A Curious Case of Dyspnea

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CARILION CLINIC

Introduction

- EV is a patient of Carilion Rheumatology with history of seropositive non-erosive rheumatoid arthritis (RA) on adalimumab and leflunomide
- Medications held after recurrent urinary tract infections
- One month later, patient presented to local ED with shortness of breath and pleuritic chest pain x 5 days
- Computed tomography (CT) chest obtained which suggested cavitary lung lesions
- Transferred to nearby non-Carilion hospital for further evaluation

Initial Differentials and Thoughts?

- Infection (bacterial, fungal, atypical, and viral)
- Malignancy (primary or metastatic)
- Vasculitis (granulomatosis with polyangiitis [GPA])
- Other Inflammatory process (RA, sarcoidosis, etc.)
- Drug reaction

Outside Hospital Work Up:

Laboratory test	Value	Ref range	Units
ESR	69	0-30	mm/hr
CRP, Non-cardiac	89.5	<5	mg/L
ANCA testing	Negative		
Infectious testing	Negative		
Bronchoalveolar Lavage	• Cell count with predominance of lymphocytes • Bacterial (including TB) and fungal cultures negative • Presence of hemosiderin-laden macrophages		

On Discharge from Outside Hospital:

- Working diagnosis was GPA
- Discharged on prednisone 50 mg, reduced by 10 mg daily for a total of 5 days
- Advised to follow up with our rheumatology clinic
- Asked to continue to hold RA medications until seen by rheumatology

At the rheumatology office:

- No improvement with Prednisone after 5 days
- Fevers with Tmax of 100.5 F, chills, and night sweats
- Now with non-productive cough, SOB and pleuritic chest pain
- Swelling and tenderness of multiple joints

- How would you proceed?

- Treated as RA related interstitial lung disease (RA-ILD)
- Prednisone 60 mg daily
- Tests: High resolution CT chest, 2D echocardiogram, and pulmonary function testing
- Referral to Pulmonology

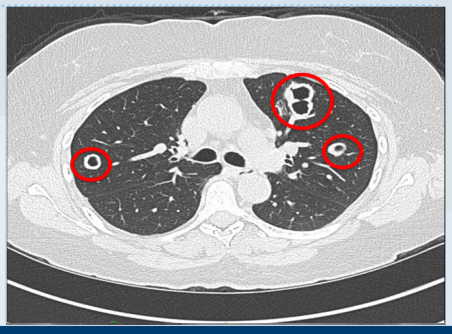
Pulmonology clinic:

- Seen in pulmonology clinic 6 days later
- Respiratory symptoms have worsened
- Pulmonology recommended direct admission to Carilion Roanoke Memorial Hospital for work up

Carilion Clinic Work Up:

Laboratory test	Value	Previous value	Reference range	Units
ESR	37	69	0-20	mm/hr
CRP	0.42	89.5	<1.0	mg/L
ANCA testing	Negative			
Infectious work up	Negative			
Repeat BAL	Fungal, AFB, and bacterial stains negative			

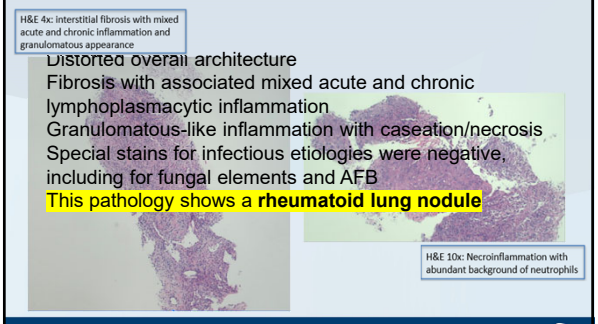
Imaging



Next Steps?

- Biopsy of cavitary lung lesion obtained

Biopsy



Distorted overall architecture
Fibrosis with associated mixed acute and chronic lymphoplasmacytic inflammation
Granulomatous-like inflammation with caseation/necrosis
Special stains for infectious etiologies were negative, including for fungal elements and AFB
This pathology shows a **rheumatoid lung nodule**

RA Lung Nodules

- Smoking, age, high-titer CCP and RF, family history RA, and male sex are risk factors
- Imaging findings can mimic infection or malignancy
- Nodules can be round or lobulated with calcifications or cavitation
- Medication non-adherence is a significant cause
- Can worsen with methotrexate; other medications associated with accelerated nodulosis are leflunomide and anti-TNF-alpha inhibitors

Key points

- RA lung nodules may be related to the course of the disease or drugs that treat RA
- Accurate diagnosis is imperative as infection and malignancy have similar appearance on imaging
- Biopsy confirms the histopathological features of the nodule
- Treatment includes stressing compliance with meds, changing RA meds, or surgery (rare)

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References

- Esposito AJ, Chu SG, Madan R, Doyle TJ, Dellaripa PF. Thoracic Manifestations of Rheumatoid Arthritis. Clin Chest Med. 2019 Sep;40(3):545-560. doi: 10.1016/j.ccm.2019.05.003. Epub 2019 Jul 6. PMID: 31376890;
- Shaw M, et al. Rheumatoid arthritis-associated lung disease. Eur Respir Rev. 2015 Mar;24(135):1-16. doi: 10.1183/09059180.00008014.
- **Wickrematilake G. Complicated Rheumatoid Nodules in Lung. Case Rep Rheumatol. 2020 Dec 2;2020:6627244. doi: 10.1155/2020/6627244. PMID: 33343960; PMCID: PMC7728473.**
- Yunt ZX, Solomon JJ. Lung disease in rheumatoid arthritis. Rheum Dis Clin North Am. 2015 May;41(2):225-36. doi: 10.1016/j.rdc.2014.12.004. Epub 2015 Feb 3.