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CASE REPORT

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Sacroiliitis in Systemic Lupus Erythematosus–Systemic Sclerosis Overlap Syndrome: A Therapeutic Challenge

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Abstract

Axial skeletal involvement is rare in systemic lupus erythematosus (SLE) and systemic sclerosis (SSc) and is not typically recognized in their overlap. We describe a 35-year-old woman with a 4-year history of SLE–SSc overlap who developed inflammatory low-back pain and progressive dyspnea. High-resolution computed tomography showed new usual-interstitial-pneumonia-pattern interstitial lung disease (ILD); sacroiliac magnetic resonance imaging confirmed bilateral active sacroiliitis; HLA-B27 was negative. After methotrexate withdrawal, mycophenolate, and nintedanib, rituximab was given for progressive ILD and produced both pulmonary stabilization and resolution of axial symptoms, allowing nonsteroidal anti-inflammatory drug discontinuation. Rituximab may offer dual benefit in overlap-associated sacroiliitis with ILD. (**International Journal of Biomedicine. 2026;16(3):388-394.**)

Keywords: **i**nterstitial lung disease • rituximab • MRI • connective tissue diseases

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Abbreviations

ANA, antinuclear antibody; **ASAS**, Assessment of SpondyloArthritis International Society; **CTD**, connective tissue disease; **HRCT**, high-resolution computed tomography; **ILD**, interstitial lung disease; **MRI**, magnetic resonance imaging; **NSAIDs**, nonsteroidal anti-inflammatory drugs; **SLE**, systemic lupus erythematosus; **SSc**, systemic sclerosis; **UIP**, usual interstitial pneumonia.

Introduction

Systemic lupus erythematosus (SLE) and systemic sclerosis (SSc) are chronic, multisystem autoimmune connective tissue diseases (CTDs) characterized by distinct yet partially overlapping immunopathogenic features, including loss of self-tolerance, autoantibody production, and tissue injury mediated by immune complex deposition, vasculopathy, and fibrosis.[1] Although each disease has a well-defined clinical phenotype, a subset of patients fulfills classification criteria for both entities simultaneously or sequentially, a condition referred to as SLE–SSc overlap syndrome. Reported prevalence estimates vary considerably depending on case definition and cohort, ranging from approximately 6.8% to 14% of patients with SSc in contemporary series, with patients typically being younger at diagnosis and more frequently exhibiting limited cutaneous SSc, anti–U1-RNP positivity, and antiphospholipid antibodies than those with isolated SSc.[2,3] Clinically, overlap patients often present with Raynaud phenomenon, inflammatory polyarthritis, gastroesophageal reflux, skin thickening, cytopenias, and variable degrees of renal and pulmonary involvement.[2,3] Interstitial lung disease (ILD), particularly when manifesting as a nonspecific interstitial pneumonia or, less commonly, a usual interstitial pneumonia (UIP) pattern, represents a major source of morbidity and mortality in SSc and occurs less frequently but with comparable clinical impact in SLE.[2]

Musculoskeletal manifestations are highly prevalent in both SLE and SSc, affecting 70–95% of patients with SLE and the majority of those with SSc over the disease course, with inflammatory arthralgia or arthritis commonly presenting first.[4,5] In SLE, articular involvement predominantly takes the form of a symmetric, non-erosive polyarthritis affecting the small joints of the hands, wrists, and knees (Jaccoud's arthropathy being a recognized variant), whereas in SSc, inflammatory arthritis, tendon friction rubs, flexion contractures, and acro-osteolysis are more characteristic.[4,5] In contrast, axial skeletal involvement—including sacroiliitis—remains distinctly uncommon and is not generally regarded as a characteristic feature of either disease or their overlap

