TUMOR AND TUMOR-LIKE CONDITIONS OF THE PERITONEUM AND OMENTUM/MESENTERY

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• None

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Malignant Mesothelioma:

- Rare aggressive tumor
- More common in men
- Approx. 15% arise from peritoneum
- Etiology: Exposure to asbestosis; other causes include mineral fiber exposure, radiation and chronic irritation
- Three main histological subtypes: epithelioid (most common), sarcomatous (worst prognosis), and biphasic (mixed)
- Frequent mutation of BRCA-Associated Protein (BAP)1

Levy AD et al Radiographics 2008; Alexander HR et al UptoDate 2016
PRIMARY PERITONEAL TUMORS

Malignant Mesothelioma:

- Can present as focal, large or confluent peritoneal based mass/es (“dry” type)
- Peritoneal nodular or diffuse thickening with ascites (“wet” type)
- May show scalloping on adjacent abdominal organs - liver, spleen etc.
- Calcification including calcified plaques is uncommon
- Can infiltrate bowel mesentery, result in bowel wall thickening and may lead to bowel obstruction

Levy AD et al Radiographics 2008
Peritoneal mesothelioma

“Dry type”

“Wet type”
Malignant Mesothelioma:

- Cannot be easily distinguished from abdominal carcinomatosis
- Absence of a known primary, absence of metastases to other organs or enlarged lymph nodes may help to distinguish from carcinomatosis, or lymphomatosi
- Lymphomatosi and TB peritonitis can look similar but usually also demonstrate enlarged mesenteric and retroperitoneal lymph nodes
Malignant Mesothelioma:

- Potentially useful serum markers for diagnosis and follow-up are serum mesothelin-related protein (SMRP)
- Elevated in more than 84% of mesotheliomas, with 60% sensitivity for diagnosis
- Epithelial membrane antigen (EMA) is used to determine whether the tissue is malignant
- Diagnosis of malignant peritoneal mesothelioma can be made in approximately 80% of cases

PRIMARY PERITONEAL TUMORS

Primary peritoneal serous papillary carcinoma:

- Also called serous surface papillary carcinoma (PPSC)
- Occurs in older women - White and non-Hispanics
- Rising incidence - in Western world partially due to tumor reclassification
- Abdominal distension, fullness, increasing girth and GI symptoms are common
- Elevated CA-125
- Approx. 15% of “epithelial ovarian carcinomas” are actually PPSC

Primary Peritoneal Serous Papillary carcinoma:

- Ascites
- Peritoneal nodules
- Peritoneal thickening
- Psammomatous calcification seen in about 30% of cases
- May have adnexal masses
- But pathologically adnexal involvement confined to surface of ovaries/fallopian tubes only
- Ddx: Carcinomatosis (ovarian), lymphomatosis, mesothelioma, TB

Stafford-Johnson DB et al AJR 1998; Morita H et al. AJR 2003; Levy AD et al Radiographics 2008
Primary peritoneal serous papillary carcinoma
Multicystic mesothelioma

• Other names: Peritoneal inclusion cyst
• Rare benign primary peritoneal entity with no relation to malignant mesothelioma
• No relationship to h/o asbestos exposure
• Seen in premenopausal women with prior gynecological surgery or infection that results in peritoneal scarring
• Hormonally active ovaries secrete fluid that becomes loculated in the pelvis
• Non neoplastic reactive mesothelial proliferation

KA Jain AJR 2000; 174:1559-1563
PRIMARY PERITONEAL TUMORS

Multicystic mesothelioma:

- Imaging features are non-specific
- Multicystic pelvic mass or masses with enhancing septa along peritoneal surfaces of uterus, bladder
- Ovary may be trapped
- Ddx: Lymphangiomas, mesenteric cysts, mucinous tumors, epidermoid and tail gut cysts - can rarely mimic ovarian neoplasms

Treatment:

- Surgical (30-50% recurrence)
- Sclerotherapy
- Hormonal
- Aspiration

KA Jain AJR 2000; 174:1559-1563
Benign cystic mesothelioma
(aka. Peritoneal inclusion cyst/mesothelial cyst)
Benign cystic mesothelioma

Wang Tian Bao et al World J Gastroenterol 2013
SECONDARY PERITONEAL TUMORS

Metastatic neoplasms:

- Carcinomatosis
- Pseudomyxoma peritonei
- Lymphomatosi

Infectious and post-infectious lesions:

- Tuberculous peritonitis
- Disseminated histoplasmosis
- Inflammatory “pseudotumor”

Levy AD et al Radiographics 2008
SECONDARY PERITONEAL TUMORS

Peritoneal carcinomatosis

• Common sites of primary neoplasms:
  • Gastrointestinal tract (stomach, colon, appendix, gallbladder, and pancreas), ovary, breast, lung, and uterus

Imaging findings:

• Peritoneal and omental thickening
• Focal or diffuse nodular soft tissue with contrast enhancement
• Ascites usually seen in advanced cases
Peritoneal Carcinomatosis - Ovarian Cystadenocarcinoma
SECONDARY PERITONEAL TUMORS

Differential diagnosis:

- Serous peritoneal carcinoma
- Malignant Mesothelioma

Differentiating features:

- No h/o extra-peritoneal malignancy
- No other associated metastases to other sites such as solid organs and lymph nodes
SECONDARY PERITONEAL TUMORS

Pseudomyxoma Peritonei:

- Result of a rupture of a mucinous tumor of the appendix (or ovary)

- Two pathological subtypes:
  - Type I - Adenomucinosis: mucin + fibrosis and minimal atypia - primary tumor usually an adenoma/low grade carcinoma - appendix
  - Type II - Mucinous carcinoma: proliferative epithelium with marked atypia - primary usually mucinous adenocarcinoma - GI tract, pancreas, GB and ovary

- 5 yr. survival in Type I better (75%) vs. 14% for Type II

Ronnett BM et al Cancer 2001
SECONDARY PERITONEAL TUMORS

Pseudomyxoma Peritonei

- Characterized by recurrent and recalcitrant voluminous mucinous ascites due to surface growth on the peritoneum without significant invasion of underlying tissues
- Typical CT imaging feature is scalloped indentation of the surface of the liver and spleen—can be seen in other entities
- May have calcifications
- Unlike peritoneal metastases, there are no nodules
SECONDARY PERITONEAL TUMORS

Peritoneal Lymphomatomatosis:

• Peritoneal involvement most frequently in diffuse large B-cell lymphoma but can be seen in many subtypes of lymphoma

• Can mimic peritoneal carcinomatosis

• Can be cause of: Ascites, hepatosplenic lesions and unidentified cause of peritoneal thickening on especially in male pts.

• Usually associated with lymph node enlargement, but not always
Peritoneal Lymphomatosis
SECONDARY PERITONEAL TUMORS

Infectious and post-infectious lesions:

- Tuberculous peritonitis
- Disseminated histoplasmosis
- Inflammatory “pseudotumor”

Miscellaneous:

- Gliomatosis peritonei
- Splenosis

Levy AD et al Radiographics 2008
• Diffuse peritoneal thickening (thick arrow), mesenteric edema /stranding (arrow), and mild ascites (arrowhead) due to TB peritonitis
Differential Diagnosis

- Tuberculous Peritonitis
- Peritoneal fat necrosis
- Peritoneal mesothelioma
- Peritoneal carcinomatosis
SECONDARY PERITONEAL TUMORS

Gliomatosis peritonei:

• Associated with immature ovarian teratomas - rarely seen in patients with ventriculo-peritoneal shunts
• Pathogenesis - unclear
• Characterized by peritoneal implants of glial tissue
• If the histology shows mature glial cells - it is mostly considered benign - good prognosis
• Prognosis and need for therapy depends on biopsy and histological analysis for immature glial cells - if malignant cells found then chemotherapy needed
• On CT, gliomatosis peritonei manifests as soft-tissue peritoneal nodules and masses, omental caking, and ascites in the setting of ovarian or pelvic mass suggestive of teratoma

Levy AD et al Radiographics 2008
GLIOMATOSIS PERITONEI
Sclerosing mesenteritis:

- Also known as: mesenteric panniculitis/ mesenteric lipodystrophy, retractile mesenteritis, lipogranulomatosis etc.
- Idiopathic- more recently associated with IgG4 disorders
- Non specific inflammation, fat necrosis and fibrosis
- Usually involves small bowel mesentery
- Men affected more commonly

Levy AD et al Radiographics 2006
BENIGN FIBROUS TUMORS AND TUMOR-LIKE CONDITIONS OF THE MESENTERY

Sclerosing mesenteritis: Imaging

- Ill-defined or well-defined mesenteric “mass”
- Soft tissue mixed with fat; late stages calcification
- Can envelop mesenteric vasculature, with “fatty” collar around vessels
- Radiating strands of fibrosis
- Can kink small bowel leading to obstructive features

Levy AD et al Radiographics 2006
Sclerosing Mesenteritis

Early stage
Fat proliferation

Mid-stage
Soft tissue proliferation

Late stage
Calcification
Desmoid or Mesenteric fibromatosis [MF]:

- No age or gender predilection
- Usually present with abdominal pain or palpable mass
- Other symptoms include: GI bleeding, small bowel obstruction, perforation
- Over 80% of pts. with FAP and MF have had prior surgery
- MF can also be seen in other rare autosomal dominant hereditary disorders

Levy AD et al Radiographics 2006
Desmoid or Mesenteric fibromatosis:

- Imaging appearance (CT and MR) related to histology
- Collagenous tumors have homogenous soft tissue attenuation
- Those with myxoid stroma, low attenuation on CT and account for high signal intensity on T2 W MR images
- Variable contrast enhancement
IMAGING-GUIDED PERCUTANEOUS BIOPSY:

- 111 biopsies over 8 yr. period
- 79 pts with past h/o cancer
- 32 pts with no past h/o cancer
- 52/79 (66%) had metastatic disease
- In 23/32 (72%) with no prior h/o malignancy, new malignancy found (adenocarcinoma, lymphoma, mesothelioma, GIST, leiomyosarcoma, desmoplastic round cell tumor)
- Benign conditions unusual

Souza FF et al AJR 2009; Levy AD et al Radiographics 2008
Thank You!