Metastatic Esophageal Gastrointestinal Stromal Tumor (GIST)

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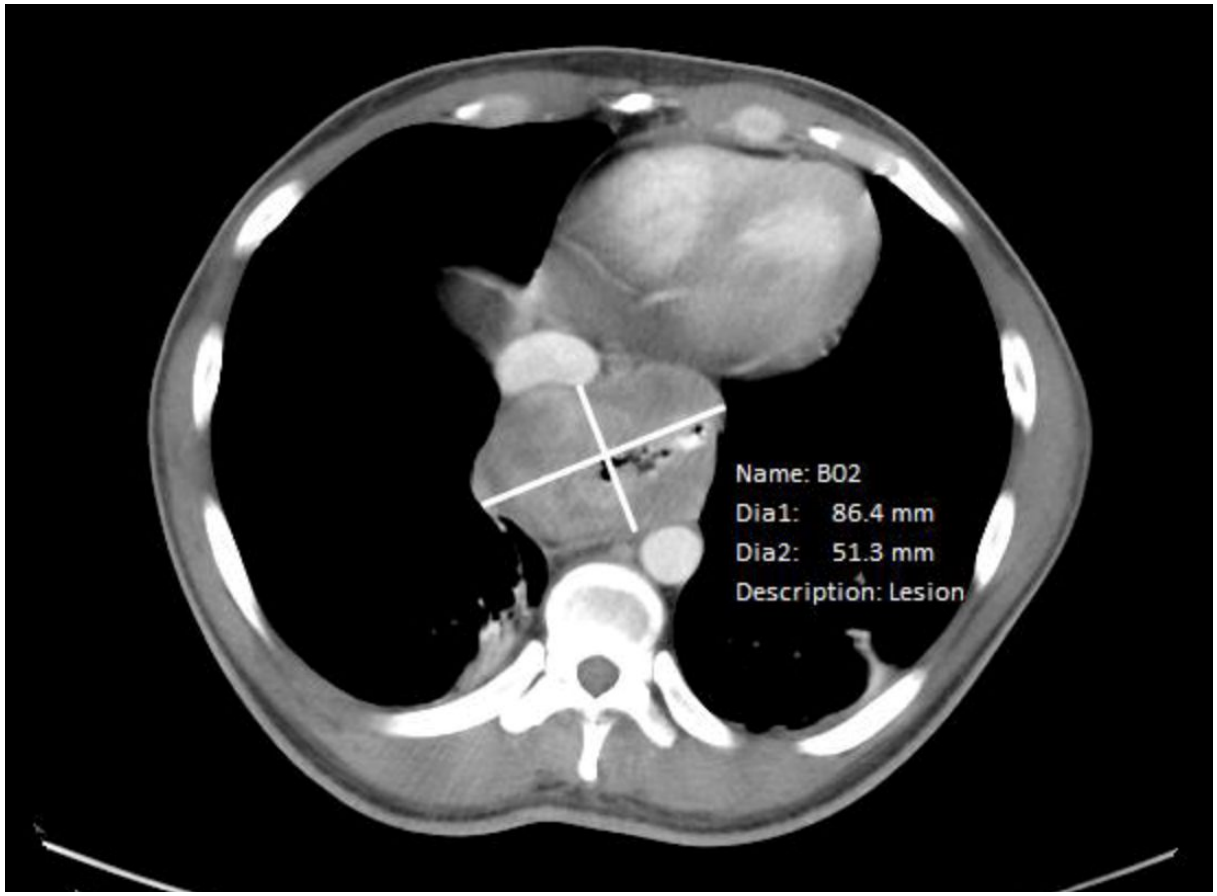
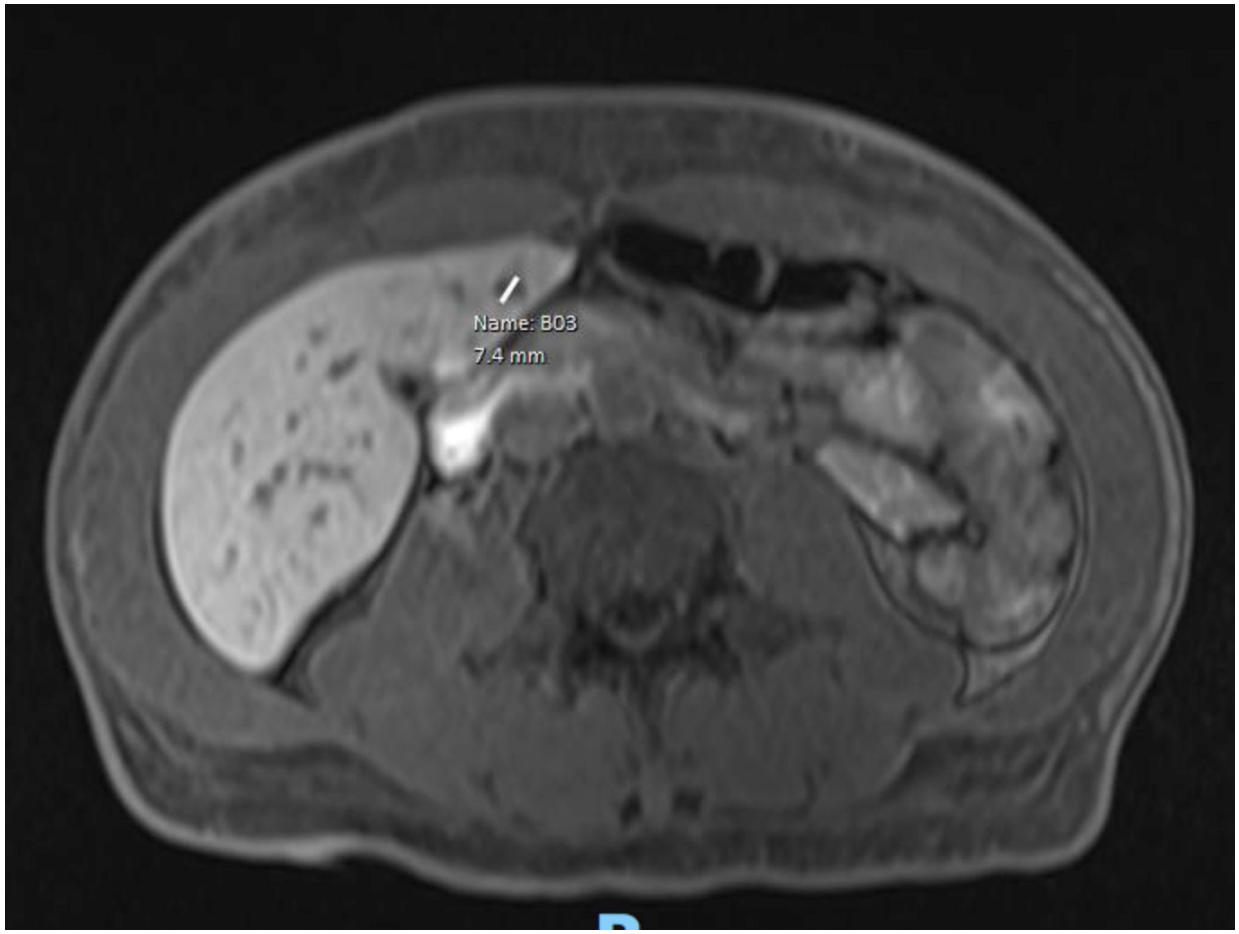
Case