phenotype.[5] The true prevalence of sacroiliitis in SLE is poorly defined, largely because the sacroiliac joints have historically been considered outside the spectrum of lupus arthropathy and are rarely imaged in routine practice. A case–control magnetic resonance imaging (MRI) study reported a significantly higher frequency of sacroiliac joint inflammation in patients with SLE than in age- and sex-matched controls, with elevated C-reactive protein concentrations identified as a risk factor for acute sacroiliitis.[6] A separate cohort study found inflammatory back pain in approximately 16% of SLE patients, of whom a subset demonstrated active sacroiliitis on MRI independent of HLA-B27 status.[7] Isolated case reports have documented bilateral sacroiliitis in juvenile and adult SLE as well as in SLE overlap syndromes with dermatomyositis, supporting the existence of a distinct "lupoid sacroarthropathy" phenotype that appears to reflect disease-intrinsic autoimmune inflammation rather than coexisting spondyloarthritis.[8-10] By contrast, sacroiliitis in SSc and in SLE–SSc overlap has been reported only exceptionally.[5,11] When sacroiliitis occurs in a patient with an established CTD, especially in the absence of HLA-B27 positivity, a family history of spondyloarthritis, or other defining spondyloarthritis features such as psoriasis, uveitis, inflammatory bowel disease, dactylitis, or enthesitis, the diagnostic differential becomes broad and includes infectious, mechanical, degenerative, and—most importantly—primary autoimmune etiologies that must be distinguished from seronegative spondyloarthropathy.[8-12] The 2009 Assessment of SpondyloArthritis International Society (ASAS) classification criteria for axial spondyloarthritis require the presence of chronic back pain (duration ≥3 months) beginning before age 45, together with imaging evidence of sacroiliitis plus one spondyloarthritis feature, or HLA-B27 positivity plus two such features.[12,13] Patients whose presentations lie outside these criteria, as in the present case, represent a diagnostic challenge and may reflect a mechanism of synovio-entheseal autoimmune activation rather than classic enthesis-driven spondyloarthritis.[14]

Management decisions in this population are further complicated by the presence of progressive ILD, which constrains the safe use of nonsteroidal anti-inflammatory drugs (NSAIDs), high-dose corticosteroids, and several conventional synthetic disease-modifying antirheumatic drugs (csDMARDs). Methotrexate, although effective for inflammatory arthritis in both SLE and SSc, is generally avoided or withdrawn once ILD develops due to concerns regarding pulmonary toxicity and confounding of disease monitoring. Mycophenolate mofetil is widely regarded as a first-line immunosuppressive agent for CTD-associated ILD, and the tyrosine kinase inhibitor nintedanib has been shown in the SENSCIS trial to reduce the annual rate of decline in forced vital capacity in patients with SSc-associated ILD,[15] When pulmonary progression continues despite combination immunosuppressive and antifibrotic therapy, B-cell–directed therapy with rituximab has increasingly been employed as a rescue strategy and has demonstrated efficacy in stabilizing or improving lung function across a range of CTD-ILDs, including SSc, inflammatory myositis, and lupus.[16,17] Beyond its pulmonary effects, rituximab may also exert a meaningful impact on extra-pulmonary inflammatory disease activity, including articular and axial manifestations, by depleting autoreactive B cells and modulating the synovio-entheseal immune milieu.[14,17,18]

Against this background, we report a case of MRI-confirmed bilateral active sacroiliitis arising in a patient with established SLE–SSc overlap who subsequently developed progressive ILD. The case addresses an important but underappreciated clinical intersection: the recognition of atypical axial manifestations in CTD overlap, the therapeutic limitations imposed by concurrent organ-threatening pulmonary disease, and the observation that B-cell depletion with rituximab—pursued primarily for pulmonary indications—may also provide meaningful benefit for inflammatory axial symptoms. To our knowledge, bilateral sacroiliitis in SLE–SSc overlap has not previously been described alongside a response of axial symptoms to rituximab, and the case therefore illustrates a clinically relevant but under-recognized musculoskeletal phenotype within the autoimmune overlap spectrum and provides a potential management framework when conventional options are restricted by pulmonary disease.

