AMSER Case of the Month
September 2022

21-year-old female with right lower quadrant pain

Abraham Weiss, MS4 - Washington State University
Elson S. Floyd College of Medicine

Dr. Julie Kaczmark, MD – Inland Imaging
Patient Presentation

• **HPI:** 21-year-old G2P1 female at 7w4d presented to the ED for abdominal pain with nausea/vomiting. Pain poorly localized, but worse in the lower abdomen.

• **ROS:** No fever, vaginal bleeding, dysuria, diarrhea

• **PMHx:** Obesity (BMI 37)

• **SHx:** Cholecystectomy, cesarean section

• **Vitals:** BP 86/49, HR 102, RR 19, SpO2 100%, 98 F

• **Exam:** Tired, pale, anxious appearing. Diffuse abdominal tenderness with rebound and guarding. Low transverse cesarean scar.
Pertinent Labs

- CBC
  - WBC 17.5
  - HGB 10.5
  - HCT 32.0
  - MCV 90

- hCG quantitative
  - 14,453
  - Expected for gestational age ~15,000

- CMP
  - BUN 11
  - Cr 0.62
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>US abdomen</td>
<td>Usually Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>MRI abdomen and pelvis without IV contrast</td>
<td>Usually Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>US pelvis</td>
<td>May Be Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>CT abdomen and pelvis with IV contrast</td>
<td>May Be Appropriate</td>
<td>💀💀💀</td>
</tr>
<tr>
<td>CT abdomen and pelvis without IV contrast</td>
<td>May Be Appropriate</td>
<td>💀💀💀</td>
</tr>
<tr>
<td>CT abdomen and pelvis without and with IV contrast</td>
<td>Usually Not Appropriate</td>
<td>💀💀💀💀</td>
</tr>
<tr>
<td>MRI abdomen and pelvis without and with IV contrast</td>
<td>Usually Not Appropriate</td>
<td>💀💀💀💀</td>
</tr>
<tr>
<td>WBC scan abdomen and pelvis</td>
<td>Usually Not Appropriate</td>
<td>💀💀💀💀</td>
</tr>
<tr>
<td>Radiography abdomen</td>
<td>Usually Not Appropriate</td>
<td>💀💀</td>
</tr>
<tr>
<td>Fluoroscopy contrast enema</td>
<td>Usually Not Appropriate</td>
<td>💀💀💀</td>
</tr>
</tbody>
</table>

This imaging modality was ordered by the ER physician.
MRI findings: (unlabeled)

Coronal

Axial

T2 weighted imaging
MRI findings: (unlabeled)

Coronal

Sagittal
MRI findings: (labeled)

Coronal

Hemoperitoneum

Axial

Gestational sac in the proximal fallopian tube (interstitial ectopic)
MRI findings: (labeled)

- **Coronal**
  - Hemoperitoneum

- **Sagittal**
  - Gestational sac in the proximal fallopian tube (interstitial ectopic)

T2 fat saturation
Final Diagnosis:

Ruptured interstitial ectopic pregnancy with hemoperitoneum
Case discussion: Laparoscopic findings

Interstitial ectopic pregnancy

Hemoperitoneum

Status post removal and hemostatic matrix
Case Discussion: Interstitial ectopic pregnancy

• The interstitial portion of the fallopian tube is the most medial aspect of the tube, located where the tube connects to the endometrial cavity

• Interstitial ectopic pregnancies have a higher potential for poor outcomes compared to other locations

• The distensible myometrium can surround a portion of the expanding gestational sac, thus symptoms may not appear until weeks 9-12, at which point there may be rupture with severe hemorrhage

• Immediate surgery and hemostasis is necessary

• **Ultrasound** is typically the first imaging modality of choice in patients with suspected ectopic pregnancy

• MRI was likely chosen as the first imaging modality in this patient (rather than ultrasound) due to acute appendicitis as the primary diagnostic consideration in conjunction with patient body habitus

https://doi.org/10.1007/s00261-020-02681-6
References:


