Peritoneal Carcinomatosis: unravelling its main features and mimics

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Background

Peritoneal carcinomatosis is the intraperitoneal dissemination of any tumour that does not originate from the peritoneum itself.

It is the most common diffuse peritoneal disease.

Malignant and benign diseases use these same conduits to spread throughout the abdomen and pelvis.

Secondary peritoneal malignancies far outnumber primary peritoneal neoplasms, such as peritoneal mesothelioma.

Imaging Findings

The hallmark of peritoneal carcinomatosis is presence of peritoneal thickening and omental cake.

Where to look for ascitic fluid in the peritoneal cavity?

The four most common well-defined areas of stasis (asterisks): The right paracolic gutter and the ileocecal junction, the pelvis and the superior aspect of the sigmoid mesocolon.

Omental "cake".

Expressive thickening and enhancement of the greater omentum, displacing the bowel away from the abdominal wall.

Omental "cake".

Mesenteric lymphadenopathy. Axial and coronal scans of a female patient with breast cancer shows ascites and multiple rounded lymph nodes in the small bowel mesentery.

Loculated ascites

in a patient with a ovarian cancer known.

Omental "cake".

Ultrasound. Expressive thickening of the greater omentum, displacing the bowel away from the abdominal wall.

Sister Mary Joseph nodules.

Patient with gastric adenocarcinoma and soft tissue enhancing nodules in the umbilical region.

Differential Diagnosis

Benign etiologies may mimic peritoneal carcinomatosis such as in cases of disseminated peritoneal endometriosis, leiomyomatosis, and tuberculosis.

Radiologists should recognize this entity given its significant implications in the staging, management, and prognosis in cases of malignant origin.

Pseudomyxoma peritonei.

Small amount of perihepatic and perisplenic fluid, with mass effect (scalloping) on the posterior surface of the liver (arrow), characteristic of pseudomyxoma peritonei.

Ascitis with punctiform calcifications in a case of mucinous gastric adenocarcinoma.

Malignant Mesothelioma.

Axial (left) and sagittal (right) CT scans shows caked thickening of the omentum, with indistinguishable features from peritoneal carcinomatosis. The presence of pleural calcified plaques (not shown) raised the suspicion, confirmed by biopsy, of malignant mesothelioma.

Diffuse peritoneal leiomyomatosis.

Axial CT scans from a 46 years old female patient with known diffuse peritoneal leiomyomatosis. Note some nodule implants on mesentery and marked enlarged uterus.

Tuberculous Peritonitis.

Patient with a known lung cancer. There is a heterogenous mass adhering to the mesentery. Biopsy confirmed tuberculous peritonitis ("fixed fibrotic type").

Conclusions

Invasive peritoneal disease includes more than just peritoneal carcinomatosis, and the radiologist should be aware of the main differential diagnosis to ensure a proper patient management.