AMSER Case of the Month
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54 y/o Hypotension and Abdominal Pain Post-Paracentesis

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Patient Presentation

• HPI:
  • 54 y/o male w/ history of alcoholic cirrhosis with portal hypertension admitted to hospital for bleeding esophageal varices (treated with banding), abdominal distension related to large amount of ascites and shortness of breath.
  • Patient status post diagnostic and therapeutic paracentesis with 2750cc ascitic fluid removed.
  • Soon after paracentesis, patient complained of severe abdominal pain and worsening abdominal distension.
  • Patient was hypotensive and hemoglobin went from 9.8 gm/dL pre-paracentesis to 4.0 gm/dL post-paracentesis.
What Imaging Should We Order?
### Applicable ACR Appropriateness Criteria

**Variant 4:** Postsurgical and traumatic causes of nonvariceal upper gastrointestinal bleeding; endoscopy contraindicated.

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
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<tbody>
<tr>
<td>Arteriography visceral</td>
<td>9</td>
<td>This procedure is comparable to CTA and is comparable to CT abdomen with IV contrast.</td>
<td>⭐⭐⭐⭐</td>
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<td>CTA abdomen with IV contrast</td>
<td>8</td>
<td>This procedure is comparable to arteriography and is an alternative to CT abdomen with IV contrast.</td>
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<td>CT abdomen with IV contrast</td>
<td>7</td>
<td>This procedure is comparable to arteriography and is an alternative to CTA abdomen with IV contrast.</td>
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<td>CT enterography</td>
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<td>⭐⭐⭐⭐⭐</td>
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<td>CT abdomen without IV contrast</td>
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<td>⭐⭐⭐⭐</td>
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<td>CT abdomen without and with IV contrast</td>
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<td>⭐⭐⭐⭐⭐</td>
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<td>RBC scan abdomen and pelvis</td>
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<td>⭐⭐⭐⭐</td>
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<td>X-ray upper GI series</td>
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**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level*
Pre - Contrast

Post Contrast – Arterial Phase
Abd Wall Hematoma

Sentinel Clot

Active Bleed from Abd wall into peritoneum

Ascites
Final Dx:

Active Arterial Extravasation from Right Lateral Circumflex Artery with Hemoperitoneum and Small Abdominal Wall Hematoma
Discussion: Paracentesis

• Paracentesis is frequently performed in patients with end-stage liver disease to relieve tense abdominal distension and dyspnea.

• Paracentesis is considered a safe procedure despite coagulopathy and thrombocytopenia associated with liver failure.

• Major bleeding complications is uncommon, reported in 0.2 – 1.7% of paracenteses.

• Higher rates of complications described in patients with higher MELD and Child-Pugh score (more severe liver disease) with increased risk of bleeding in patients with lower fibrinogen levels.

• Increased risk of hemorrhage also seen in patients with acute renal injury, probably related to platelet dysfunction.

• Use of 2 probe ultrasound guidance technique (high and low frequency ultrasound transducers) may help avoid abdominal wall vessels and provide necessary depth to see ascites pocket and avoid hollow viscus.
Discussion: Complications Post- Paracentesis

- Complications
  - Ascitic fluid leak from puncture site
  - Infection: Wound or Peritonitis
  - Bleeding
  - Bowel or Bladder perforation
  - Catheter laceration and loss in abdominal cavity
  - Paracentesis Induced Circulatory Dysfunction
    - Postparacentesis hypotension
    - Dilutional hyponatremia
    - Hepatorenal syndrome
Bleeding Post Paracentesis

- Bleeding
  - Abdominal wall hematoma – injury to artery or collateral veins
  - Hemoperitoneum
    - Traumatic: Laceration or Pseudoaneurysm of blood vessel
    - Spontaneous: Mesenteric variceal bleeding after removal >4 liters of ascites
Our Patient’s Course – Emergent Right Common Iliac Artery Angiogram performed
Our Patient’s Course

• Emergent right common iliac artery angiography demonstrates active extravasation from the right lateral circumflex artery branch. Embolization of the right lateral circumflex branch with a combination of Gelfoam and embolic coils was performed.
No evidence of active arterial extravasation, status post embolization. Persistent large abdominal ascites and hemoperitoneum with increased density of the ascites likely secondary to a combination of redistribution of blood products as well as mixing of contrast material injected during the embolization procedure.
References:


• Lindsay AJ, Burton J, Ray CE. Paracentesis-Induced Circulatory Dysfunction: A Primer for the Interventional Radiologist. *Semin Intervent Radiol* 2014;31:276-278

