AMSER Case of the Month October 2021

13 y/o female with nausea and vomiting

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Patient Presentation

- HPI: 13 y/o female presents for nausea and vomiting for the last 2 days. She last vomited 4 hours ago. She complains of epigastric pain and LLQ abdominal pain. She started her menstrual period 4 days ago. She takes no medications. She denies RLQ abdominal pain, fever, chills, flank pain, dysuria and urinary frequency.

- Vitals: Temp: 36.7 °C (98.1 °F) Heart Rate: 144 Resp: 20 SpO2: 98 % BP: 118/65

- Physical Exam: Epigastric and LLQ tenderness, otherwise unremarkable exam

Pertinent Labs

- WBC: 36.4 (Normal 4.5-11)
- Amylase: 917 (Normal 23-85)
- Lipase: 1,650 (Normal 0-160)

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

This imaging modality was selected.

Variant 1: **Suspected acute pancreatitis. First-time presentation. Epigastric pain and increased amylase and lipase. Less than 48 to 72 hours after symptom onset. Initial imaging.**

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

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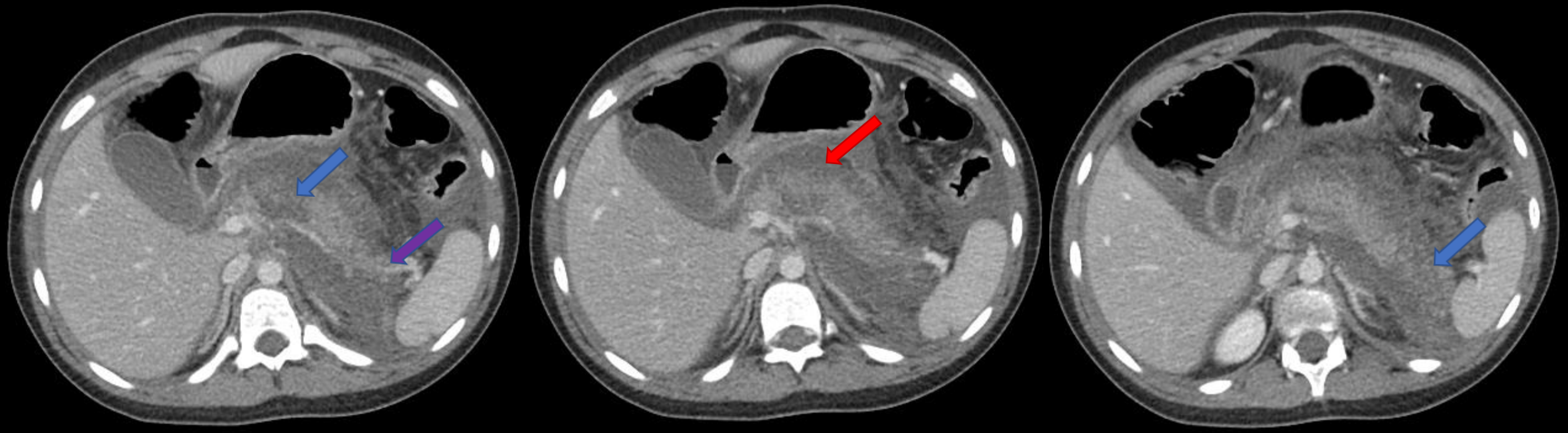
Findings (unlabeled)

Findings (labeled)



Blue Arrows- Areas of non enhancement of the pancreatic body and tail.
Red Arrow- Free fluid and developing phlegmon surrounding the pancreas.
Purple Arrow- Splenic vein thrombosis.

Findings (unlabeled)

Slides arranged cranial-caudal and are left-to-right (as numbered).