- Mr. F is a 31 year old male with a PMH of GERD who initially presented to the ED with complains of worsening dysphagia, intermittent abdominal pain, nausea/vomiting, and a 70 lb weight loss over one year
- EGD revealed a fungating, ulcerating mass just proximal to the GE junction- it was biopsied and pathology confirmed it was a GIST tumor
- CT abdomen/pelvis demonstrated a large esophageal mass (8.6 cm x 5.1 cm) with large necrotic cavitary space and fistulous connection causing IVC compression, with possible invasion of the right crura of the diaphragm. Also showed multiple liver lesions concerning for metastatic disease
- MRI liver showed a 7mm indeterminate hepatic segment 5 lesion suspicious for metastatic disease. Remaining liver lesions consistent with simple cysts
- Patient referred for focal liver biopsy for further treatment planning

CT abdomen demonstrates enhancing, necrotic, large esophageal mass measuring 8.6cm x 5.1cm

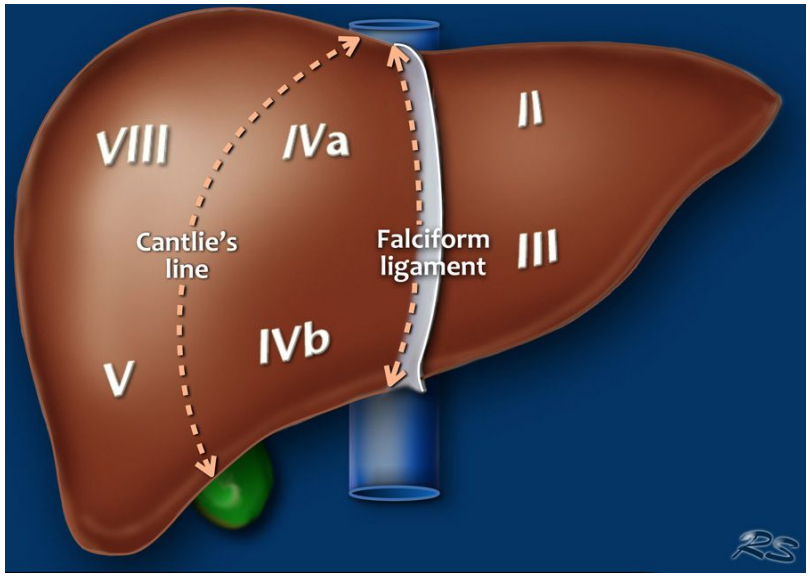


MRI Liver demonstrates a 7mm lesion in hepatic segment 5 that is mildly T1 hypointense, T2 isointense, and relatively hypo-enhancing

