AMSER Case of the Month December 2023

55 y.o male presenting with dyspnea, nausea, and green colored emesis

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Patient Presentation

- HPI: 55 y.o. male with a past medical history of multiple strokes who presents to the ED with progressive generalized weakness, nausea, and green emesis.
- Past Medical/Surgical Hx: Multiple CVAs
- Allergies: Unremarkable
- Medications: None
- Vitals: EKG sinus tachycardia 120's; BP 127/105; T 36.8 C
- ROS: +SOB, change in appetite/BM, green emesis
- Physical Exam: Abdominal exam without tender to palpation or scleral icterus

Pertinent Labs

- BMP:
  - BUN 21
- CBC:
  - WBC 12.7
- LFT:
  - AST 182->495
  - ALT 178->267
  - Alk Phos 297->1207
  - Direct bilirubin 1.8->15.7
- Lipase: 66->180

What Imaging Should We Order?

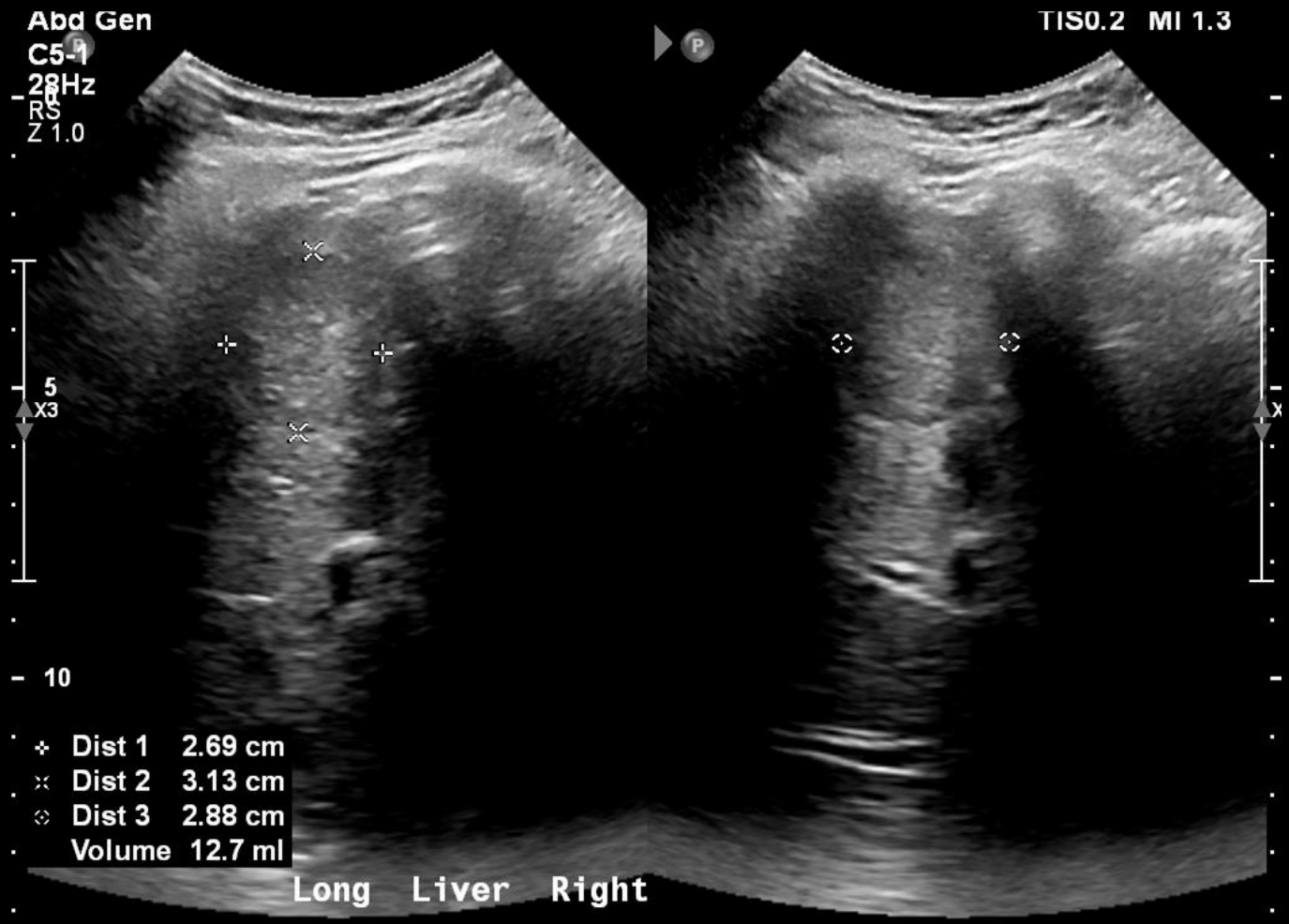
American College of Radiology
ACR Appropriateness Criteria®
Abnormal Liver Function Tests

Variant 1: **Abnormal liver function tests. Hepatocellular predominance with mild aminotransferase increase. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US abdomen	Usually Appropriate	O
US duplex Doppler abdomen	Usually Appropriate	O
US shear wave elastography abdomen	May Be Appropriate	O
MR elastography abdomen	May Be Appropriate	O
MRI abdomen without and with IV contrast with MRCP	May Be Appropriate	O
MRI abdomen without IV contrast with MRCP	May Be Appropriate	O
CT abdomen and pelvis without IV contrast	May Be Appropriate	☢☢☢
US abdomen with IV contrast	Usually Not Appropriate	O
CT abdomen and pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

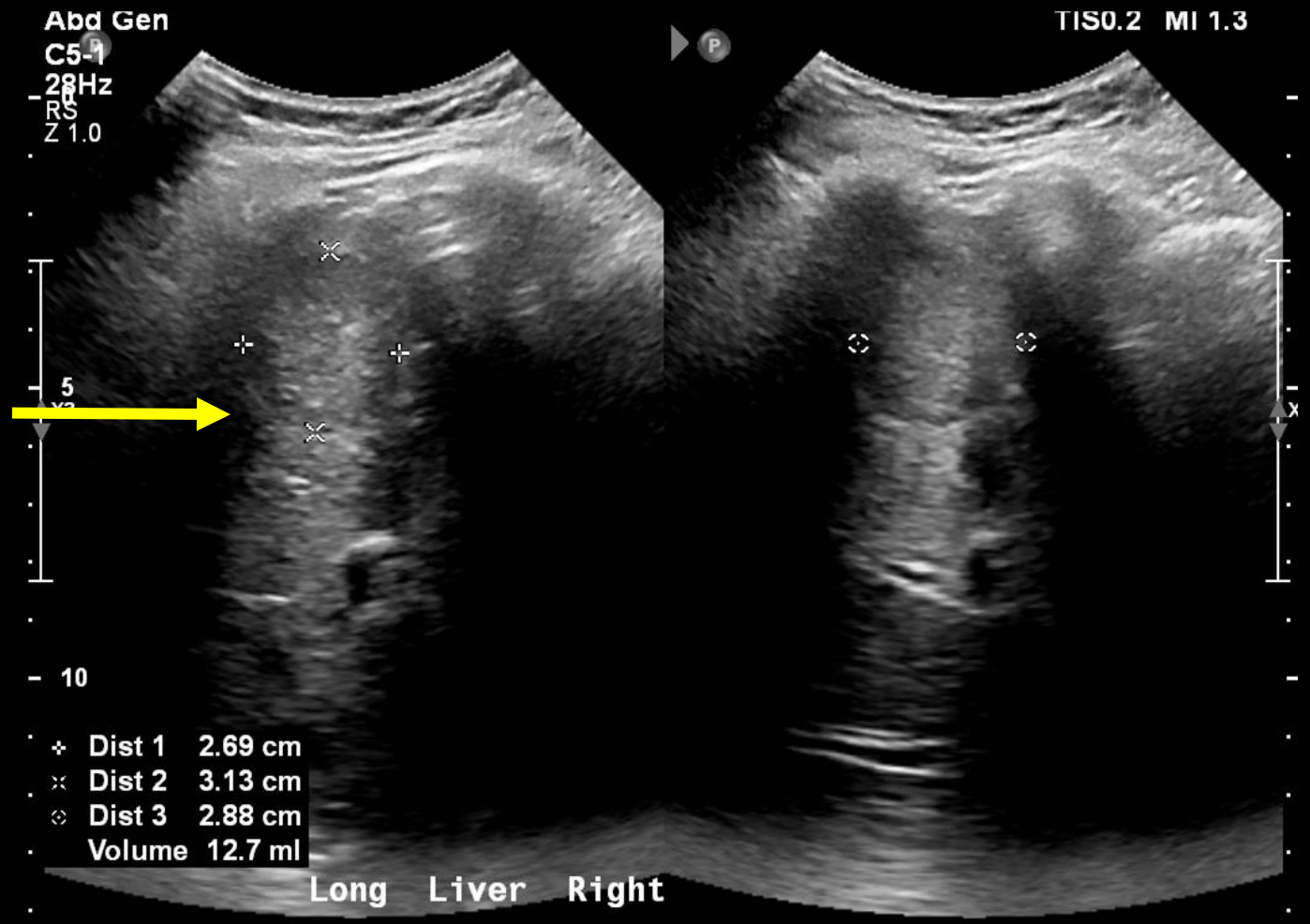
This imaging modality was ordered by primary physicians to evaluate n/v and elevated LFTs

