

AMSER Case of the Month

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47 y/o F with sepsis

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Patient Presentation

- History: 4 days of worsening LLQ pain and nausea s/p antibiotic treatment for recurrent intraabdominal infection.
- PMH: Gardner Syndrome, intraabdominal abscess, desmoid tumor, SBO, SVT
- PSH: Pan-colectomy, tumor debulking
- Meds: Morphine, levothyroxine, lorazepam
- Physical Exam: LLQ and epigastric tenderness

Pertinent Labs

- WBC 3.6 (4.0 – 11.0)
- Tbili 1.3
- Na 138, K 3.8, CO2 23
- UA with trace blood

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

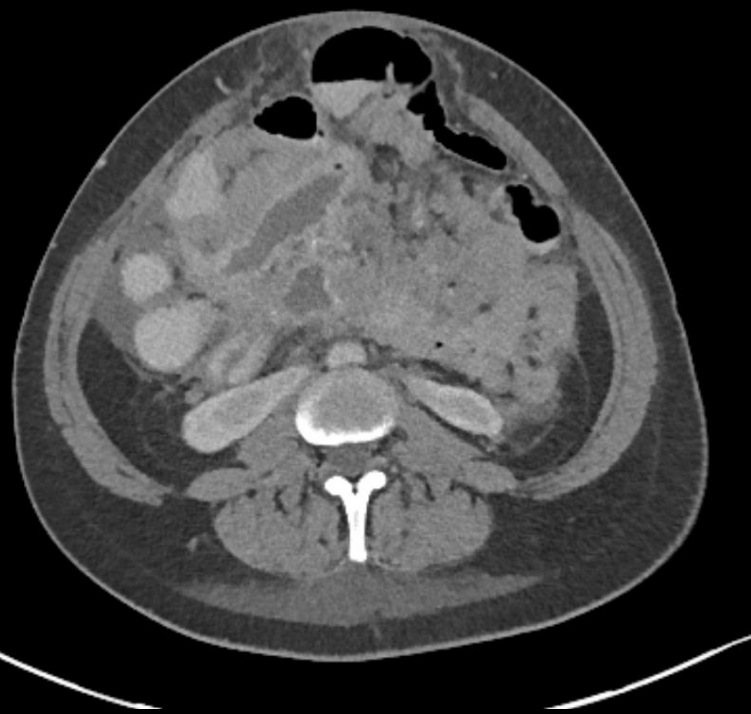
Variant 1: Left lower quadrant pain. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	☢☢☢
US abdomen transabdominal	May Be Appropriate	○
US pelvis transvaginal	May Be Appropriate	○
Radiography abdomen and pelvis	May Be Appropriate	☢☢☢
MRI abdomen and pelvis without and with IV contrast	May Be Appropriate	○
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without IV contrast	May Be Appropriate	☢☢☢
Fluoroscopy contrast enema	Usually Not Appropriate	☢☢☢
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢☢

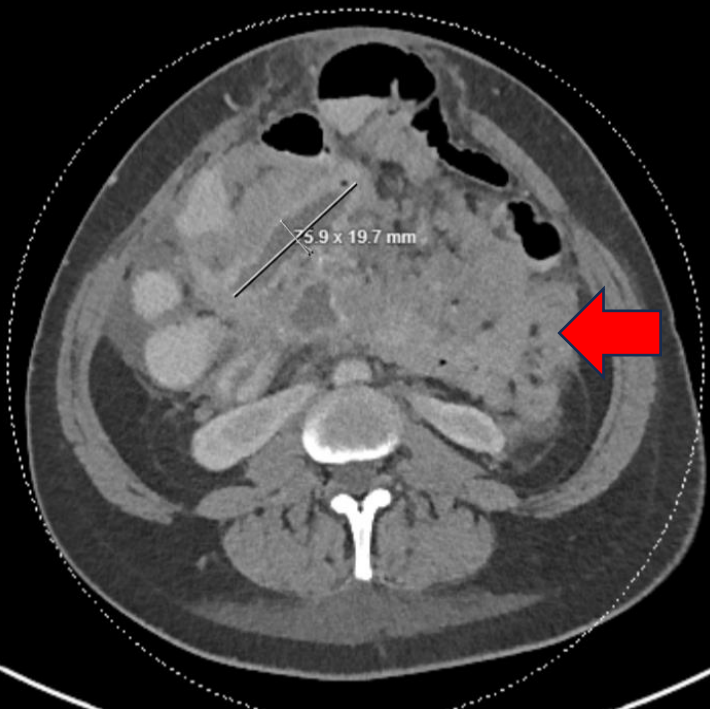
This imaging modality was ordered by the ER physician