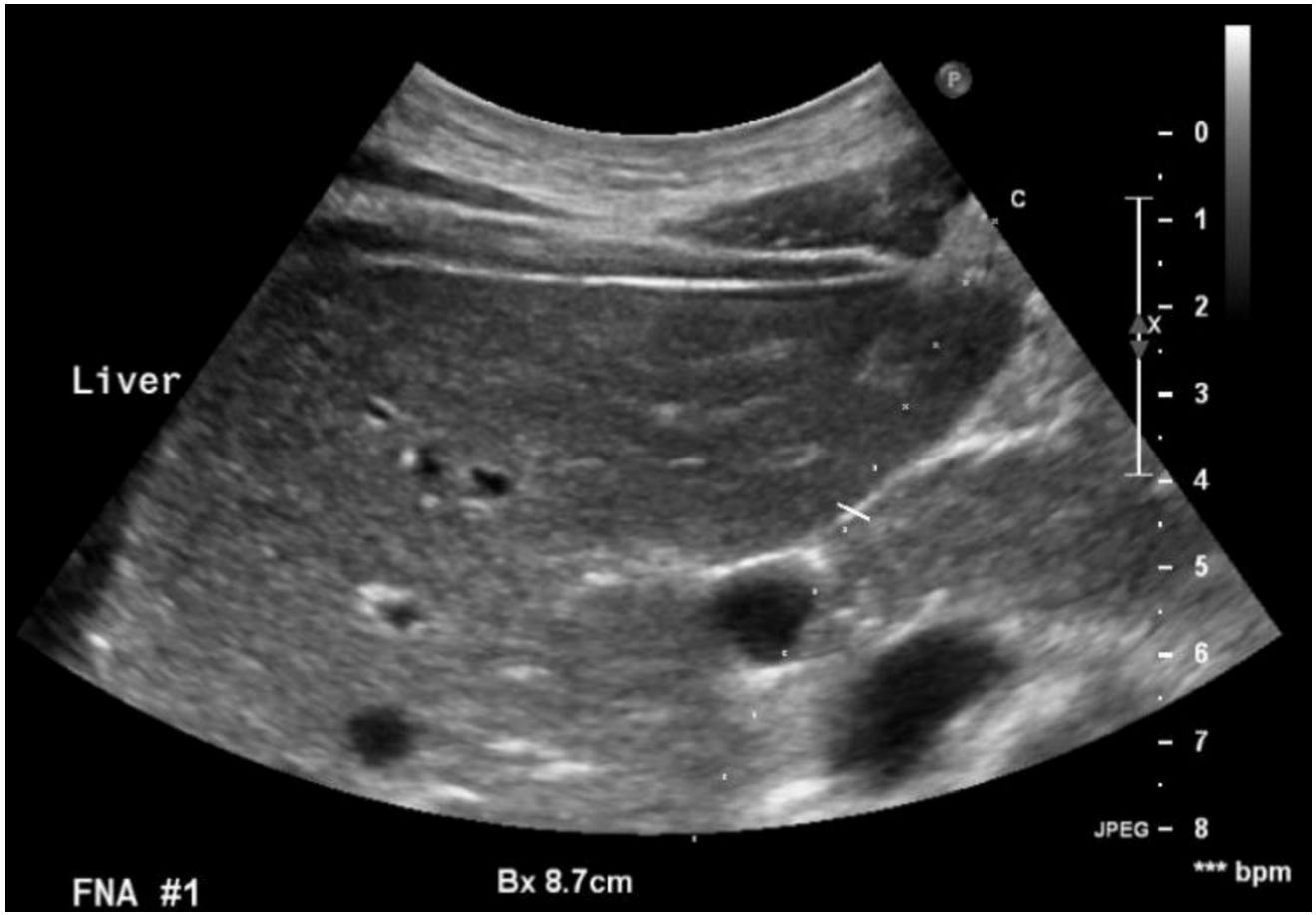


US Guided Liver Biopsy

- The patient was an appropriate candidate for conscious sedation and US guided liver biopsy
- A subcostal biopsy approach was planned which showed the focal liver lesion in segment 4B
- A single 22-guage FNA was obtained but was inadequate for definitive diagnosis so three 18-gauge core biopsies were taken
- The patient had no complications and was discharged from radiology in stable condition

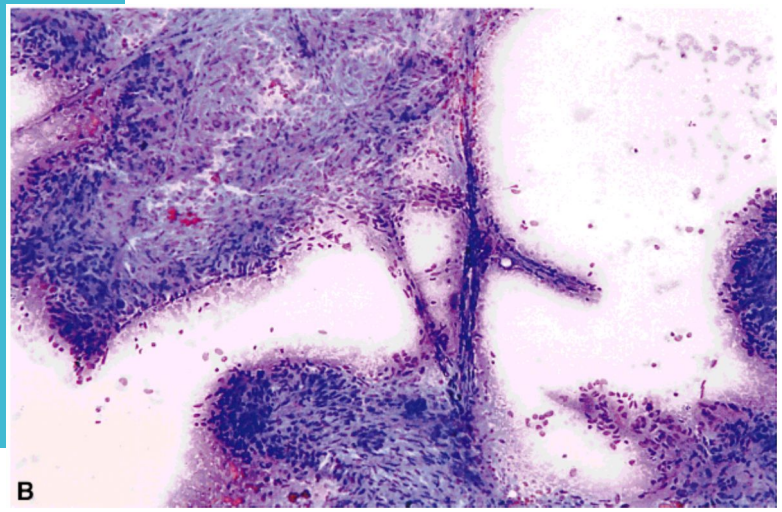


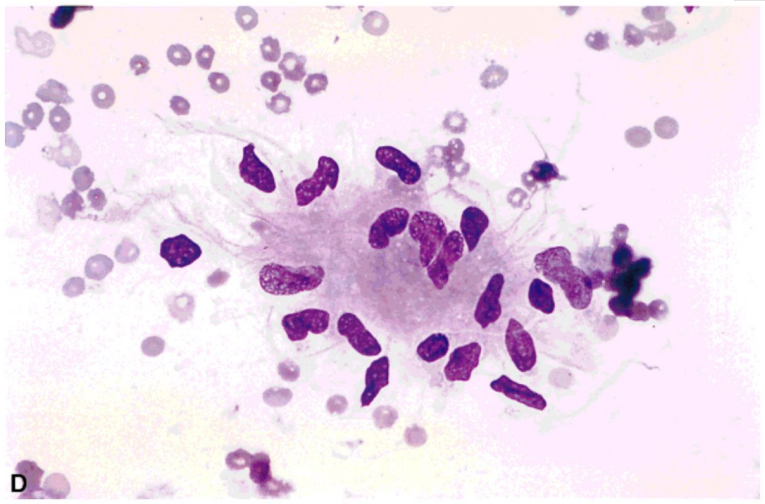
US Guided Focal Liver Biopsy of Segment 4B



