

# AMSER Case of the Month

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HPI: 58 y/o female with abdominal pain and nausea

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# Patient Presentation

- **HPI:** 58 y/o female with a history of CVA w/ residual R sided weakness, DMII, hypertension, and plasma cell leukemia presenting for a planned chemotherapy admission, but experiencing non-localized abdominal pain, nausea, and poor appetite.
- **PMHx/PSHx:** CVA 2022; DMII; HTN; CD19-/CH56- restricted monotypic plasma cell leukemia w/ significant elevations in serum free light chains and CT showing extensive lytic lesions throughout femur and spine; bone marrow biopsy 2022 demonstrated hypercellularity and infiltration by atypical plasma cells; Myeloma Prognostic Panel FISH: del(13q/-13), dup(1a), del17p, t(14;16)
- **Relevant Meds:** Dara-KRd (Daratumumab, Carfilzomib, Lenalidomide, Dexamethasone)

# Patient Presentation

- **Vitals:** T 37.6C, HR 106, RR 20, BP 151/66, SpO2 97% on RA
- **Physical Examination:** Chronically ill appearing female with exam notable for dyspnea and jaundice. Unremarkable otherwise.
- **Pertinent Labs:** eGFR 20; Hgb 7; RBC 2.21; WBC 4.98; ALT 373; AST 255; T Bili 2.3; Alk Phos 882; LDH 2216; SPEP 200 mg/dL free lambda monoclonal Ig.

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

**Variant 1:** Acute nonlocalized abdominal pain and fever. No recent surgery. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	⊕⊕⊕
MRI abdomen and pelvis without and with IV contrast	May Be Appropriate	○
US abdomen	May Be Appropriate	○
CT abdomen and pelvis without IV contrast	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 contrast enema	Usually Not Appropriate	⊕⊕⊕
Fluoroscopy upper GI series with small bowel follow-through	Usually Not Appropriate	⊕⊕⊕

