

AMSER Case of the Month

April 2023

69-year-old man presents with abdominal pain,
diarrhea, and hematochezia

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Patient Presentation

- **HPI:** 69-year-old man with past medical history of myocardial infarction status post drug eluting stent placement presents to the ER with bilateral upper abdominal pain, diarrhea, and hematochezia for one day.
- **PMHx:** MI s/p drug eluting stent placement, HTN, HLD, and sleep apnea
- **PSHx:** Colonoscopy w/ polyp removal
- **Family Hx:** Unspecified cancer (father)
- **Social Hx:** Non-contributory

Pertinent Labs

- **Complete blood count:**
 - Hemoglobin: 18.3
 - Hematocrit: 53.4
 - INR: 1.1
 - PTT: 13.5
- **Complete metabolic panel:**
 - AST/ALT: 25/20

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1:

Lower gastrointestinal tract bleeding. Active bleeding clinically observed as hematochezia or melena in a hemodynamically stable patient. Next step.

Procedure	Appropriateness Category
CTA abdomen and pelvis without and with IV contrast	Usually Appropriate
Diagnostic/therapeutic colonoscopy	Usually Appropriate
RBC scan abdomen and pelvis	Usually Appropriate
Transcatheter arteriography/embolization	May Be Appropriate
MRA abdomen and pelvis without and with IV contrast	Usually Not Appropriate
Surgery	Usually Not Appropriate

This imaging modality was ordered by the ER physician

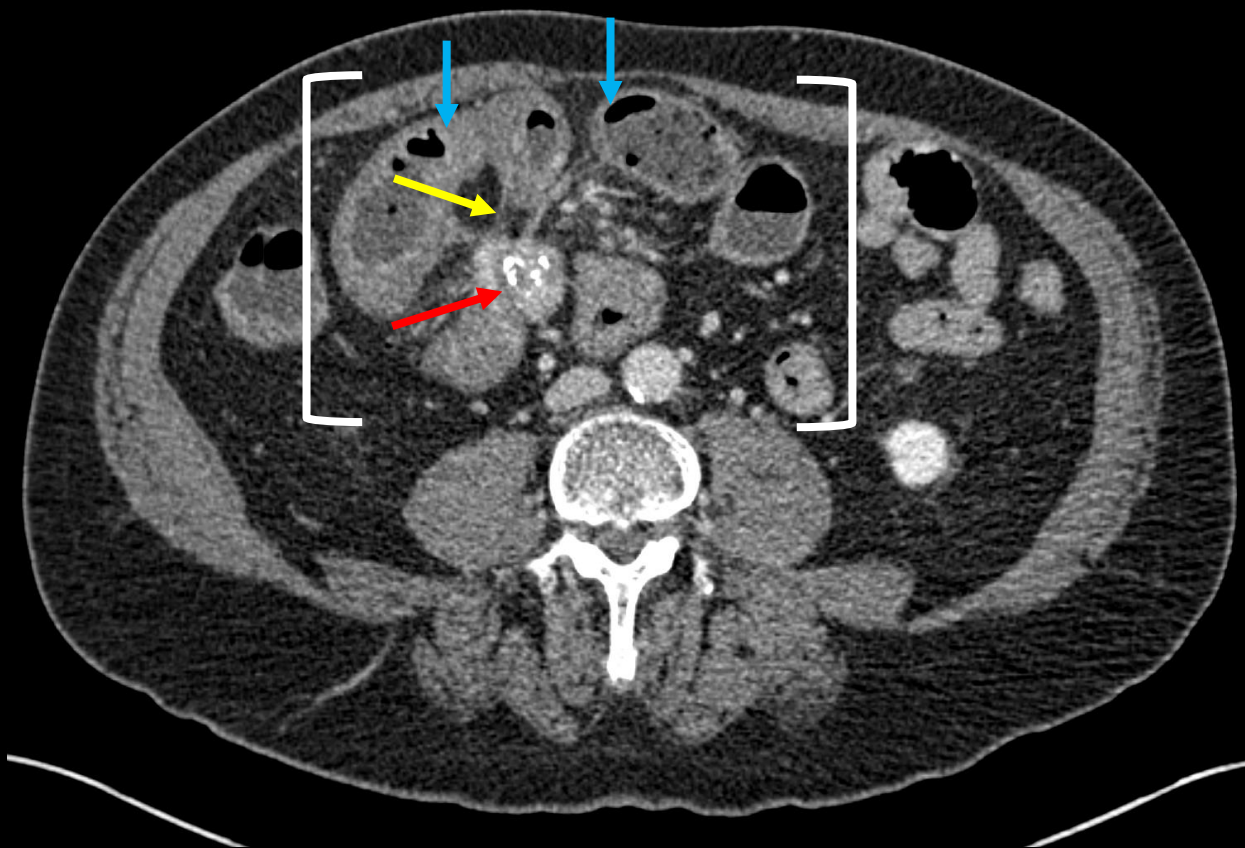


Findings (unlabeled)



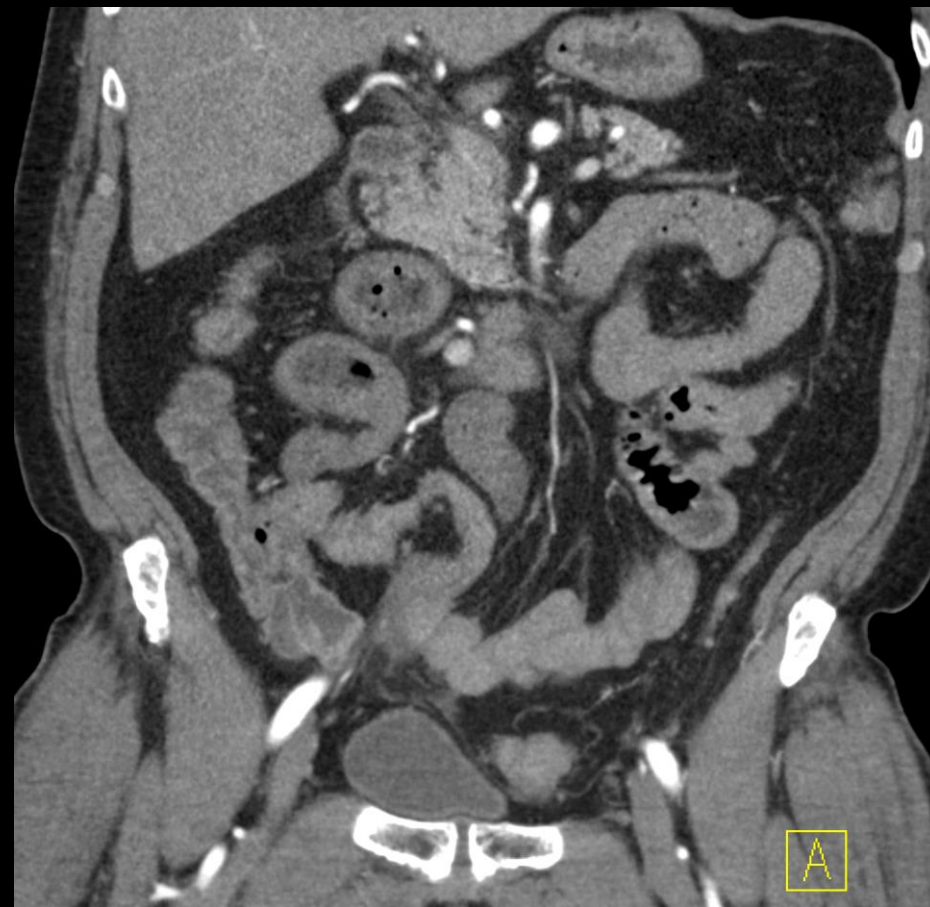
Findings: (labeled)

- Enhancing spiculated mass with stippled/dystrophic calcifications measuring 2.3 x 3.4 cm centered in the right lower quadrant mesentery (red) with a stellate pattern of fibrotic mesenteric thickening resulting in tethering of RLQ small bowel loops (yellow).
- Associated partial small bowel obstruction with mucosal hyperenhancement (blue).
- No bowel hypoenhancement, pneumatosis, or free air to suggest bowel ischemia.

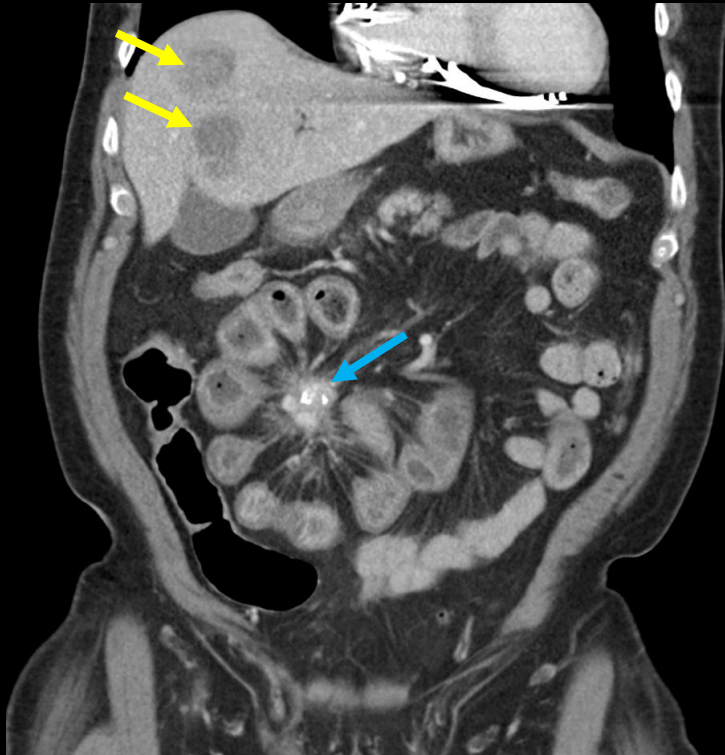


Three-phase CT Angiogram Abdomen Pelvis—Venous Phase

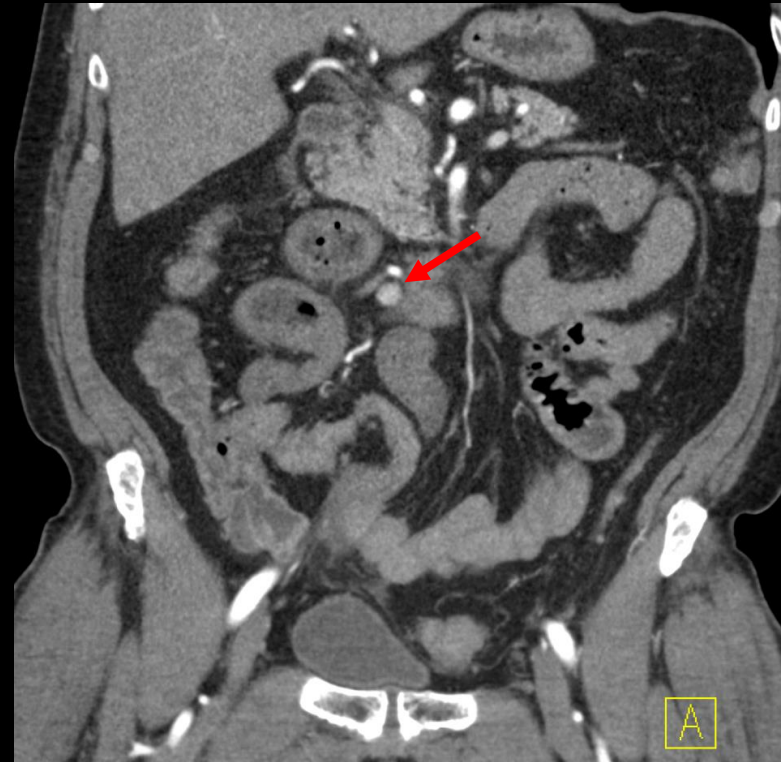
Findings (unlabeled)



Findings: (labeled)



Mesenteric mass (blue). Multifocal irregular hypoenhancing metastatic liver lesions (yellow).