Abdominal Ultrasound (unlabeled)

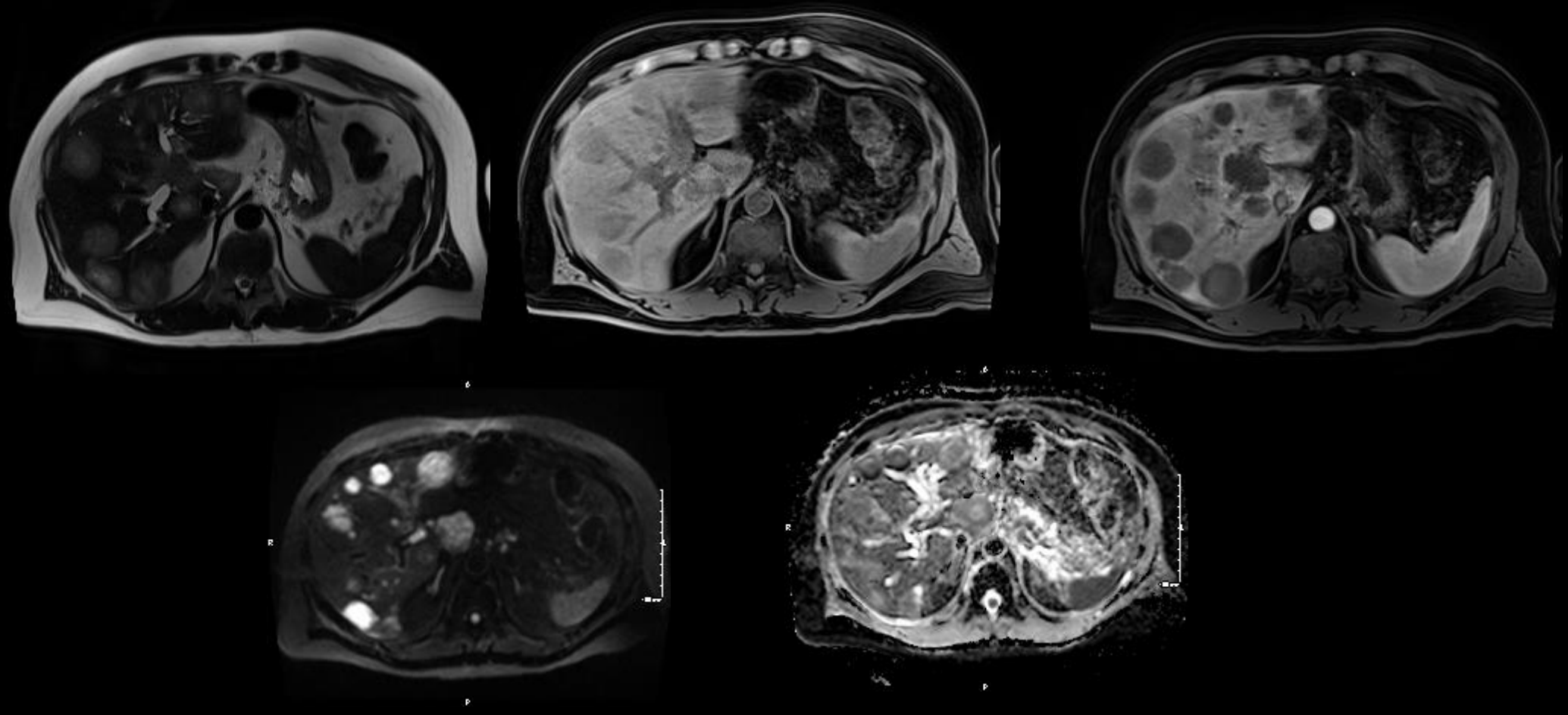


Abdominal Ultrasound (labeled)

