# AMSER Case of the Month December 2025

## 24-year-old male with left flank pain and bilateral lower extremity swelling

Alexander Azar, BS, BA

Case Western Reserve University School of Medicine

Matthew Hartman, MD

Allegheny Health Network

# Patient Presentation

- HPI: 24-year-old male with 5 days of left flank pain and bilateral leg swelling. Pain is dull and radiates to left lower abdomen. Reports frothy urine and facial puffiness for ~1 month. Denies fever, dysuria, hematuria, trauma, surgery, or immobilization
- Vitals: T 98.6 °F HR 90 BP 140/86 RR 18 $SpO_2$ 99% RA
- Physical Exam:
  - General: In mild discomfort, alert
  - Abdomen: mild left flank tenderness, no rebound or guarding
  - Extremities: 2+ pitting edema bilaterally to mid-shin
  - Cardiac/Lungs/Skin/Neuro: unremarkable

# Pertinent Labs

- Urinalysis: 3+ protein, no RBCs
- Urine protein/creatinine ratio: 7.9 g/day (high)
- Serum albumin: 2.1 g/dL (low)
- Total cholesterol: 320 mg/dL (high)
- D-dimer: 3,110 ng/mL (high)
- BUN/Creatinine: 18/1.0 mg/dL (normal)
- PT/INR, aPTT: normal
- Coagulation factors (VIII, vWF): normal

# What Imaging Should We Order?

# ACR Appropriateness Criteria

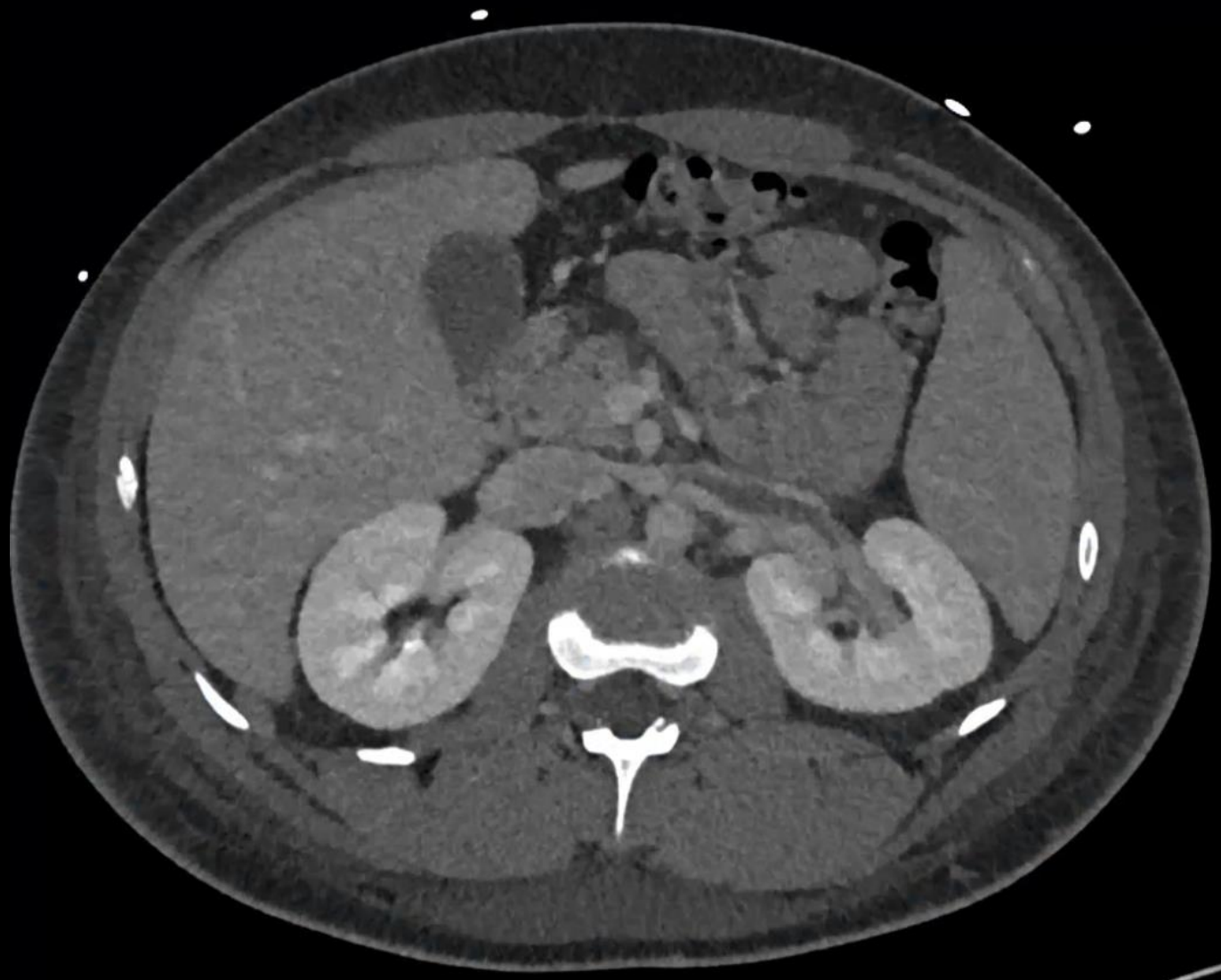
**Variant 4:** **Acute onset flank pain. Suspicion of stone disease. CT without contrast is inconclusive for the presence of stones. Next imaging study.**

