AMSER Case of the Month
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67-year-old man undergoing treatment for metastatic melanoma

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Patient Presentation

• **HPI:** 67-year-old male with metastatic melanoma. Treatment was initiated with ipilimumab and nivolumab. CT chest, abdomen, and pelvis were obtained to evaluate for disease progression.

• **PMHx:** Stage IV melanoma of anorectal primary (BRAF negative, NRAS G12R positive), ulcerative colitis

• **Surg Hx:** No abdominal surgeries

• **Medications:** ipilimumab/nivolumab (immune checkpoint inhibitors)
Pertinent Presentation

• **Physical exam:** Vital signs within normal limits, no increased work of breathing, abdomen soft, non-distended. No skin changes.

• **Labs:**
  - WBC – 8
  - Hgb – 12.4 (L)
  - PLT – 241
  - LDH – 242

• **Prior Chest CT:** No acute abnormality and no metastatic disease.
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

*Colorectal cancer criteria was selected as patient’s primary melanoma was anorectal. Dedicated ACR guidelines for melanoma staging and follow up currently not available.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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<tbody>
<tr>
<td>CT chest with IV contrast and MRI abdomen with IV contrast</td>
<td>Usually Appropriate</td>
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<tr>
<td>CT chest abdomen pelvis with IV contrast</td>
<td>Usually Appropriate</td>
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<tr>
<td>CT chest with IV contrast and MRI abdomen without IV contrast</td>
<td>May Be Appropriate</td>
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<td>FDG-PET/CT skull base to mid-thigh</td>
<td>May Be Appropriate</td>
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<td>CT chest without and with IV contrast and MRI abdomen without and with IV contrast</td>
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This imaging modality was ordered by the oncologist.
Findings: New nodular consolidation and groundglass bilaterally in the lower lungs.
Final Dx:

Drug-induced Pneumonitis (organizing pneumonia pattern)/ Checkpoint Inhibitor Pulmonary Toxicity
Checkpoint Inhibitor Pulmonary Toxicity: Pneumonitis

- **Pathology:** Focal inflammation of the lung parenchyma
- **Symptoms:** New/worsening cough, shortness of breath, chest pain, fever
- **Incidence:** 10% of participants receiving combination checkpoint inhibitor therapy (in this case ipilimumab/nivolumab)
- **Median onset:** 34 weeks (ranges from 1.5 to 127 weeks)
- **Treatment of pneumonitis:** Discontinue medication. Prednisone taper if patient is symptomatic or if >25% of lung parenchymal involvement
Multiple studies have attempted to classify the patterns of lung injury that can occur from checkpoint inhibitors.

Overall, there is a wide variety of radiologic patterns which can be seen. The radiologist can play a role in identification of lung toxicities and should be aware of therapy patients receive in order to suggest this diagnosis.
Case Conclusion

- Checkpoint inhibitors were held. No steroids initiated.

- Follow up chest CTs demonstrated improvement. He subsequently resumed therapy on nivolumab.

- He continues single therapy checkpoint inhibitor without complications and has no findings of thoracic metastatic disease.

Follow up coronal CT images with resolution of opacities after therapy was held.
References:


