

AMSER Rad Path Case of the Month

66 y/o M presenting with abdominal pain

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Allegheny
Health Network

Patient Presentation

- **HPI:** 66 y/o M presents with 2 weeks of intermittent diffuse abdominal pain
- **PMHx:** Nodular sclerosis classical Hodgkin lymphoma (NScHL), DM II, HTN, AFib
- **PSHx:** colonoscopy w/ polypectomy, bone marrow transplant, diagnostic laparoscopy, Mohs surgery x3, B/L knee replacement
- **PE:** mild RLQ tenderness to palpation, no masses appreciated

What Imaging Should We Order?

ACR Appropriateness Criteria:

Variant 4:

Acute nonlocalized abdominal pain. Not otherwise specified. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	⊕⊕⊕
CT abdomen and pelvis without IV contrast	Usually Appropriate	⊕⊕⊕
MRI abdomen and pelvis without and with IV contrast	Usually Appropriate	○
US abdomen	May Be Appropriate	○
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without and with IV contrast	May Be Appropriate	⊕⊕⊕⊕
Radiography abdomen	May Be Appropriate	⊕⊕
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	⊕⊕⊕⊕
WBC scan abdomen and pelvis	Usually Not Appropriate	⊕⊕⊕⊕
Nuclear medicine scan gallbladder	Usually Not Appropriate	⊕⊕
Fluoroscopy upper GI series with small bowel follow-through	Usually Not Appropriate	⊕⊕⊕
Fluoroscopy contrast enema	Usually Not Appropriate	⊕⊕⊕