These imaging modalities were ordered by the ER physician



# Findings (unlabeled)



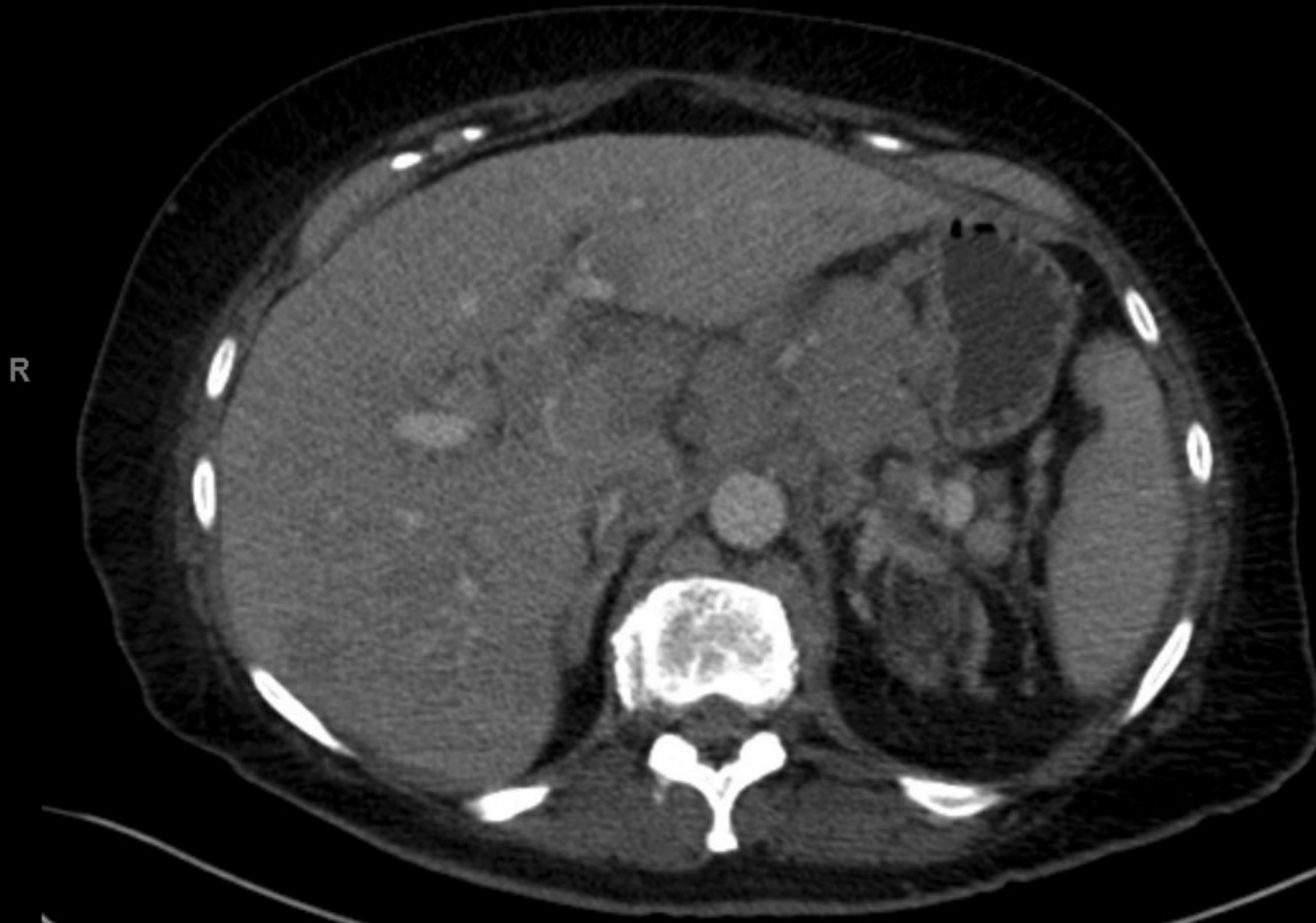
Abdominal US

# Findings (unlabeled)



CT AP w/ IV  
Contrast

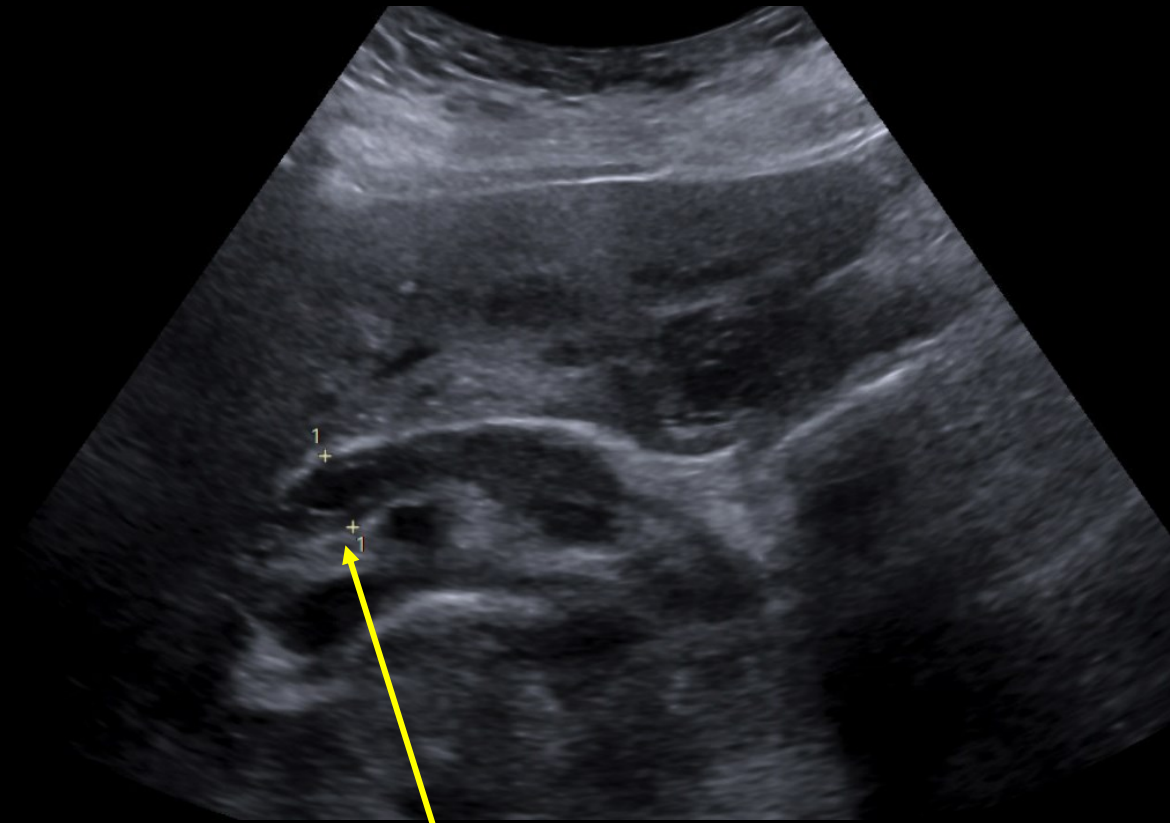
# Findings (unlabeled)



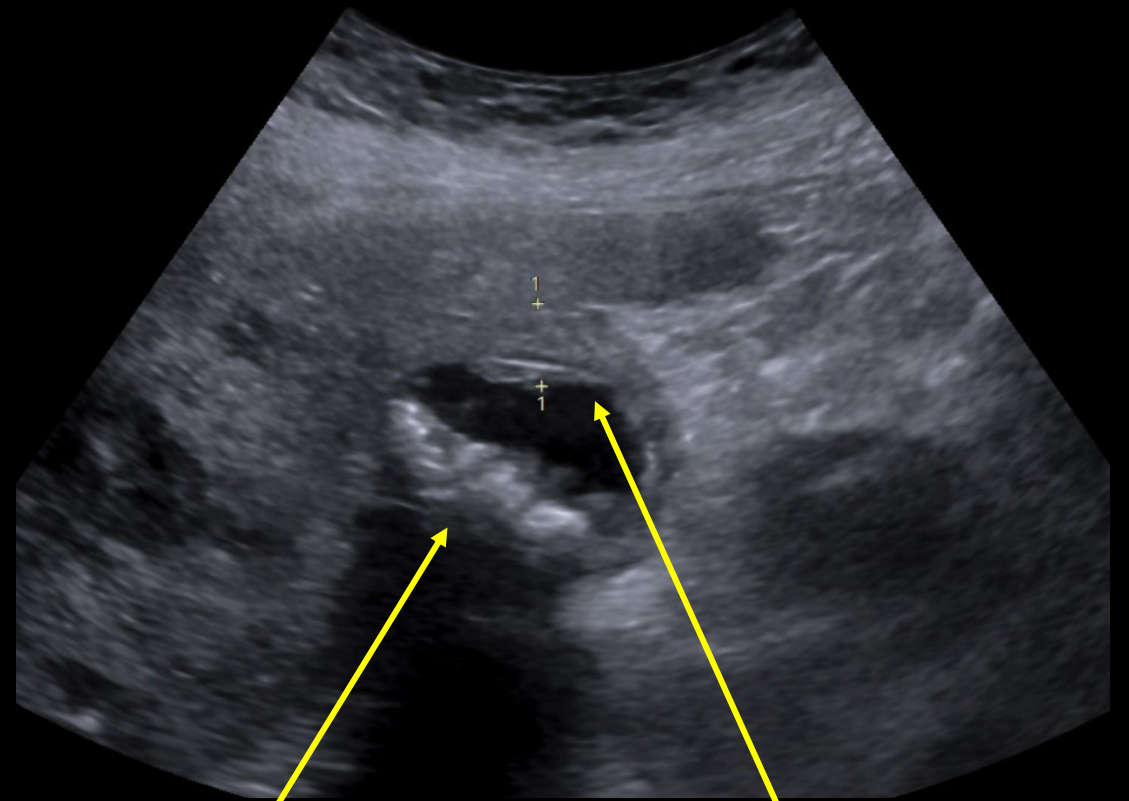
CT AP w/ IV  
Contrast



# Findings (labeled)



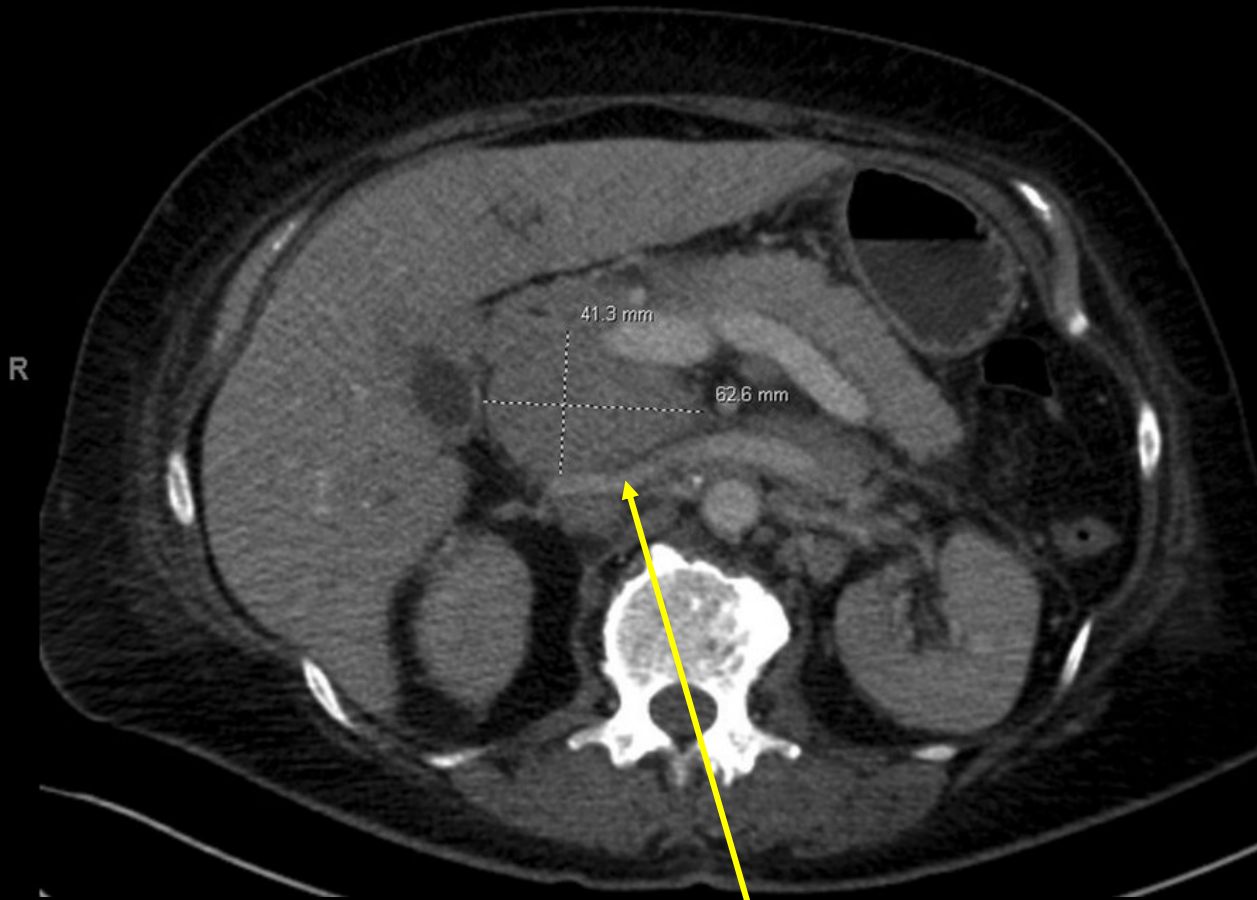
Common Bile Duct 1.02 cm



Gallstones

Gallbladder Wall 0.96 cm with pericholecystic fluid

# Findings: (labeled)

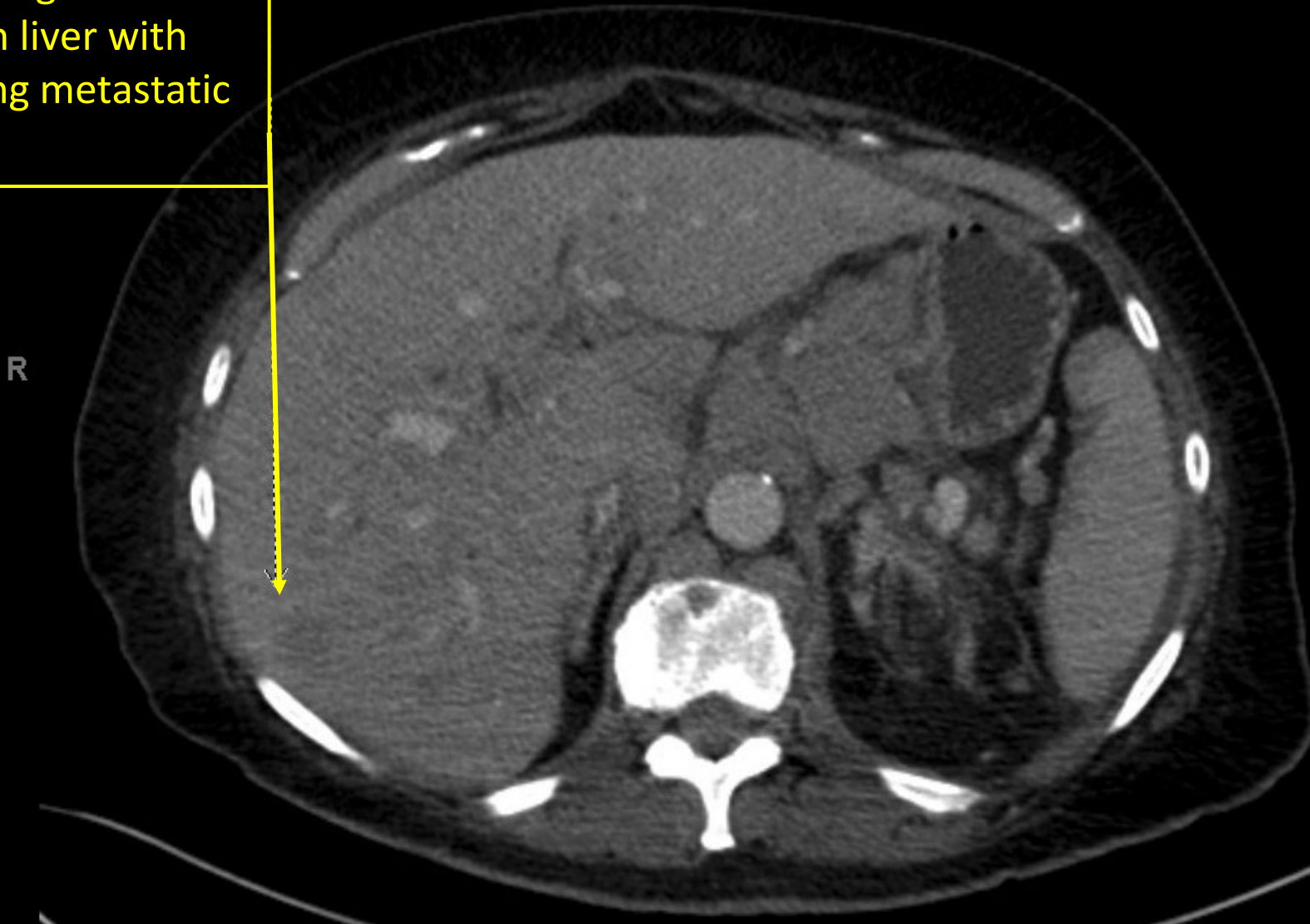


CT AP w/ IV  
Contrast

4.1 x 6.3 cm **pericaval** lymph node and 4.1 x 3.3 cm **paraceliac** lymph node

# Findings (labeled)

Faint hypoattenuating 1.7 cm masslike foci within liver with differential including metastatic disease



CT AP w/ IV Contrast

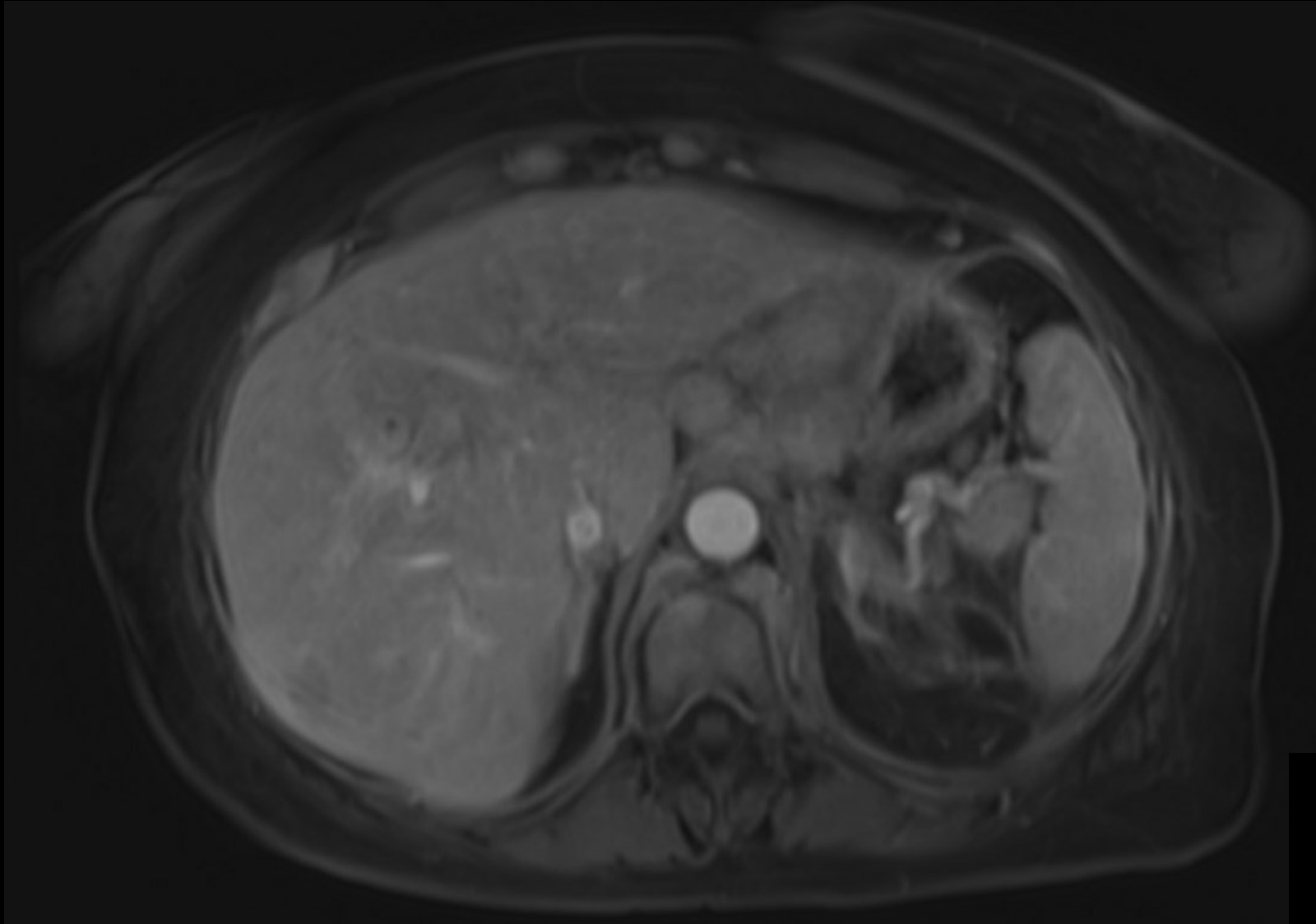
# Select the applicable ACR Appropriateness Criteria

**Variant 4:** Indeterminate, greater than 1 cm liver lesion on initial imaging with CT (noncontrast or single-phase) or noncontrast MRI. Known history of an extrahepatic malignancy.

Procedure	Appropriateness Category	Relative Radiation Level
MRI abdomen without and with IV contrast	Usually Appropriate	○
CT abdomen with IV contrast multiphase	Usually Appropriate	⊕⊕⊕
FDG-PET/CT skull base to mid-thigh	Usually Appropriate	⊕⊕⊕⊕
US abdomen	May Be Appropriate	○
US abdomen with IV contrast	May Be Appropriate	○
Image-guided biopsy liver	May Be Appropriate	Varies
CT abdomen without and with IV contrast	May Be Appropriate	⊕⊕⊕⊕
DOTATATE PET/CT skull base to mid-thigh	May Be Appropriate	⊕⊕⊕
Octreotide scan with SPECT or SPECT/CT chest and abdomen	May Be Appropriate	⊕⊕⊕⊕
Liver spleen scan	Usually Not Appropriate	⊕⊕⊕
RBC scan abdomen and pelvis	Usually Not Appropriate	⊕⊕⊕

This imaging modality was ordered for further assessment of the liver mass

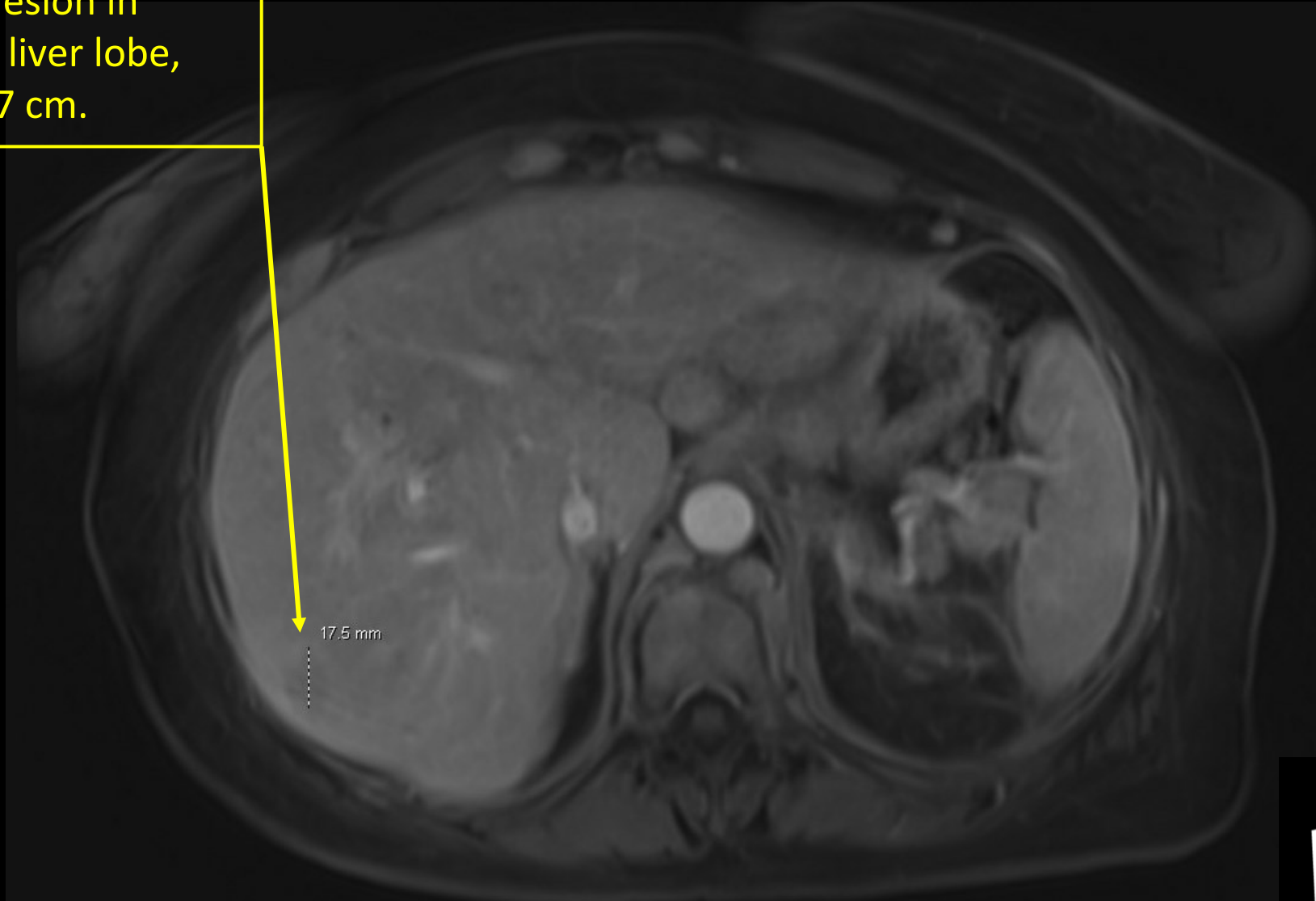
# Findings (unlabeled)



MRI Abdomen  
+/- IV Contrast

# Findings (labeled)

Focal hypointense lesion in inferior aspect of R liver lobe, measuring up to 1.7 cm.



MRI Abdomen  
+/- IV Contrast

**Final Dx:**

Acute Cholecystitis with incidental Plasmacytoma Liver Metastasis

# Case Discussion

- Management
  - Clinical Stage III Plasma Cell Leukemia with high risk FISH cytogenetics, rising lambda light chains ~400, with CT + MRI demonstrating bulky retroperitoneal + periportal lymphadenopathy and plasmacytoma metastasis to liver
  - HIDA scan revealed gallbladder wall thickening and common bile duct thickening. Per Surgical Oncology, no acute intervention, as patient was to receive chemotherapy shortly.
  - Radiation Oncology consulted, recommended proceeding with chemotherapy over radiation therapy. Received VDPACE (bortezomib, dexamethasone, cisplatin, doxorubicin, etoposide) therapy.



# Case Discussion

- Acute Cholecystitis
  - Impacts 200,000 people in the United States annually
  - Presents as acute RUQ tenderness, fever, and nausea
  - RUQ ultrasonography has an 81% sensitivity and 83% specificity for diagnosing acute cholecystitis. If US does not provide a definitive diagnosis, hepatobiliary scintigraphy is the gold standard
  - Following diagnosis, early laparoscopic cholecystectomy is associated with improved outcomes, fewer postoperative complications, shorter length of hospital stay, and fewer costs.
  - A percutaneous cholecystostomy tube is an effective therapy for patients with exceptionally high perioperative risk, but are associated with higher rates of postprocedural complications relative to laparoscopic cholecystectomy, and are reserved for severely ill patients.

# Case Discussion

- Multiple Myeloma (Plasma Cell Leukemia)
  - Malignancy of plasma cells that mainly (but not exclusively) involves bone marrow
  - Hepatic infiltration by plasma cells has been observed in 28-40% of patients in 2 patterns – diffuse (sinusoidal/portal) and nodular
  - Other liver histological findings include amyloidosis, myeloid metaplasia, and extrahepatic cholestasis
  - Liver involvement in multiple myeloma has not been proven to be a prognostic characteristic, therefore invasive procedures such as liver biopsy are rarely performed.
  - Per Perez-Soler et al., multiple myeloma with concomitant jaundice or liver failure point to acute hepatitis/cholecystitis rather than plasma cell infiltration.

# References:

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7. Perez-Soler, Roman, et al. "Liver involvement in multiple myeloma." American journal of hematology 20.1 (1985): 25-29.
8. Kiewiet, Jordy JS, et al. "A systematic review and meta-analysis of diagnostic performance of imaging in acute cholecystitis." Radiology 264.3 (2012): 708-720.