Indeterminate hyperenhancing 1.0 cm mesenteric lymph node (red).

Patient Clinical Course

- Patient underwent exploratory laparotomy with lysis of adhesions, small bowel resection, and removal of the mesenteric mass to relieve the partial obstruction.
- Multiple palpable lesions were noted in the right liver lobe. Wedge biopsy was performed and samples were sent for pathological examination.

Biopsy Results Pathology Report

- Well-differentiated tumor cells extending through the muscularis propria and subserosal adipose tissue with extensive perineural and lymphovascular invasion consistent with a grade 1 neuroendocrine tumor (NET).
- Seven of twenty lymph nodes positive for metastatic NET.
- Liver biopsy results consistent with metastatic, well-differentiated NET.
- Primary tumor and liver sample both stained positive for Chromogranin A (CgA) and Synaptophysin.

Final Dx:

Metastatic grade 1 neuroendocrine tumor

Case Discussion

- Clinical Presentation

- Abdominal pain and diarrhea are common presenting symptoms of NETs
- Mechanical effect from the primary tumor or mesenteric lymph node involvement can cause recurrent bowel obstructions
- Symptoms of “Carcinoid Syndrome” suggest serotonin-secreting liver metastasis
 - Diarrhea, flushing, palpitations, and bronchospasm

- Pathogenesis

- NETs likely arise from the enterochromaffin cells found in the crypts of Lieberkühn

- Imaging

- Three phase CTA Abd-Pelvis revealed a calcified, hyperenhancing RLQ mass tethered to distal small bowel loops resulting in partial obstruction
- Multifocal metastatic lesions in the right liver lobe

Case Discussion

- Biochemical Markers
 - NET diagnosis is confirmed by positive immunohistochemical stain for one or more neuroendocrine markers (Ex. Chromogranin A or Synaptophysin)
 - This patient's samples stained positive for both markers
 - Serum CgA and Urine 5-HIAA are markers for carcinoid disease and are used to monitor treatment response
 - CgA is more specific because 5-HIAA requires serotonin secretion by the tumor (carcinoid syndrome)
 - This patient's serum CgA: 656.0 → 233.9 ng/mL after tumor resection and 4 months on somatostatin agonist
 - This patient's urine 5-HIAA: 81.7 → 22.5 mg/24hr after tumor resection and 4 months on somatostatin agonist

Case Discussion

- Treatment
 - Distal small bowel tumors: Resection of primary tumor and mesenteric lymph nodes
 - Somatostatin Analogs: Octreotide and Lanreotide
 - First line therapy to control symptoms and growth of well-differentiated NETs
 - This patient underwent therapy with Lanreotide every 28 days
 - Liver metastases: Surgical resection of hepatic tumor, hepatic arterial embolization, or percutaneous thermal ablation

References:

- American College of Radiology. ACR Appropriateness Criteria®. Available at <https://acsearch.acr.org/list> . Accessed December 28, 2022. .
- Basuroy, R., Srirajaskanthan, R., & Ramage, J. K. (2016). Neuroendocrine Tumors. *Gastroenterol Clin North Am*, 45(3), 487-507. doi:10.1016/j.gtc.2016.04.007.
- Castellano, D., Grande, E., Valle, J., Capdevila, J., Reidy-Lagunes, D., O'Connor, J. M., & Raymond, E. (2015). Expert consensus for the management of advanced or metastatic pancreatic neuroendocrine and carcinoid tumors. *Cancer Chemother Pharmacol*, 75(6), 1099-1114. doi:10.1007/s00280-014-2642-2.
- Pinchot, S. N., Holen, K., Sippel, R. S., & Chen, H. (2008). Carcinoid tumors. *Oncologist*, 13(12), 1255-1269. doi:10.1634/theoncologist.2008-0207.
- Zhang, J. Y., & Kunz, P. L. (2022). Making Sense of a Complex Disease: A Practical Approach to Managing Neuroendocrine Tumors. *JCO Oncol Pract*, 18(4), 258-264. doi:10.1200/OP.21.00240.