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| MRU without and with IV contrast | May Be Appropriate | O |
| CT abdomen and pelvis with IV contrast | May Be Appropriate | ☢☢☢ |
| CTU without and with IV contrast | May Be Appropriate | ☢☢☢☢ |
| US color Doppler kidneys and bladder retroperitoneal | Usually Not Appropriate | O |
| US kidneys and bladder retroperitoneal | Usually Not Appropriate | O |
| Radiography abdomen and pelvis | Usually Not Appropriate | ☢☢ |
| Radiography intravenous urography | Usually Not Appropriate | ☢☢☢ |
| MRI abdomen and pelvis without and with IV contrast | Usually Not Appropriate | O |
| MRI abdomen and pelvis without IV contrast | Usually Not Appropriate | O |
| MRU without IV contrast | Usually Not Appropriate | O |
| CT abdomen and pelvis without IV contrast | Usually Not Appropriate | ☢☢☢ |
| CT abdomen and pelvis without and with IV contrast | Usually Not Appropriate | ☢☢☢☢ |

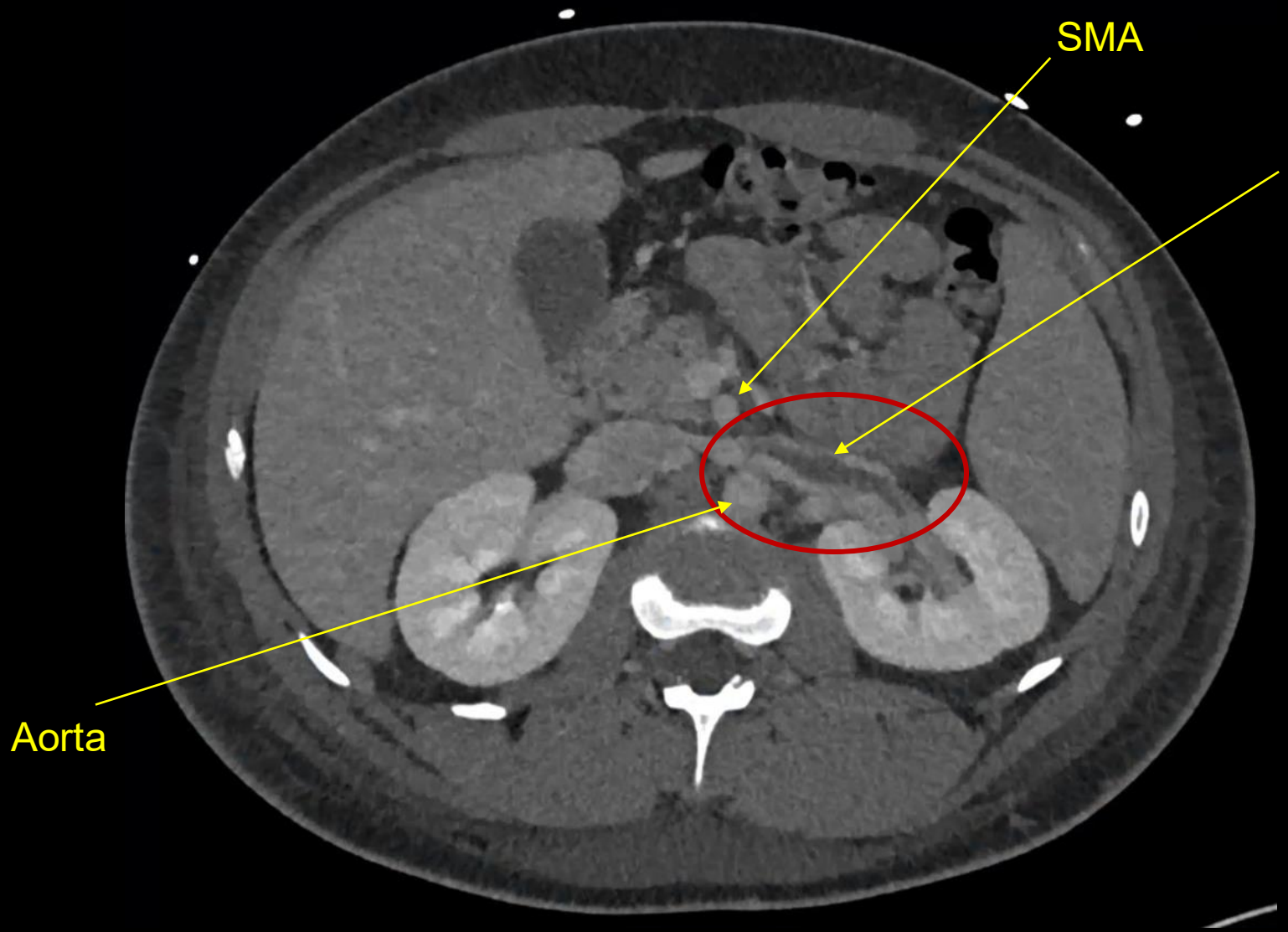
This imaging modality was ordered by the ER physician

American College of Radiology. *ACR Appropriateness Criteria®: Acute Onset Flank Pain — Suspicion of Stone Disease (Urolithiasis).* Gupta R T et al., 2023.

# Findings (unlabeled)



# Findings: (labeled)



# Final Dx:

Left Renal Vein Thrombosis

# Case Discussion

- **Renal vein thrombosis (RVT)** etiology:
  - Adults: renal disease (membranous nephropathy is most common) or tumor
  - Infants: Dehydration, shock, trauma, sepsis