Cytology of GIST tumors

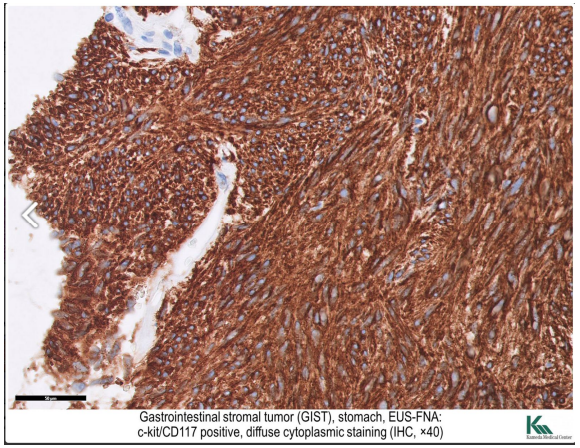
- Typically show irregular outlined clusters of uniform **spindle cells** that are spread easily without crush artifact
- Cells have wispy cytoplasm with long, delicate, filamentous extensions
- A prominent vascular pattern is common
- Features of malignancy include cellular dyscohesion, nuclear pleomorphism, prominent nucleoli, increased mitotic activity, and prominent necrosis
- Mr. F's aspirate smears and core biopsy demonstrated a spindle cell neoplasm with moderate nuclear pleomorphism

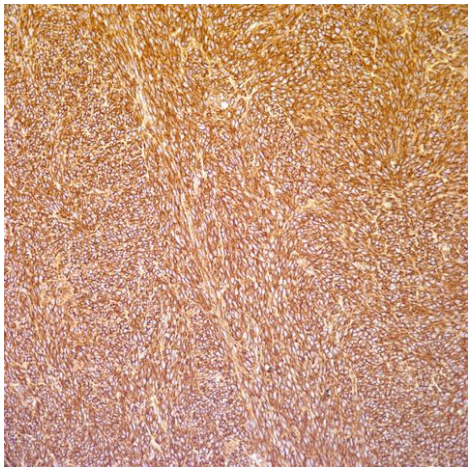




Special Stains

- Mr. F had additional immunohistochemical staining for **c-kit** and **DOG1,** which were both positive and support the diagnosis of GIST
- C-kit:
  - Receptor for kit protein: a tyrosine kinase growth factor receptor protein important for development and survival of mast cells, hematopoietic stem cells, melanocytes, germ cells, and interstitial cells of Cajal
  - It has activating mutations in most GIST tumors
  - Can be targeted with imatinib, a tyrosine kinase inhibitor
- DOG1
  - Chloride channel protein
  - Sensitive and specific marker for GIST


Gastrointestinal stromal tumor (GIST), stomach, EUS-FNA:
c-kit/CD117 positive, diffuse cytoplasmic staining (IHC, ×40)



More About Primary Esophageal GIST

- Mesenchymal tumor of the digestive tract, likely originating from multipotential progenitors of interstitial cells of Cajal
- It is very rare (less than 3% of GIST arise in the esophagus)
- Average age at diagnosis is 50-60, no gender predilection
- Mostly sporadic although higher incidence in NF1, Carneys triad and Familial GIST syndrome
- Often present with dysphagia
- Often metastasizes to the liver and peritoneum
- Prognosis is based on tumor size and mitotic rate

Risk category	Tumor size	Mitotic rate/50 HPF
Low	< 5 cm	< 5
Intermediate	< 5 cm	6 - 10
Intermediate	5 - 10 cm	< 5
High	> 5 cm	> 5
High	> 10 cm	Any mitotic rate
High	Any size	> 10

Back to Mr. F

- Diagnosed with esophageal GIST, stage IV (T_3NxM_1)- large primary with biopsy proven metastases
- No family history of malignancies
- Clinically well with mild iron deficiency anemia
- Started imatinib therapy as neoadjuvant therapy
- Follow up on mutation and exon testing to ensure correct dose/use of imatinib
- Plan to repeat imaging with PET in 3 months to evaluate response to imatinib
- Will hopefully eventually follow with surgical oncology for tumor excision

References

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