MRI of Peritoneal, Mesenteric and Omental Masses and Mass-like Lesions

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No Disclosures

- The views expressed in this lecture are those of the author and do not necessarily reflect the official policy or position of the Departments of the Navy, Army, Air Force or Marines; the Department of Defense, or the U.S. Government.
Objectives

- List differential diagnosis for focal mass of the peritoneal cavity
- List differential diagnosis for diffuse masses of the peritoneal cavity
- Identify distinguishing features of these tumors on imaging.
Differential Diagnosis

• Focal
  - IMT
  - Castleman disease
  - Mesenteric fibromatosis
  - Lipoblastoma
  - Vascular anomalies
  - Meconium pseudocyst
  - Plexiform neurofibroma

• Diffuse
  - Burkitt lymphoma
  - DSRCT
  - Rhabdomyosarcoma
  - Metastatic disease
  - Growing teratoma syndrome
  - Gliomatosis peritonei
  - Retroperitoneal tumor spread – neuroblstoma, Wilms
  - Peritoneal carcinomatosis
  - Peritoneal seeding of intracranial tumors via VP shunt
  - Sclerosing encapsulating peritonitis
Inflammatory myofibroblastic tumor

- Neoplasm of intermediate bio behavior
- Any anatomic site – most common
  - Lung
  - Mesentery
  - Omentum
- Systemic signs and symptoms
- ALK – tyrosine receptor kinase oncogene – 50-70%
Imaging Features

- Depends on degree of inflammatory infiltrate vs. stromal component – stroma myxoid vs. fibrotic
- Well defined, smooth or multilobulated
- Minority – calcifications
- T1- hypo to muscle T2- hyper
- But fibrotic components dark on both
- Heterogeneous enhancement

17 yo girl
2 mo girl
Castleman Disease

- Angiofollicular lymphoid hyperplasia
- Young adults
- Thorax > mesentery
- Unicentric (local) vs. multifocal (disseminated)
Imaging Features

- Unicentric, well-defined, hypervascular mass – hyaline vascular type
- Multicentric – hepatosplenomegaly, ascites, diffuse adenopathy
17 yo boy
Mesenteric fibromatosis

- AKA intra-abdominal desmoid
- Pathologically benign but locally aggressive
- Assoc with Gardner syndrome
- F:M 3:1
- Risk - trauma
Imaging Features

- Located at base of the mesentery
- Surrounds vessels and bowel
- Depends on content of collagen versus myxoid change and degree of cellularity and vascularity
- T1- hypo to isointense to muscle
- T2- variable
- Fluid signal may predict growth on follow-up
- Enhancement – mild, hetero
- Increased vascularity predicts growth

16 yo girl
Lipoblastoma
2 yo boy
Vascular Anomalies

- Lymphatic malformation
- Infantile hemangioma
2 yo
7-wo boy
Meconium Pseudocyst
Multiple or Diffuse Masses
Desmoplastic Small Round Cell Tumor

- Rare, aggressive neoplasm
- Adolescent males
- Most often in peritoneal cavity especially retrovesical space
**Imaging Features**

- Multiple masses without a clear organ of origin
- Most have a large dominant mass
- T1- hypo to iso
- T2 – heterogeneously iso- to hyperintense


14 yo girl
Burkitt Lymphoma

- Most common malignancy to involve the mesentery/omentum
- Most common type of NHL in children < 15 yo
- Highly aggressive B-cell lymphoma
Imaging Features

- Right lower quadrant – terminal ileum
- Mass with bowel wall thickening; aneurysmal dilation
- Mesenteric vessel encasement
- Other organ involvement – breasts, ovaries, kidneys, liver
Rhabdomyosarcoma

- Most common pediatric soft-tissue tumor
- Any site – head/neck and GU most common
- T1- intermediate to hypo
- T2-intermediate to hyper
- Heterogeneous enhancement – may be vigorous
- Diffusion-weighted images can improve conspicuity
6 yo girl with trauma
Ddx
13 yo girl
Summary

- **Focal**
  - IMT – well circumscribed, central calcifications, fibrotic component dark on T2
  - Castleman disease – enlarged nodes, intense enhancement
  - Mesenteric fibromatosis – family history of Gardner syndrome, tends to encase vessels and bowel, fluid-signal areas, fibrotic areas dark T2 signal
  - Lipoblastoma – fat suppression
  - Lymphatic malformation – fluid signal, fluid levels, walls and septa enhance
  - Infantile hemangioma – feeding vessels, intense enhancement
  - Meconium peritonitis – young infant, calcified rim, bright on T1
Summary

• Diffuse
  - DSRCT – 90% males, dominant mass usually pelvic, ascites
  - Burkitt lymphoma – RLQ mass, involves bowel, extensive disease, involvement of other organs, no calcifications prior to therapy
  - Rhabdomyosarcoma – focal or diffuse, omental primary
  - Sclerosing encapsulating peritonitis – diffuse peritoneal thickening and enhancement, no primary