

Why a High Titer Rheumatoid Factor and Joint Pain Should Not Automatically Translate into a Diagnosis of Rheumatoid Arthritis

Introduction

- Rheumatoid factors (RFs) are autoantibodies directed against the Fc region of IgG
- Although most commonly used in rheumatoid arthritis (~70% can have a positive RF), RFs are found in a wide range of pathologies including other autoimmune and non-autoimmune diseases
- In fact, a transient increase in IgM-RF is normal part of the immune response that can occur during infections and is triggered by immune complexes that contain microbial antigens

Case Description

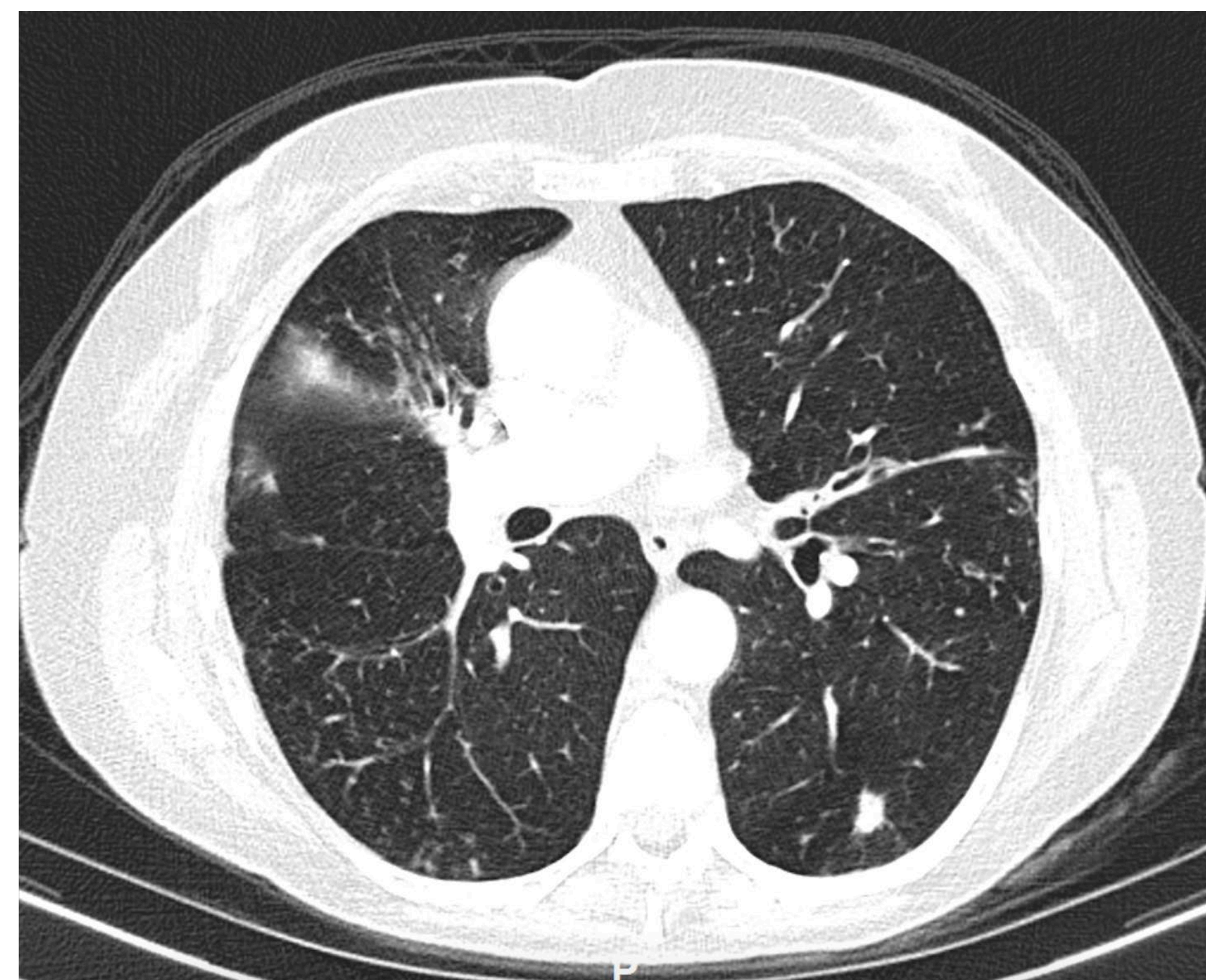
- A 69 year old female with PMH of MAC infection, HTN, and HLD presented to her primary care provider for fevers up to 101.8°F, body aches, chills, a nonproductive cough, and bilateral hip pain
- She was treated with azithromycin several days earlier without any improvement as well as tested negative for COVID several times
- A chest x-ray was obtained and revealed a mild interstitial infiltrate in the LLL concerning for PNA and treatment with levofloxacin was commenced
- Despite receiving treatment with multiple courses of antibiotics, the patient continued to report ongoing fevers, weakness, pain in her arms and legs, and a 20-pound weight loss over the course of 2 months
- The bilateral hip pain described as sharp and exacerbated by walking continued and patient reported new onset bilateral jaw pain that was worse with chewing
- She was seen by an orthopedic surgeon and diagnosed with osteoarthritis of the hips and started on NSAID treatment without significant improvement
- Due to concern of an autoimmune arthritis causing patient's symptoms, patient had inflammatory bloodwork drawn (shown in the center column), was started on prednisone, and referred to Rheumatology
- Upon evaluation by Rheumatology, patient's hip pain was thought to be secondary to trochanteric bursitis and she was found to have 0 swollen and tender joints that would raise suspicion for rheumatoid arthritis
- Prednisone was subsequently tapered to a lower dose and eventually discontinued
- Unfortunately, patient was admitted to the hospital for ongoing fevers, chills, nausea, and vomiting
- She had a CT chest done (shown in the center column) and was treated with IV antibiotics and discharged on cefdinir
- Post-discharge, a sputum culture that was obtained during the hospitalization ended up growing *Nocardia* and antibiotic regimen was changed to TMP-SMX outpatient
- On further investigation, patient's husband had mentioned that they were working with soil about 1 month prior to symptom onset
- As patient was being treated for the infection, she reported a marked improvement in all her symptoms