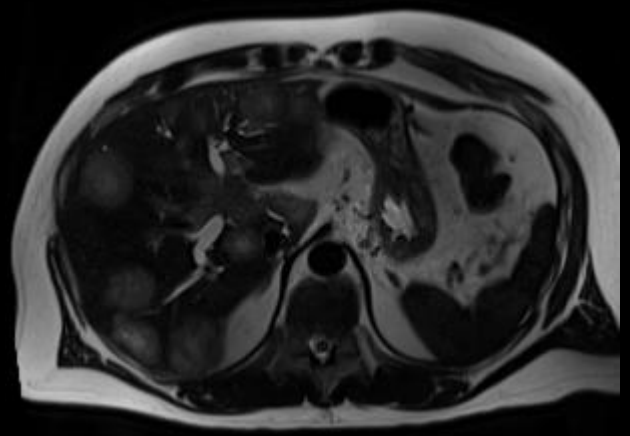
Isoechoic lesion in the right hepatic lobe with peripheral hypoechoic rim aka “target lesion”



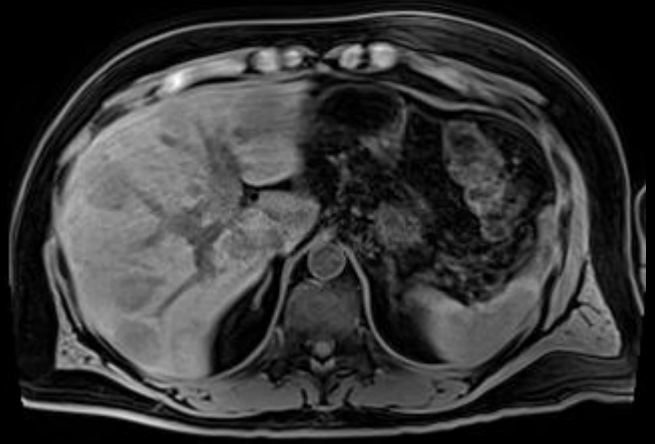
MRI abdomen (unlabeled)



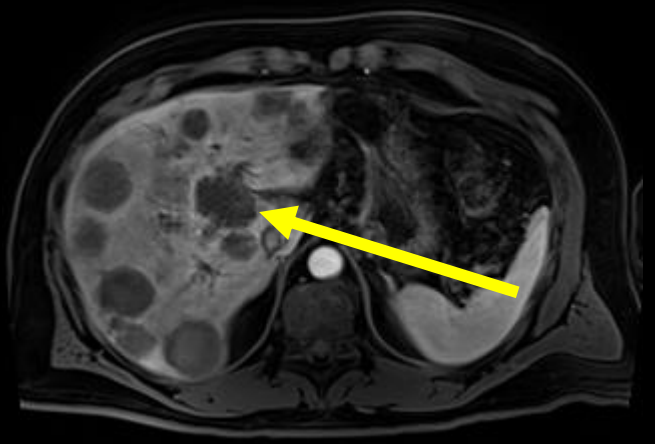
MRI abdomen (labeled) Liver mets



T2



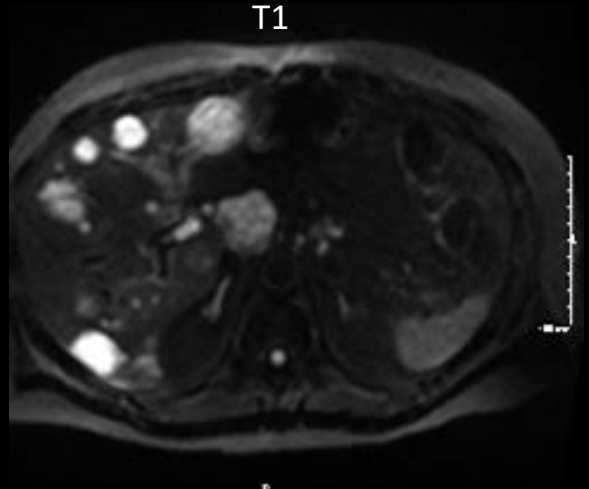
T1



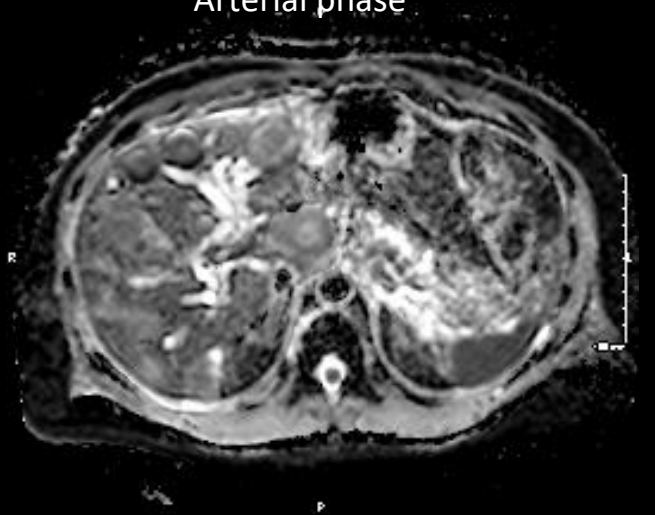
Arterial phase

Innumerable T2 hyper T1 hypointense lesions with peripheral enhancement and associated bright DWI/dark ADC (restriction diffusion)

Note that the yellow arrow points to a tumor thrombus occupying the portal vein confluence

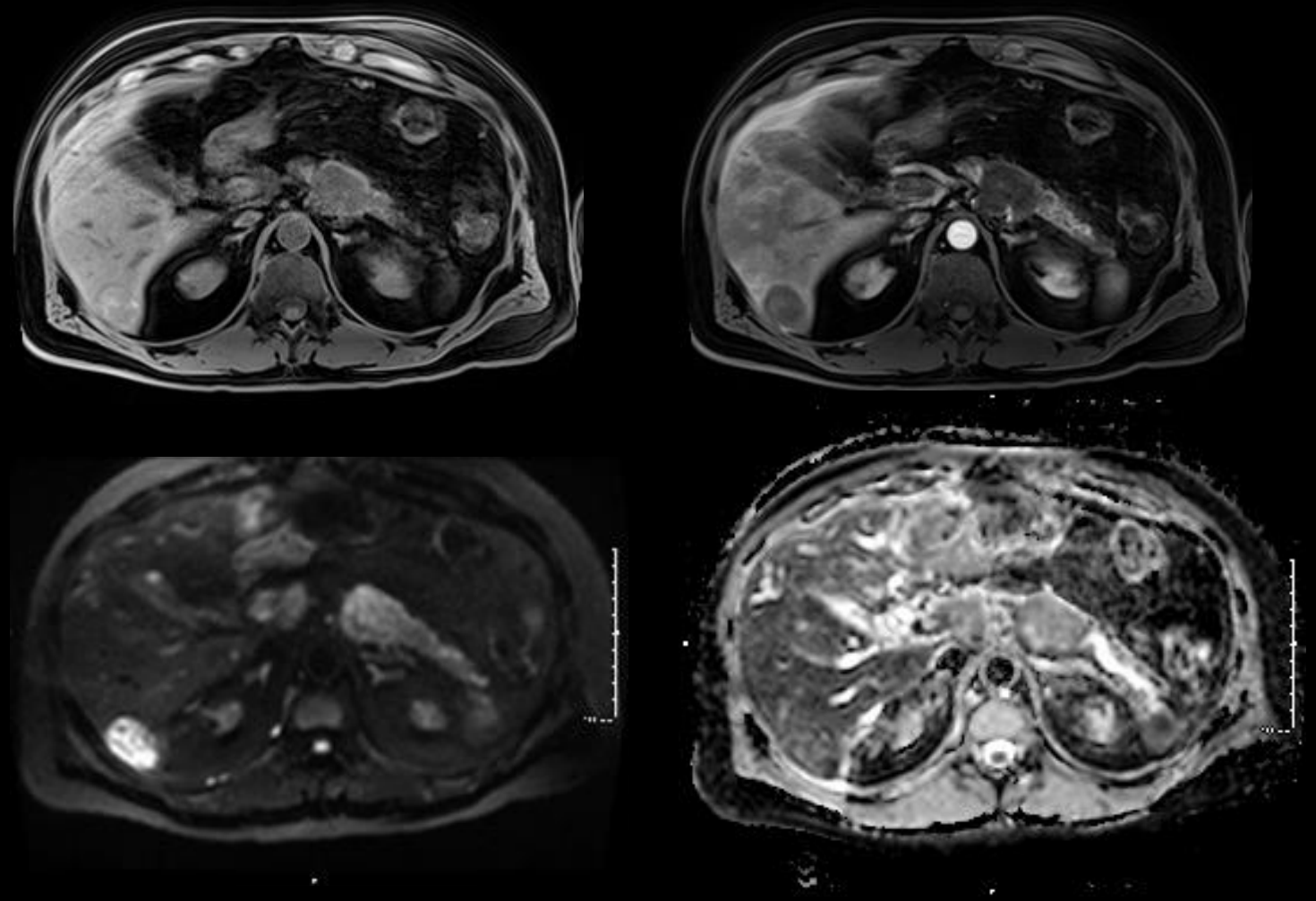


DWI



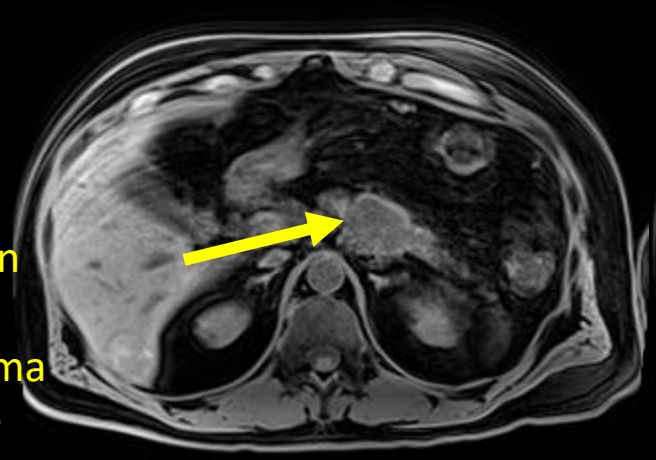
ADC

MRI abdomen (unlabeled)

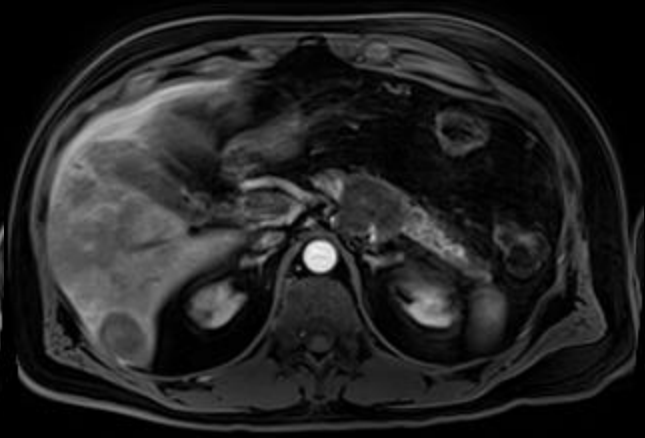


MRI abdomen (labeled) Primary pancreatic mass

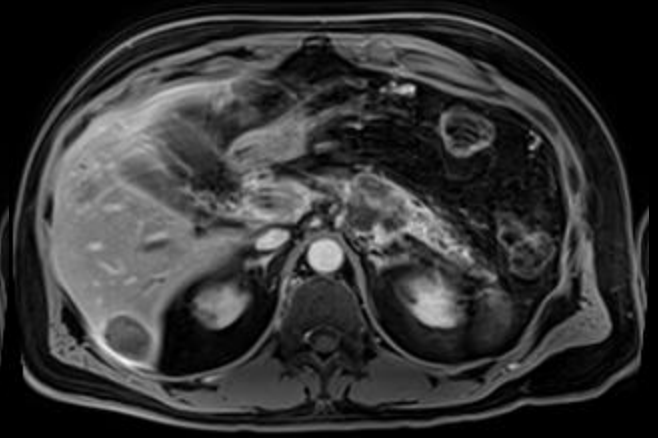
Best sequence for resolution of pancreatic adenocarcinoma is on non contrast T1. Noting that pancreatic adenocarcinoma hypoenhances versus the normal pancreatic parenchyma on T1, arterial, venous and delayed T1 post contrast.