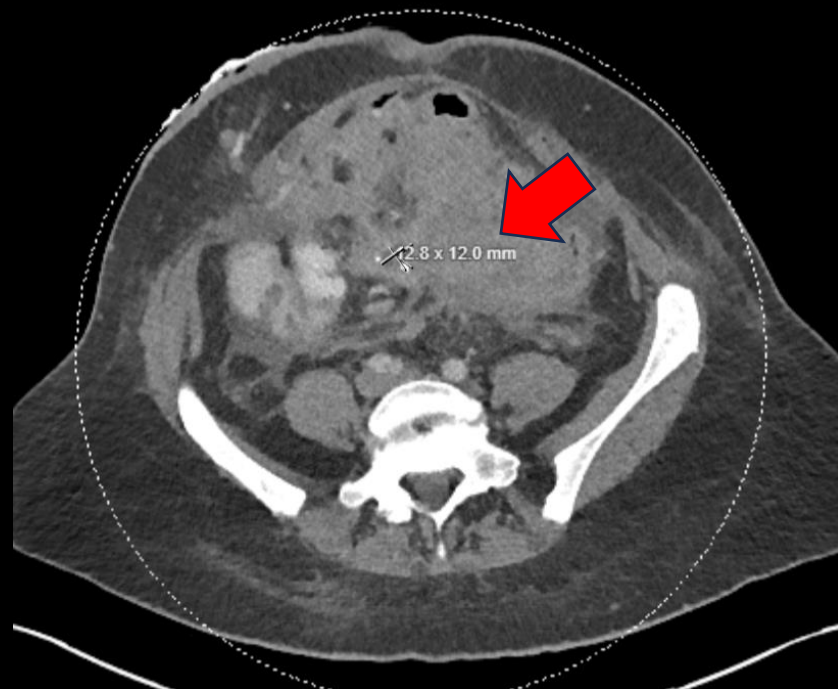
CT Findings (unlabeled)



Findings: (labeled)



7.6 x 2.0 cm rim-enhancing fluid and gas collection within the right abdomen, consistent with abscess



Additional 1.3 x 1.2 cm abscess within the central mesenteric roots



Third abscess, measuring 5.4 x 3.1 cm within the pelvis

Red arrows indicate portions of amorphous desmoid infiltrating the mesentery and remaining portions of the bowel

Final Dx:

Multiple Intraabdominal Abscesses

Case Discussion

- Gardner syndrome is one of the familial adenomatous polyposis syndromes
 - Characteristic tumors include: osteomas, desmoid tumors (as in this patient), duodenal tumors / ampullary carcinoma, papillary thyroid carcinoma, and adrenal adenomas
 - Patients undergo extensive abdominal surgical intervention, creating complex variant anatomy prone to complications
- This case highlights the importance of identifying abscesses which can be challenging in these patients, particularly those with complex postsurgical anatomy

Case Discussion – Differential and Management

- Differential diagnosis for an abdominopelvic fluid collection is broad and includes: abscess, hematoma, seroma, and organ perforation-related fluid (such as urinoma, biloma, bowel leak).
- CT findings that can increase specificity for abscess / infection include rim-enhancement and gas.
- Biopsy can be useful in determining etiology but there was no safe window for biopsy in our patient.
- Our patient's fluid collections were felt to be abscesses in the setting of her current signs / symptoms of sepsis and her prior history of recurrent intraabdominal abscesses.
- Infectious Disease was consulted, and the patient received an extended course of broad-spectrum antibiotics with clinical improvement

Teaching Points – Abscess Identification

- Abscesses are purulent collections consisting of:
 - Central core of necrotic inflammatory cells and tissue
 - Halo of neutrophils
 - Fibrotic capsule with dilated blood vessels
- CT features can include:
 - Low attenuation central necrotic component
 - Fibrous capsule with contrast enhancement
 - Local inflammatory reaction such as fat stranding
 - Mass effect
 - Surrounding gas

Teaching Points – Desmoid Tumors

- Desmoid tumors are benign fibrotic tumors that can be locally invasive (as in our patient) and have a high tendency for recurrence
- They are *rare*, representing approximately 0.03% of all neoplasms and are more common in women (2:1)
- Can be associated with pregnancy and estrogen therapy, Gardner syndrome, and FAP
- CT features include:
 - Generally well-circumscribed, but can be infiltrative
 - Either homogeneously or focally hyperattenuating compared to soft tissue on non-contrast scans
 - Enhancement with IV contrast

References:

Gaillard F, Vadera S, Deng F, et al. Gardner syndrome. Reference article, Radiopaedia.org (Accessed on 08 Sep 2023) <https://doi.org/10.53347/rID-1370>

Gaillard F, El-Feky M, Bell D, et al. Abscess. Reference article, Radiopaedia.org (Accessed on 14 Sep 2023) <https://doi.org/10.53347/rID-6723>

Heiken JP, Katz DS, Menu Y. Emergency Radiology of the Abdomen and Pelvis: Imaging of the Non-traumatic and Traumatic Acute Abdomen. 2018 Mar 21. In: Hodler J, Kubik-Huch RA, von Schulthess GK, editors. Diseases of the Abdomen and Pelvis 2018-2021: Diagnostic Imaging - IDKD Book [Internet]. Cham (CH): Springer; 2018. Chapter 13. PMID: 31314362.

Weinstein et al. (Revised 2023). *American College of Radiology ACR Appropriateness Criteria® Left Lower Quadrant Pain*. <https://acsearch.acr.org/list>

Burt, Randall W. (August 2023). *Gardner Syndrome*. <https://www.uptodate.com/contents/gardner-syndrome?source=autocomplete&index=0~1&search=gardner%20syn>