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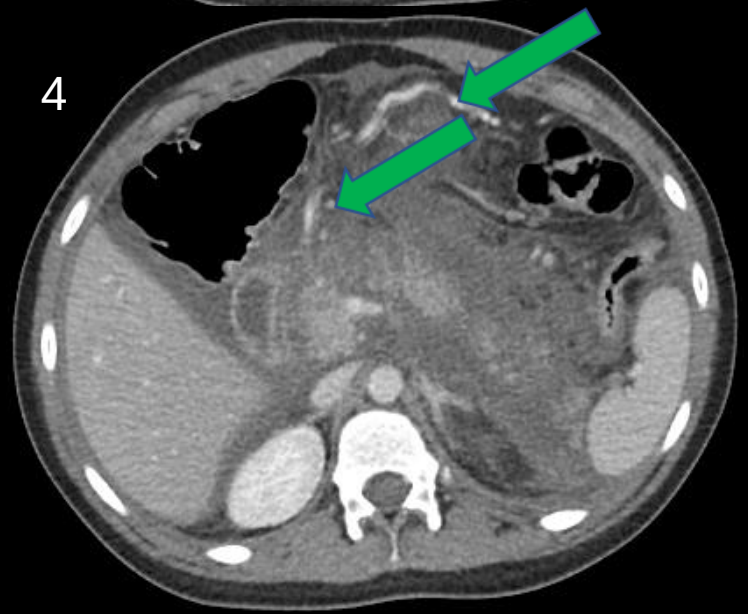
Findings (labeled)



Green Arrows – Collateral vessel from spleen to superior mesenteric vein.

Purple Arrow - Intraluminal thrombus in the splenic vein.

Slides arranged cranial-caudal and are left-to-right (as numbered).

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Final Dx:

Acute Necrotizing Pancreatitis of Idiopathic Etiology (Presumed Viral Infection)

Acute Pancreatitis Imaging

- Pediatric pancreatitis accounts for less than 5% of all diagnoses of acute pancreatitis.
- The diagnosis of pancreatitis requires 2 of the 3 following:
  - Classic epigastric pain, elevated lipase, or imaging evidence
- Because imaging is not necessary to confirm the diagnosis, imaging is used to assess for complications of pancreatitis as well as possible etiologies. Checklist of things to search for:
  - Peripancreatic fluid collection.*
  - Pancreatic pseudocyst.
  - Pancreatic necrosis.*
  - Peripancreatic vascular complications.*
  - Possible etiologies
    - Congenital abnormality (divisum, annular pancreas, choledochal cyst
    - Cholelithiasis/Choledocholithiasis
    - Trauma
    - Cystic fibrosis

Complication	n=669 (%)
Local Complications (n, %)	
Acute peripancreatic fluid collection	79 (11.8)
Acute necrotic collection	36 (5.4)
Pancreatic pseudocyst	26 (3.9)
Walled-off necrosis	6 (0.9)
Peripancreatic Vascular Complications	5 (0.7)
Other complications (n, %)	
Pleural effusion	75 (11.2)
Multiorgan failure	13 (1.9)
Cholangitis	6 (0.9)
Left colon fistula	2 (0.3)
Others	6 (0.9)

Included within the category "Others" are: Atrial fibrillation (n=3), new-onset diabetes mellitus (n=1), gram negative rod bacteremia (n=2), ischemic bowel (n=1) and severe type 1 respiratory failure (n=1). Some patients had more than one complication

Wang et al., 2009

* Seen in this patient

Case Discussion of Imaging Modalities

- **Ultrasound:** Useful for initial evaluation and follow-up imaging due to lack of radiation. Entire pancreas can be hard to see by US in children. It should be noted that ultrasound cannot reliably differentiate between interstitial and necrotizing pancreatitis; CT or MRI imaging is often preferred.
- **CT with IV contrast:** CT is useful to assess for complications including necrosis. CT was ordered initially in this pediatric patient due to her age, clinical presentation and lack of underlying risk factors; the diagnosis of pancreatitis was likely not suspected prior to imaging (her amylase and lipase tests were ordered after the CT results became available).
- **MRI with IV contrast:** Is at least as effective as CT at identifying necrosis and other complications; may be used in cases where ionizing radiation should be avoided. Superior to CT in sensitivity for accurate assessment of internal contents of peripancreatic fluid collections.
- **MRCP**: Can be useful in pediatrics to identify congenital pancreaticobiliary anomalies such as pancreas divisum and choledochal cyst. Patients with these underlying anomalies often present in childhood with recurrent pancreatitis.

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