- **Pathophysiology** in nephrotic syndrome**:** Urinary loss of antithrombin III, protein C/S, and increased hepatic fibrinogen → hypercoagulable state.
- **Typical presentation:** Flank pain, hematuria, or acute renal failure; may be asymptomatic and discovered incidentally on imaging.
- **Ultrasound (Doppler):** Renal enlargement (acute), absent or reversed venous flow with intraluminal thrombus

# Case Discussion

- **CT or MR Venography:**
  - Gold-standard imaging for diagnosis
  - **Bland thrombus**: Non-enhancing filling defect; no vein expansion; homogeneous; no internal vascularity
  - **Tumor thrombus**: Enhancing intraluminal component; venous expansion; internal vascularity; contiguous with renal mass
- **Management:**
  - **Anticoagulation** (heparin → warfarin or DOAC) is first-line
  - Treat underlying nephrotic syndrome (ACEi/ARB, corticosteroids, disease-specific therapy)
  - Thrombolysis or thrombectomy reserved for bilateral/fulminant cases

# Treatment: Thrombolysis

*Post-thrombolysis renal venogram showing improved luminal contrast flow through the left renal vein, consistent with successful recanalization.*

# References:


American College of Radiology. ACR Appropriateness Criteria®: Acute Onset Flank Pain — Suspicion of Stone Disease (Urolithiasis). Gupta R T et al., 2023. https://acsearch.acr.org/docs/69362/Narrative/

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