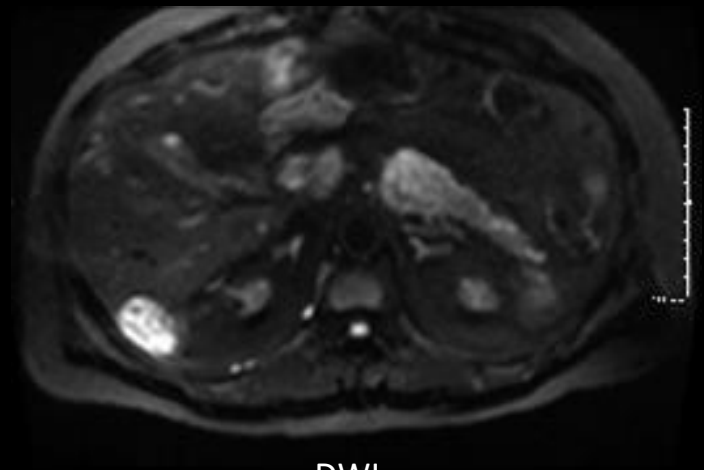
T1, non-contrast



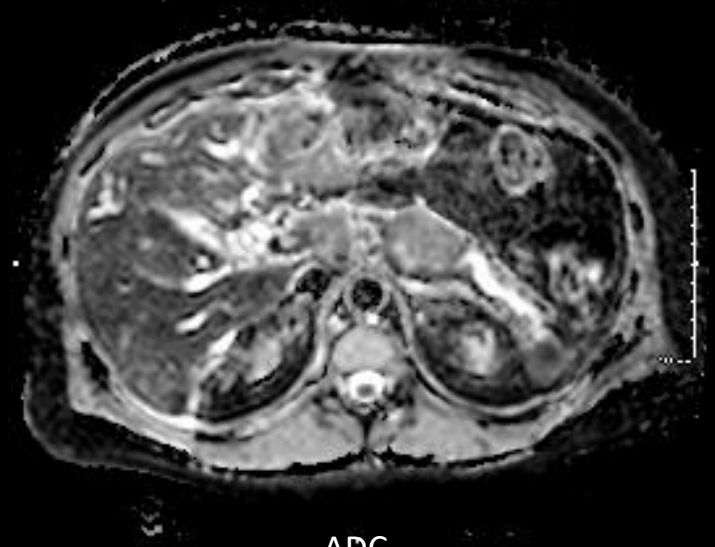
Arterial phase



Venous phase



DWI



ADC

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EUS w/Pancreatic Biopsy

- Conducted 4/11
- Findings:
  - FNA showing adenocarcinoma with potential squamous component

Final Dx:

Metastatic Pancreatic Adenocarcinoma

Pancreatic Adenocarcinoma

Background

- Adenocarcinoma of the pancreas involve the exocrine ductal cells.

Epidemiology

- ~3% of all cancers in US and 4th leading cause of cancer related deaths in US.
- Survival rates are low b/c it's difficult to detect the disease in earlier stages. Early stage tumors are difficult to detect on imaging, hence this disease can go unnoticed until metastases.

Risk Factors

- Smoking
- Obesity
- Diabetes (especially T2DM)
- Chronic Pancreatitis
- Hereditary/Genetic Factors (BRCA1/BRCA1)

Pancreatic Adenocarcinoma

Clinical Presentation

- **Painless Obstructive Jaundice**: If pancreatic mass compresses bile duct blocking bile flow → clinically shows as jaundice, dark urine, and pruritus.
    - Can lead to bile duct dilatation and cholangiocarcinoma.
- **Nonspecific GI Symptoms:** Nausea, vomiting, abdominal/back pain, weight loss, and changes in bowel habits.
- **Worsening of Type 2 Diabetes/New Onset Diabetes**
- **Courvoisier's Law:** Palpable gallbladder + jaundice → cholangiocarcinoma or pancreatic cancer.
- **Trousseau's Sign of Malignancy:** Migratory Thrombophlebitis (recurrent inflamed blood vessels + clots)

Diagnosis and Management

Diagnosis:

- Requires Abdominal CT imaging + Biopsy (percutaneous or endoscopic)
  - Staging CT Scan
- CA 19-9 (Carbohydrate 19-9 marker)
- MRCP → assess biliary system
- ERCP

Management:

- Surgery (~15-20% cases): for small, resectable tumours isolated to pancreas head.
  - Total or distal pancreatectomy, modified/standard Whipple procedure.
  - Only potentially curable treatment.

References:

Castillo CF. Clinical Manifestations, Diagnosis, and Staging of Exocrine Pancreatic Cancer. UpToDate. June 8, 2022. Accessed June 29, 2023. https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-staging-of-exocrine-pancreatic-cancer#H1.

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