This imaging modality was ordered by the ED physician



CT findings



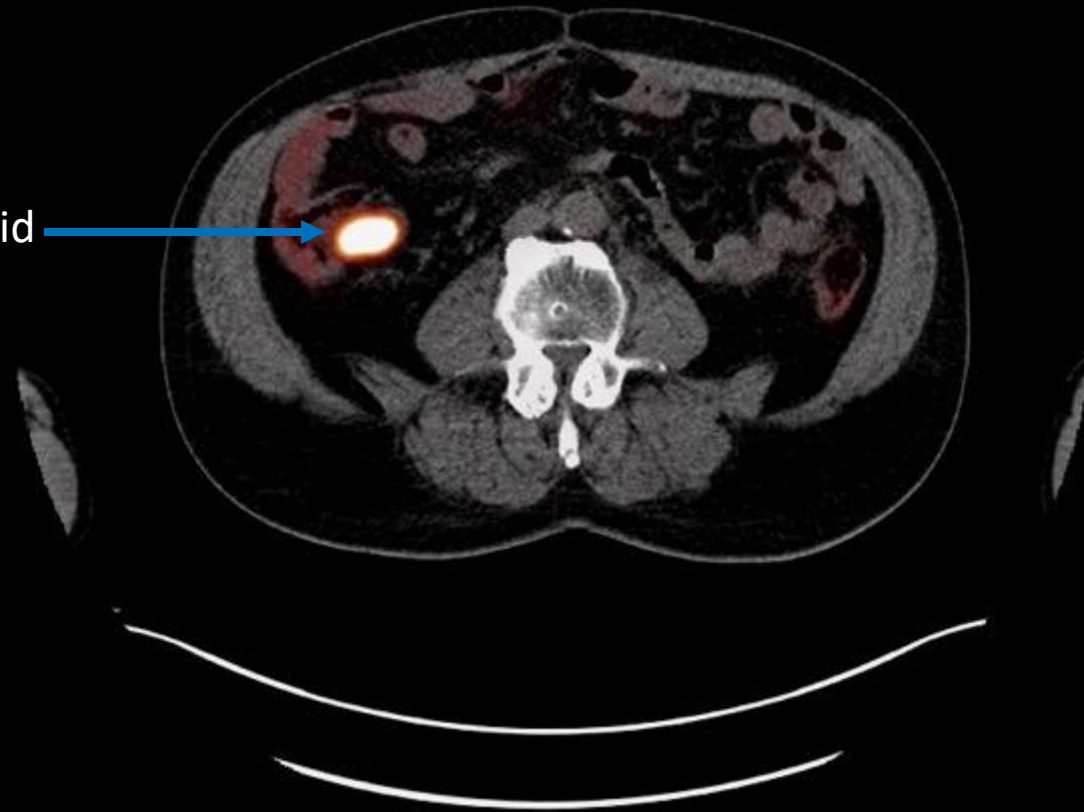
CT findings

2 cm soft tissue mass in the ileum,
outlined by oral contrast



Next Step: PET/CT

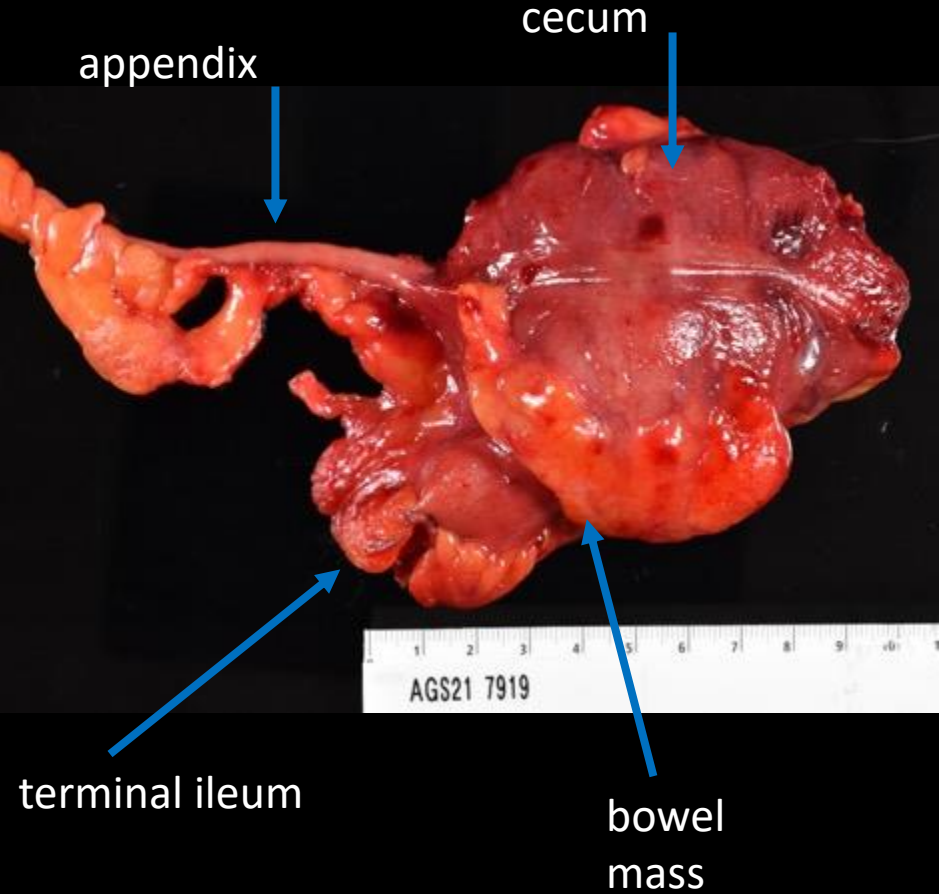
Mass is intensely FDG avid
SUV: 23



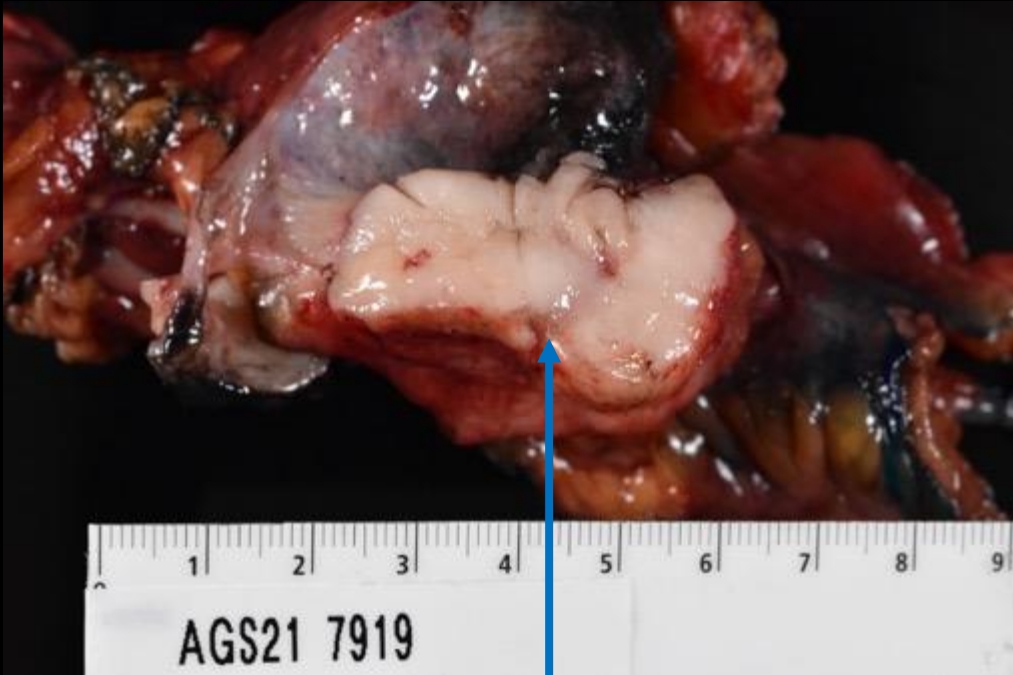
Biopsy

- Positive for aggressive B cell lymphoma
 - Scheduled for laparoscopic right hemicolectomy

Gross Pathology: Post Laparoscopic Right Hemicolectomy



