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Inflammatory Shoulder Arthritis Mimicking Septic Arthritis in Rheumatoid Arthritis

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Background

- Fever accompanied by shoulder pain strongly suggests septic arthritis, particularly in patients with recent intra-articular injections.
- However, in individuals with underlying rheumatoid arthritis (RA), bilateral shoulder involvement may reflect inflammatory disease activity.
- We report a case initially suspected as septic arthritis but ultimately determined to be RA-related inflammatory arthritis.

Case presentation

An 82-year-old woman presented with fever and bilateral shoulder pain.

Her medical history included seronegative RA treated with leflunomide (20 mg/day) and adrenal insufficiency.

She had received three intra-articular injections to the right shoulder two months prior.

At presentation, vital signs were 148/87 mmHg, heart rate 110 beats/min, and temperature 38.7°C.

Laboratory tests showed leukocytosis (WBC 15.61×10³/μL, neutrophils 71.7%) and markedly elevated C-reactive protein (320.2 mg/L). Procalcitonin was 0.20 ng/mL and blood cultures were negative.

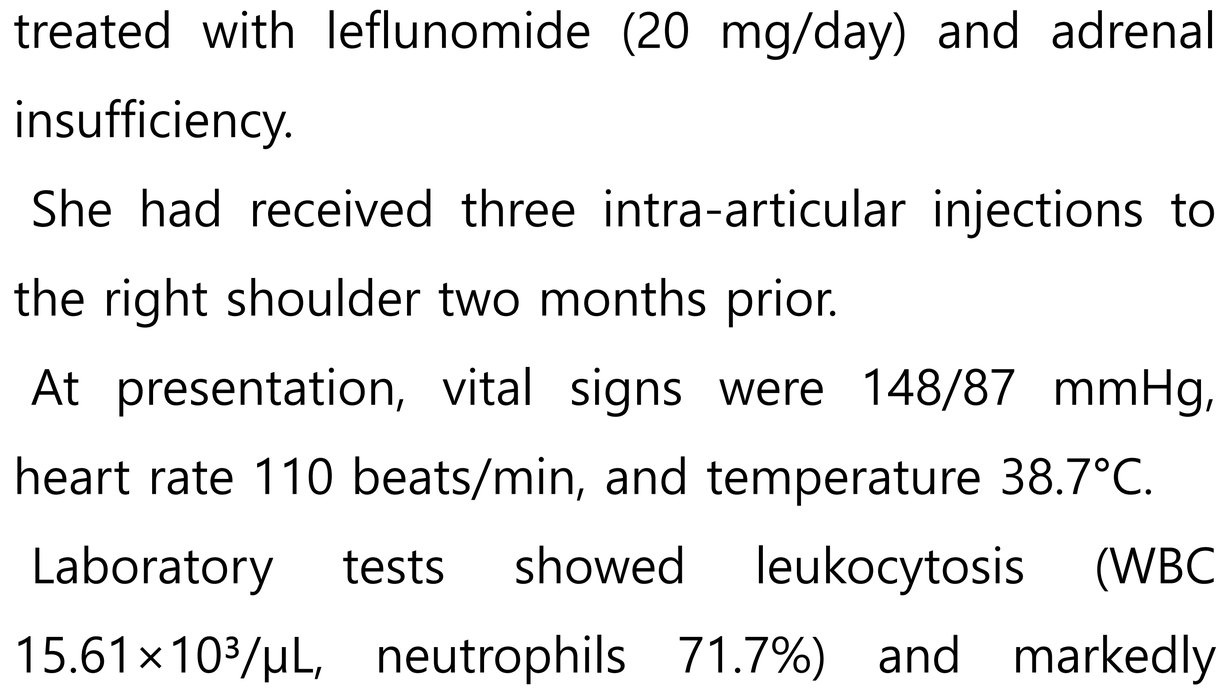

Fig. 1. Axial contrast-enhanced chest computed tomography demonstrating fluid collection within the both glenohumeral joint.

Contrast-enhanced CT revealed diffuse fluid collection and synovial wall thickening in the both glenohumeral joint (Figure 1).

Right shoulder MRI demonstrated prominent joint effusion in the glenohumeral joint, and synovial proliferation (Figure 2).

Septic arthritis was initially suspected. Empirical antibiotics were started, and incision and drainage of the right shoulder as well as bilateral percutaneous catheter drainage were performed.

Synovial fluid analysis revealed WBC 23,940/μL with 97% neutrophils. however, bacterial, fungal, and mycobacterial cultures and PCR tests were negative. Synovial biopsy showed acute inflammation with necrosis and fibrinoid exudates without identifiable pathogens.

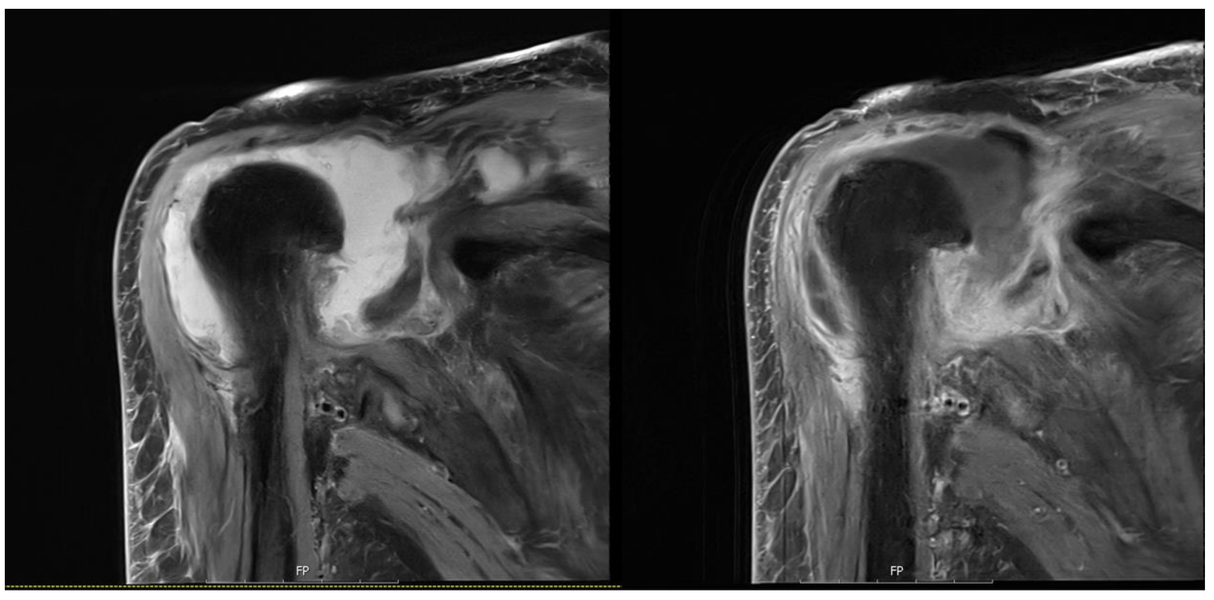

Fig 2. Coronal shoulder MRI. Left: T2-weighted image showing marked joint effusion. Right: T1-weighted fat-suppressed contrast-enhanced image demonstrating synovial enhancement.

Given bilateral involvement, persistently negative cultures, and low procalcitonin levels, inflammatory RA-related arthritis was considered more likely. Prednisolone was escalated to 15 mg/day and leflunomide was reintroduced. Fever resolved and CRP gradually decreased, accompanied by clinical improvement (Figure 3).

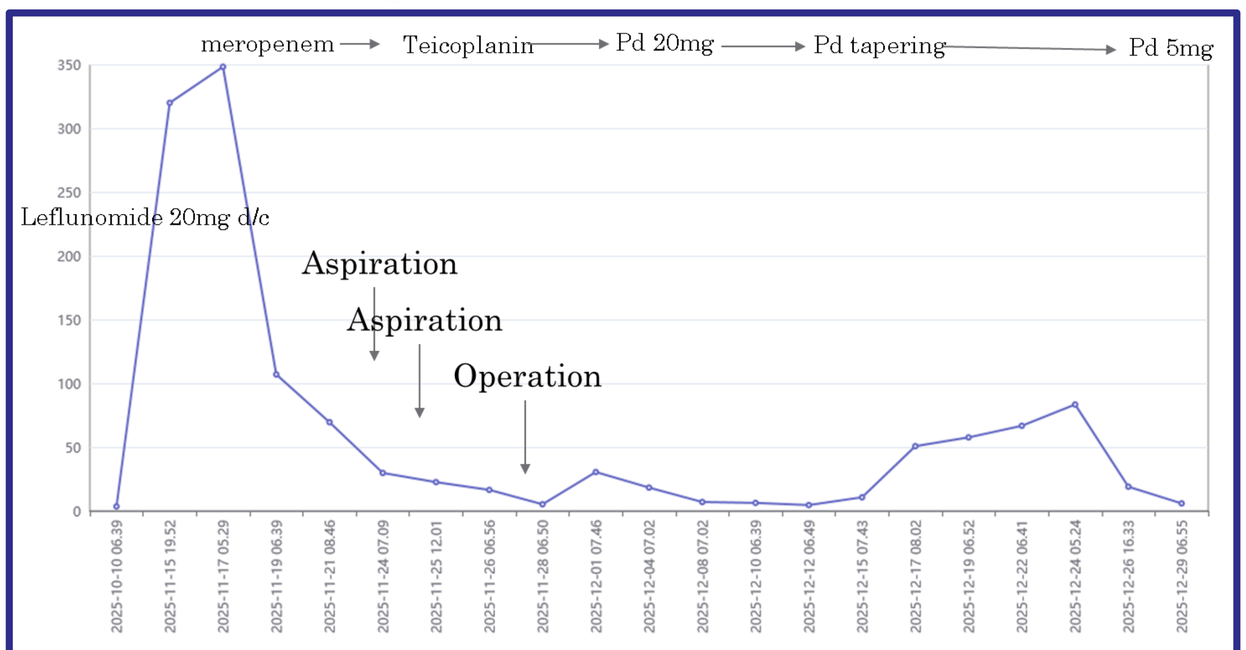

Fig. 3. Serial changes in C-reactive protein (CRP) levels during hospitalization.

Conclusions

- In patients with RA, fever and shoulder pain with markedly elevated inflammatory markers may closely mimic septic arthritis.
- Bilateral shoulder involvement and negative cultures should prompt consideration of inflammatory disease activity.