Lab Testing

Inflammatory Bloodwork Results During Course of Treatment for *Nocardia* Infection

Lab Test	Initial 10/21	After treatment 12/21	2/22	4/22	Reference Range
RF	236	285	63	30	< 14
CRP (mg/L)	305	4.84	4	--	< 10
ESR (mm/hr)	61	39	20	--	< 29

Imaging



CT Chest- Mild bilateral subpleural-predominant tree-in-bud and reticulonodular opacities, mild right middle and minimal lingular consolidations with bronchiectasis, suspicious for infection. Atypical infection such as MAC pneumonia or fungal are possibilities.

Discussion

- This patient's case highlights several important points with the first one being that rheumatoid factor can be positive in a multitude of conditions including autoimmune diseases, malignancy, infections, etc
- This is supported by the fact that the RF had trended down significantly after the patient was treated for infection
- Secondly, RF should not be used as a screening test and instead should solely be ordered when there is a moderate to high pretest probability of RA
- This patient's bilateral hip pain was ultimately attributed to trochanteric bursitis and she lacked any joint synovitis on exam that would be consistent with RA emphasizing the need to be selective when ordering testing
- Ordering a RF in a patient that lacks characteristic findings can cause confusion, anxiety, and lead to unnecessary testing
- That being said, even in cases where the patient has a positive RF and has some clinical features consistent with a diagnosis of RA, it is important to take a thorough history and physical and obtain any other necessary testing to exclude alternative diagnoses
- This is particularly important when it comes to ruling out infection as the source of a patient's symptoms as misdiagnosing her with rheumatoid arthritis can lead to starting immunosuppressive drugs thereby worsening the infection
- Fortunately, this patient's steroids were tapered relatively quickly and the infectious organism was eventually determined leading to treatment with the correct antibiotic and cessation of fevers, chills, and body aches

Conclusion

- Rheumatoid factor testing should only occur in those with a moderate to high pretest probability and even in those that test positive for RF and have some features of rheumatoid arthritis, it is important to rule out alternate diagnoses to avoid worsening the condition if/when they are started on immunosuppressives

References

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