1/8h, an abdominal CT showed some persistent lesions. The treatment was prolonged for 6 months resulting in complete healing. A long-term treatment is needed because of the predominant fibrotic nature of the tissue in actinomicotic lesions [1]. Ultrasound percutaneous guided drainage as well as surgical ressection may be needed. In our case, the diagnosis was performed by draining and obtaining some infectious content from the peri-hepatic abscesses (Fig.6). Actinomycosis has an excellent prognosis. However, long-term observation and follow-up are required to control relapses [6].

Teaching Points:

Actinomycosis is a chronic infectious disease.

Frequency by site: 50-65% cervicofacial (mandible), 15-30% thoracic, 20% abdomino-pelvic (IUD), 2-3% central nervous system.

Densely fibrotic mass-like lesion which tends to spread beyond fascial and tissue planes.

Actinomycosis is characterized by the finding of "sulfur granules"

High-dose penicillin G treatment for a long-term

Actinomycosis has an excellent prognosis.

**Differential Diagnosis List:** Abdominal wall actinomycosis (lateral trocar scar) associated to rib osteomyelitis and intrabdominal extension., Tuberculosis, Metastases, Chondrosarcoma/Osteosarcoma (rib origin), Fibrosarcoma (soft tissue origin), Empyema necessitans, Nocardiosis

**Final Diagnosis:** Abdominal wall actinomycosis (lateral trocar scar) associated to rib osteomyelitis and intrabdominal extension.
References:


Description: Note the hepatic contour deformation which indicates the presence of a peri-hepatic collection. Origin: J.A Prat-Matifoll, Vall Hebrón Hospital
Description: A non-enhancing lesion showing at least two internal hypodense foci with multiple air bubbles, suggesting two small perihepatic micro-abscesses which are deforming the hepatic contour
Origin: J.A Prat-Matifoll, Vall Hebrón Hospital
Figure 3

Description: A predominantly solid, heterogeneous and non well-defined lesion, showing enhancement. This lesion was affecting the rib, note the erosion of the superior margin of the rib, as well as the infiltration of abdominal wall muscles. Origin: J.A Prat-Matifoll, Vall Hebrón Hospital
Description: Note the destruction of the rib. Erosion of the superior margin with extension inside the rib. The isolated hyperdense point below the ribs corresponds to one of the ends of a pig-tail catheter (Fig.6) Origin: J.A Prat-Matifoll, Vall Hebrón Hospital
Description: A non-enhancing solid lesion in the right iliac fossa. Adenopathies and ascites are not present. Origin: J.A Prat-Matifoll
In our case, the diagnosis was performed by draining and obtaining some infectious content from the peri-hepatic and abdominal wall abscesses by using a pig-tail catheter. **Origin:** Prat-Matifoll, J.A, Department of Radiology, Vall Hebrón Hospital