AMSER Case of the Month
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46-yo male presents with acute on chronic abdominal pain

Brian D’Amore, MS-4
Drexel University College of Medicine

Dr. Andrew Klobuka, MD
Allegheny Health Network
Patient Presentation

- **HPI:** Presented to ED with abdominal pain x 4-5 days and intermittent RUQ and generalized/non-focal abdominal pain x 3 years
- **PMHx:** HTN, non-morbid obesity, asthma as a child
- **FamHx:** Mother: breast cancer in her 30’s, two cerebral aneurysms (successfully treated)
- **SHx:** Daily user of chewing tobacco
- **Vitals:** BP 149/108, HR 113, RR 16, SpO2 98%, T 97.7° F
- **Physical Exam:** Mild RUQ abdominal tenderness to palpation. No guarding/rebound
- **ROS:** Non-contributory
Pertinent Labs

• Chemistry:
  - Tbili 1.0 (0.2-1.6 mg/dL)
  - GGT 27 (5-65 U/L)
  - ALP 57 (53-128 U/L)
  - AST 28 (11-38 U/L)
  - ALT 14 (10-47 U/L)
  - BUN 14 (7-22 mg/dL)
  - Creatinine 1.0 (0.6-1.2 mg/dL)

• CBC:
  - WBC 10.1
  - RBC 4.9
  - Hemoglobin 13.1
  - Hematocrit 41.1%
What Imaging Should We Order?
### ACR Appropriateness Criteria

**Variant 4:** Acute nonlocalized abdominal pain. Not otherwise specified. Initial imaging.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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<tbody>
<tr>
<td>CT abdomen and pelvis with IV contrast</td>
<td>Usually Appropriate</td>
<td>🌟🌟🌟🌟</td>
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<tr>
<td>CT abdomen and pelvis without IV contrast</td>
<td>Usually Appropriate</td>
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<tr>
<td>MRI abdomen and pelvis without and with IV contrast</td>
<td>Usually Appropriate</td>
<td>O</td>
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<tr>
<td>US abdomen</td>
<td>May Be Appropriate</td>
<td>O</td>
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<td>CT abdomen and pelvis without and with IV contrast</td>
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<tr>
<td>Radiography abdomen</td>
<td>May Be Appropriate</td>
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<tr>
<td>FDG-PET/CT skull base to mid-thigh</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>WBC scan abdomen and pelvis</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>Nuclear medicine scan gallbladder</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>Fluoroscopy upper GI series with small bowel follow-through</td>
<td>Usually Not Appropriate</td>
<td>🌟🌟</td>
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<tr>
<td>Fluoroscopy contrast enema</td>
<td>Usually Not Appropriate</td>
<td>🌟🌟</td>
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This imaging modality was ordered by the ER physician.
Findings (labeled)

Infiltrative heterogeneous mass in right superior retroperitoneum

Multiple ill-defined hypodense lesions in right hepatic lobe
Final Diagnosis:
Metastatic Leiomyosarcoma, Stage IV

Confirmed by US-guided liver biopsy

Biopsy needle
Overview of Leiomyosarcoma

• Rare, malignant tumor arising from smooth muscle cells
• Usually affects the uterus, retroperitoneum, soft tissues and deep pockets of the extremities
• Soft tissue sarcomas represent 1% of cancer in US (about 15,000 cases), 7-15% of these are leiomyosarcomas
• 3 main groups based on origin: soft tissue, cutaneous, vascular
• Tumors demonstrate high resistance to chemotherapy, poor prognosis
• Preferred treatment is surgical resection, if possible
• Survival rates: local = 63%; Regional = 36%; Distant = 14%
Treatment of this Patient

- Completed neoadjuvant chemotherapy 7 cycles Q3 weeks with doxorubicin and dacarbazine
- Plan is to pursue hepatic trisegmentectomy (right lobe plus segment 4)
- Based on CT, left lobe is insufficient to compensate post resection
- As a result, patient underwent portal vein embolization by IR to restrict blood flow to right portal vein and segment 4
- By embolizing these segments, left lobe expected to hypertrophy over 4-6 weeks to ensure adequate future liver remnant following hepatic trisegmentectomy
Portal Vein Embolization

BEFORE PVE
Portal vein and branches are patent

AFTER PVE
Restricted blood flow through right lobe and segment 4 after embolization
PVE Discussion

• Considered standard of care for patients undergoing large hepatectomy

• PVE increases liver volume and function in non-resected area to allow appropriate compensate and reduce risk of post-surgical liver failure.

• 3 main indications:
  • Normal underlying liver with future liver remnant (FLR) < 20%
  • Extensive chemo and/or hepatic steatosis with FLR < 30%
  • Cirrhosis and/or advanced fibrosis with FLR < 40%

• Contraindications:
  • Portal HTN/occlusion
  • Extensive liver fibrosis

• Risks:
  • Hematoma arising from liver capsule, peritoneum, biliary tract or at access site
  • Portal venous thrombosis – increased in patients with chronic liver disease (CLD)
  • Hepatic dysfunction

• Outcomes:
  • High success rates, even in patients with CLD
  • Increased volume of FLR by 35% (± 28%) for patients with CLD.
  • Another study cites outcomes as 28-44% increase in FLR
  • FLR compensation occurs 4-6 weeks after PVE
References:


IR Procedure Guides – SIR RFS (sirweb.org) http://rfs.sirweb.org(ir-procedure-guides/?_ga=2.58540074.1686091740.1628602489-979199805.1626792482