Gross Pathology: Post Laparoscopic Right Hemicolectomy



Ileocecal mass
open section

Micro Slides

Image #1: Low power magnification of ileocecal mass, showing atypical lymphoid infiltrate in a diffuse pattern. It extends from the bowel mucosa up to the serosa. Normal small bowel mucosa on the left side

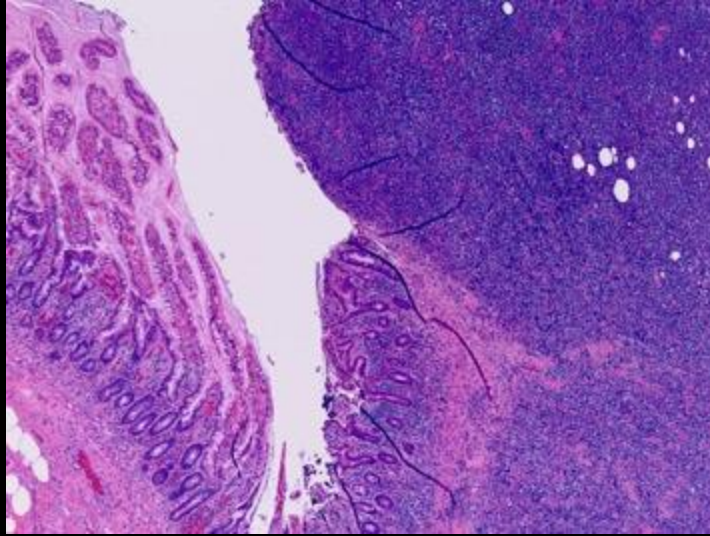


Image #2: Medium to high power magnification of ileocecal mass, showing atypical lymphoid infiltrate in a diffuse pattern with some areas of stromal fibrosis.

