AMSER Case of the Month
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57y F presenting with an incidental right upper lobe pulmonary nodule

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Patient Presentation

• **HPI:** 57yo F with rib pain, dyspnea on exertion, productive cough and an unplanned 16 pound weight loss in the last 4 months

• **PMH/PSH:** COPD, GERD, HLD, HTN, cholecystectomy, hysterectomy

• **Social History:** Current smoker (47 pack years), 12 alcoholic drinks/week

• **Family History:** Sister -> Lung Cancer, Brother -> Thyroid Cancer, Mother -> COPD

• **Vitals:** T: 36.8 °C; BP 129/89; HR 59; RR 16; SpO2 96%

• **Physical exam:** No significant findings

• **Labs:** Normal complete blood count, normal comprehensive metabolic panel

• **Other:** Pulmonary function tests: moderately severe airway obstruction
Findings: Right upper lung pulmonary nodule (arrow) hard to appreciate on lateral view
What Imaging Should We Order?
## ACR Appropriateness Criteria

### Clinical Condition:
Radiographically Detected Solitary Pulmonary Nodule

### Variant 2:
Solid nodule ≥1 cm, moderate to high clinical suspicion for cancer.

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT chest without IV contrast</td>
<td>8</td>
<td>To detect occult calcifications, fat, bronchus sign, etc.</td>
<td>🌟🌟🌟</td>
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<tr>
<td>FDG-PET/CT whole body</td>
<td>8</td>
<td>If nodule is indeterminate on HRCT.</td>
<td>🌟🌟🌟🌟</td>
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<tr>
<td>Transthoracic needle biopsy</td>
<td>8</td>
<td>If nodule shows contrast enhancement or PET scan is positive.</td>
<td>Varies</td>
</tr>
<tr>
<td>CT chest with IV contrast</td>
<td>6</td>
<td>Probably not indicated if PET is performed.</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>CT chest without and with IV contrast</td>
<td>6</td>
<td>Can look at washout.</td>
<td>🌟🌟🌟</td>
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<tr>
<td>Watchful waiting with CT follow-up</td>
<td>2</td>
<td></td>
<td>Varies</td>
</tr>
<tr>
<td>MRI chest without IV contrast</td>
<td>2</td>
<td>Limited data.</td>
<td>O</td>
</tr>
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<td>2</td>
<td>Limited data.</td>
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**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

CT chest without IV contrast was ordered first.
Findings Noncontrast CT (Unlabeled)
Findings Noncontrast CT (Labeled)

Corresponding to the CXR abnormality is a **poorly circumscribed, 1.6 cm spiculated nodule** in the right upper lobe (arrows). No lymphadenopathy. Next PET/CT was ordered.
Findings PET/CT (Unlabeled)
Findings PET/CT (Labeled)

Moderate increase in fluorodeoxyglucose uptake in the right upper lobe nodule (arrows). No additional sites of abnormal uptake.

Lung biopsy was performed next.
CT guided biopsy of the right upper lobe nodule (arrow) was performed without complication; however, the biopsy specimen was non-diagnostic.

Given high suspicion for lung cancer surgical resection was performed.
Final Diagnosis:

Rosai-Dorfman Disease
Rosai-Dorfman Disease

• **Epidemiology**: Rare; first described in 1965 with an estimated 100 cases diagnosed annually in the United States.

• **Etiology**: Non-Langerhans cell histiocytosis of unknown cause but likely with a variety of pathophysiologic mechanisms as multiple forms including familial, sporadic and associated with rheumatologic disorders and malignancy have been described.

• **Clinical Presentation**: Most commonly presents with painless bilateral cervical lymphadenopathy in children/young adults. Around 40% of cases present with extranodal disease.
Rosai-Dorfman Disease (cont.)

• **Differential Diagnosis Lung Nodule:** malignancy (lung, metastatic), rheumatologic (granulomatosis with polyangiitis, rheumatoid), infection (fungal, mycobacterium), others (Langerhans cell histiocytosis)

• **Diagnosis:** Based on clinical-radiologic-pathologic correlation

• **Treatment:** Individualized and can include observation, resection or systemic therapy

Post op day 1 after wedge resection of the right upper lobe nodule with apically directed right chest tube (arrow). Patient has done well post-operatively.
References:

• https://acsearch.acr.org/docs/69455/Narrative/

