AMSER Case of the Month
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24-year-old woman with diffuse abdominal pain

Atif Ali, MS3, UTHealth McGovern Medical School
Dr. Emma Ferguson, MD, Department of Diagnostic and Interventional Imaging at UTHealth
Dr. Steven Chua, MD, PhD, Department of Diagnostic and Interventional Imaging at UTHealth
Patient Presentation

• HPI: 24-year-old woman with no significant PMH or PSH presented to the emergency department with a five-day history of diffuse abdominal, suprapubic, and back pain that was sharp in nature and gradually worsened from 7/10 to 10/10. The pain worsened with sudden movements and was associated with nausea and decreased oral intake. Urine pregnancy test was negative.

• Vitals: T 97.7 F, HR 111, RR 18, BP 107/67, SpO2 100%

• PE: All abdominal quadrants tender to palpation; bowel sounds present. Pelvic: purulence in vaginal vault with putrid smell and cervical motion tenderness.

• Pertinent Labs: WBC 11.5
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>
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</thead>
<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>0</td>
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<tr>
<td>US abdomen</td>
<td>May Be Appropriate</td>
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<tr>
<td>MRI abdomen and pelvis without IV contrast</td>
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<td>CT abdomen and pelvis without and with IV contrast</td>
<td>May Be Appropriate</td>
<td>☄️</td>
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<tr>
<td>Radiography abdomen</td>
<td>May Be Appropriate</td>
<td>☄️</td>
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<tr>
<td>FDG-PET/CT skull base to mid-thigh</td>
<td>Usually Not Appropriate</td>
<td>☄️</td>
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<tr>
<td>WBC scan abdomen and pelvis</td>
<td>Usually Not Appropriate</td>
<td>☄️</td>
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<tr>
<td>Nuclear medicine scan gallbladder</td>
<td>Usually Not Appropriate</td>
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<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): Coronal (left) and sagittal (right)

Hypodense L retroperitoneal mass is separate and distinct from L kidney. Lies superior to kidney, abuts the spleen.

L retroperitoneal mass encases the aorta, left renal artery and exerts mass effect on L kidney displacing it inferiorly.

LK: left kidney
Sp: spleen
St: stomach
LRA: left renal artery
Findings (unlabeled): Axial
Findings (labeled): Axial

- Hypodense L retroperitoneal mass encases celiac trunk and abuts pancreas. **Abdominal MRI recommended for further evaluation.**
In phase and opposed phase images of the mass show no change in signal intensity between the two, indicating no microscopic fat, which can be present in adrenal adenomas. Thus, imaging findings are not consistent with a lipid-rich adrenal adenoma.
Abdominal MRI: T2

T2 fat saturation images demonstrate a heterogeneous mass with intermediate T2 signal. There was no signal loss on T2 fat saturated images, relative to non-fat saturated T2 images, to suggest macroscopic fat in the mass.

T2-weighted coronal (no fat saturation)

Left retroperitoneal mass exerting mass effect on the left kidney, abuts the spleen and stomach, and with heterogeneous signal on T2-weighted images, including areas of T2 hyperintense signal.
Discussion: Follow-up

- IR consulted for biopsy of L retroperitoneal mass; ultrasound-guided biopsy performed.

- Biopsy results: Schwann cell bundles positive for S100 and synaptophysin.

- Final diagnosis: Left retroperitoneal ganglioneuroma, patient referred for outpatient follow-up with surgical oncology.
Discussion: Ganglioneuromas

- **Epidemiology**: Benign tumors which occur in the young adult and children population, more frequently in females. Most often develops in abdomen/pelvis region. Data such as incidence and prevalence are not available due to this tumor being exceedingly rare.

- **Clinical presentation**: Nonspecific, diagnosis is often made incidentally. Usually asymptomatic, but patients may present with abdominal pain, distention, and various sequelae because of hormonal secretion from the tumor, such as hypertension or Cushing’s syndrome.

- **Pathophysiology**: Develop from neural crest tissue of the sympathetic nervous system ganglia. They grow slowly and may secrete catecholamines or steroid hormones.
Discussion: Ganglioneuromas

• **Diagnosis and Treatment**: Distinction from other sympathetic nervous system tumors (neuroblastoma, pheochromocytoma, schwannoma) based on imaging is difficult, so complete resection with comprehensive pathological confirmation is the ideal treatment to avoid overlooking a malignancy.

• **Prognosis**: Outcomes are generally very good, even if surgical resection is incomplete. Head/neck ganglioneuromas are associated with the most post-surgical complications due to complexity of the operation. Recurrence or metastases from ganglioneuromas are exceedingly rare.
References