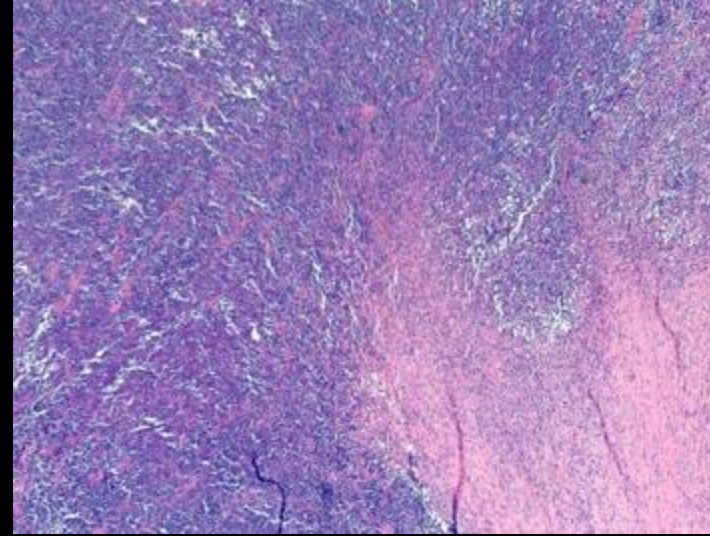


Image #3: Medium to high power magnification of ileocecal mass, showing atypical lymphoid cells infiltrating in a diffuse pattern the submucosal layer of the normal intestinal glands (left).

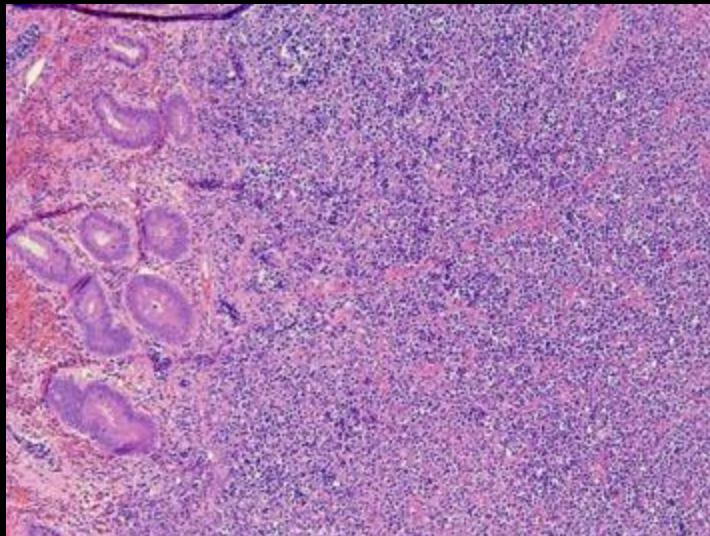
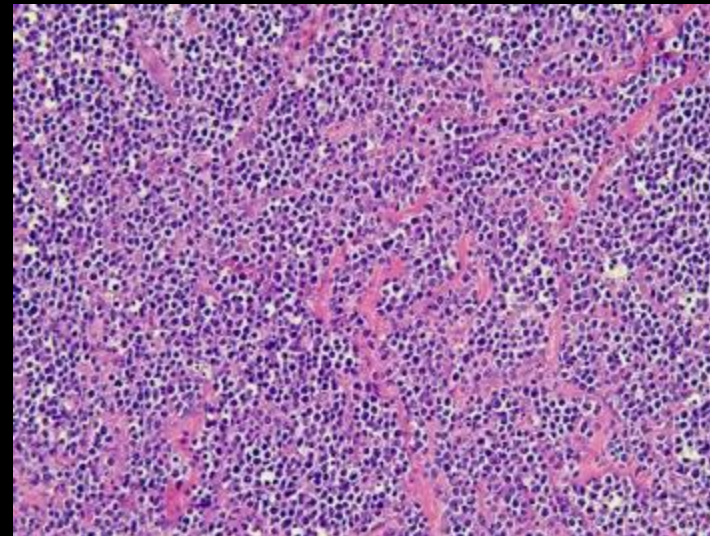


Image #4: High power magnification of ileocecal mass, showing atypical medium sized cells with stippled chromatin and occasional prominent nucleoli. Brisk mitoses and punctuate necrosis are seen along with many tingible body macrophages, imparting a starry sky appearance.



Micro Slides

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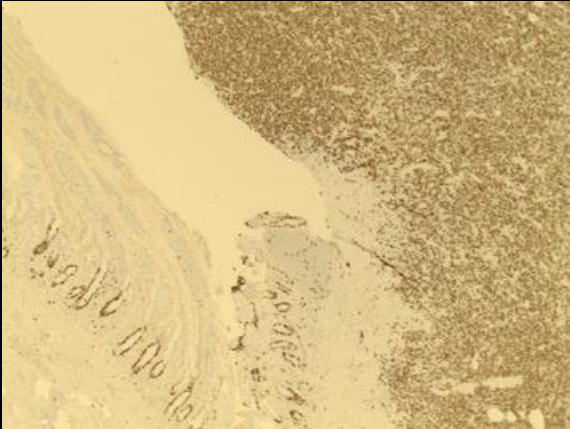


Image #5: Low power magnification of ileocecal mass with Ki-67 immunohistochemical stain, showing prominent positive nuclear staining in the mass and in the base of normal small intestine glands (left).

6

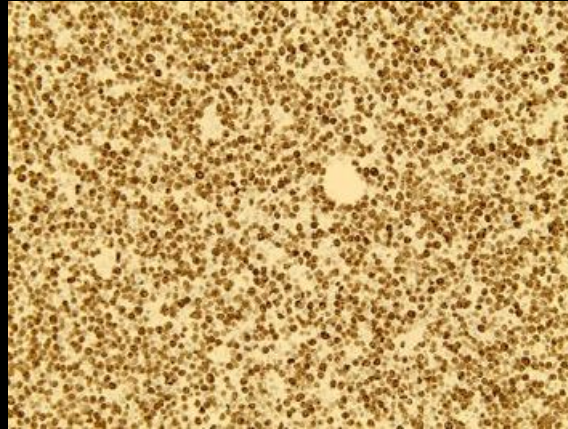


Image #6: High power magnification of ileocecal mass with Ki-67 immunohistochemical stain, showing prominent positive nuclear staining.

7

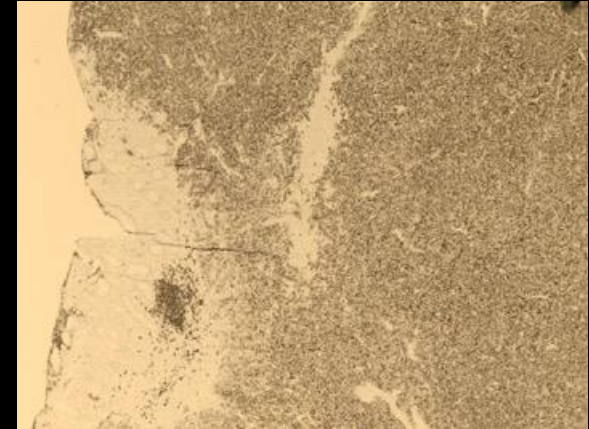


Image #7: Low power magnification of ileocecal mass with CD20 immunohistochemical stain, showing prominent positive membrane staining.

8



Image #8: High power magnification of ileocecal mass with CD20 immunohistochemical stain, showing prominent positive membrane staining.

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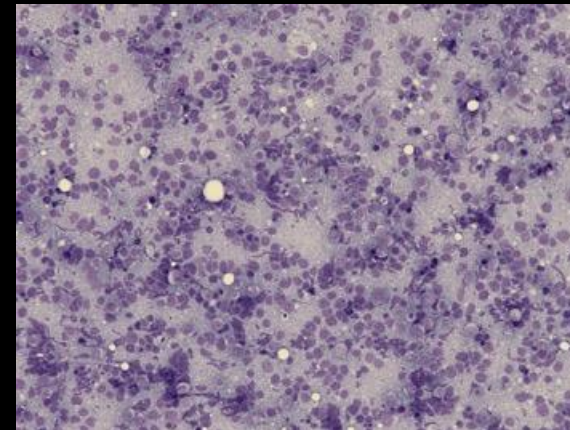


Image #9: Touch preparation slide of the mass demonstrates predominantly medium sized cells with basophilic cytoplasm, inconspicuous nucleoli and multiple cytoplasm vacuoles.

Final Dx:

- B-cell lymphoma with aggressive features, of germinal center cell origin
 - Negative margins
 - 0/3 involved pericolic lymph nodes

Diffuse Large B-Cell Lymphoma (DLBCL)

- **Epidemiology**

- Most common histologic subtype of non-Hodgkin lymphoma
- Approximately 30% of NHL cases
- 55% occur in men

- **Presentation**

- Typically present with rapidly enlarging symptomatic mass
- Nodal enlargement
- Systemic “B symptoms” – fever, weight loss, night sweats
- Elevated LDH in >50% of cases

Diffuse Large B-Cell Lymphoma (DLBCL)

- **Radiographic Features**

- Typically involves single loop of bowel
- Bowel wall thickening
 - 1 -7cm
- Aneurysmal dilatation
 - Replacement of muscularis by tumor or infiltration of myenteric nerve plexus
- Regional lymph node enlargement
 - Approximately 50% of cases

- **Diagnosis**

- Best made by excisional tissue biopsy (lymph node)
- Dx based on morphology and immunophenotyping
 - Transformed B-cells w/ prominent nucleoli and basophilic cytoplasm, diffuse growth pattern and high proliferation fraction
 - B-cell markers: CD19, CD20, CD22, CD79a

Diffuse Large B-Cell Lymphoma (DLBCL)

- **Staging**

- Classified as either limited stage disease (stage I or II) or advanced stage disease (stage III or IV)
 - **Stage I:** single extranodal lesions w/o nodal involvement
 - **Stage II:** 2 or more nodal groups on the same side of the diaphragm
 - **Stage III:** nodes on both sides of diaphragm; nodes above diaphragm w/ spleen involvement
 - **Stage IV:** additional noncontiguous extralymphatic involvement

Diffuse Large B-Cell Lymphoma (DLBCL)

- **Management**

- Limited Stage

- R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone)

- Advanced Stage

- **Germinal Center B cell DLBCL:** R-CHOP
 - **Activated B cell DLBCL:** R-CHOP + novel agent (lenalidomide)
 - **Double hit DLBCL:** clinical trial or EPOCH-R (etoposide, doxorubicin, vincristine, cyclophosphamide and prednisone + rituximab)
 - **Double expressor DLBCL:** clinical trial or R-CHOP

References

1. Abeid, Mohamed Saber, MD, PhD, and Frank Gaillard. "Small Bowel Lymphoma." *Radiopaedia*. Dec. 2020. Web. <<https://radiopaedia.org/articles/small-bowel-lymphoma-1?lang=us>>.
2. "ACR Appropriateness Criteria: Acute Nonlocalized Abdominal Pain. Not Otherwise Specified. Initial Imaging." *American College of Radiology*. 2018. Web. <<https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria>>.
3. Freedman, Arnold S., MD, and Jon C. Aster, MD, PhD. "Epidemiology, Clinical Manifestations, Pathologic Features, and Diagnosis of Diffuse Large B Cell Lymphoma." *UpToDate*. 26 July 2019. Web.
4. Freedman, Arnold S., MD, Jonathan W. Friedberg, MD, and Andrea K. Ng, MD, MPH. "Initial Treatment of Limited Stage Diffuse Large B Cell Lymphoma." *UpToDate*. 21 Sept. 2020. Web.
5. Freedman, Arnold S., MD, and Jonathan W. Friedberg, MD. "Initial Treatment of Advanced Stage Diffuse Large B Cell Lymphoma." *UpToDate*. 15 Oct. 2020. Web.