Case Presentation

Patient Information

A 35-year-old woman of Middle Eastern descent with a 4-year history of SLE–SSc overlap syndrome was evaluated in the rheumatology outpatient clinic for new inflammatory low-back pain of approximately three months' duration and progressively worsening exertional dyspnea. Her disease had originally been diagnosed after she presented with a 12-month history of triphasic Raynaud phenomenon, symmetric inflammatory polyarthralgia, and morning stiffness exceeding one hour, photosensitive malar rash, and gradually progressive skin tightening of the fingers and hands. At that initial evaluation, she met the 2019 European Alliance of Associations for Rheumatology/American College of Rheumatology (EULAR/ACR) classification criteria for SLE and the 2013 ACR/EULAR classification criteria for SSc, resulting in a diagnosis of SLE–SSc overlap syndrome. She had been started on hydroxychloroquine 400 mg daily, low-dose prednisolone, and methotrexate titrated to 15 mg weekly with folic acid supplementation, with reasonable control of her arthritis and skin findings. Her other initial manifestations included recurrent gastroesophageal reflux managed with proton pump inhibitor therapy, mild dysphagia for solids, and inflammatory polyarthritis involving the metacarpophalangeal and proximal interphalangeal joints bilaterally, associated with mild-to-moderate skin thickening of the fingers and distal forearms (modified Rodnan skin score in the mild-to-moderate range). She had no history of digital ulceration, scleroderma renal crisis, cardiac involvement, seizures, psychosis, lupus nephritis, serositis, or hematologic cytopenias. Importantly, she had no personal or family history of psoriasis, inflammatory bowel disease, anterior uveitis, reactive arthritis, or ankylosing spondylitis, and no prior axial symptoms or morning back stiffness. She was a non-smoker,

consumed no alcohol, and had no known occupational, environmental, or pharmacological exposures associated with pulmonary fibrosis. She was married, had two children, and worked in a sedentary administrative role. Her family history was negative for autoimmune disease, and she had no known drug allergies.

Baseline evaluation performed two years earlier, including transthoracic echocardiography, showed no evidence of pulmonary hypertension, and high-resolution computed tomography (HRCT) of the chest at that time demonstrated no interstitial lung disease. Baseline pulmonary function testing was within normal reference ranges. Serologic testing had revealed a strongly positive antinuclear antibody with a speckled pattern (titer 1:1280; negative <1:80), elevated anti-double-stranded DNA antibody by *Crithidia luciliae* immunofluorescence assay (titer 1:160; negative <1:10), and a markedly positive anti-Scl-70 (anti-topoisomerase I) antibody (>220 U/mL; negative <7 U/mL). Anti-centromere, anti-RNA polymerase III, anti-U1-RNP, anti-Sm, anti-Ro/SSA, anti-La/SSB, anti-Jo-1, and anti-PM-Scl antibodies were negative. Antiphospholipid antibodies (lupus anticoagulant, anti-cardiolipin, and anti-β2-glycoprotein I) and rheumatoid factor were negative. Complement C3 and C4 levels were within normal limits. Baseline complete blood count, serum creatinine, liver enzymes, creatine kinase, thyroid function, and urinalysis were unremarkable, and inflammatory markers (erythrocyte sedimentation rate and C-reactive protein) were mildly elevated, consistent with active inflammatory arthritis.

Diagnostic Assessment

The patient described her back pain as insidious in onset, localized to the lower back and bilateral buttock regions with occasional alternating buttock pain, worse in the second half of the night and on awakening, associated with morning stiffness lasting more than 60 minutes, improving with movement but not with rest, and only partially responsive to as-needed analgesia. The pain had progressed over approximately three months and had begun to interfere with sleep and daily activities. These features fulfilled the ASAS expert criteria for inflammatory back pain. Concurrently, she reported progressive exertional dyspnea (New York Heart Association functional class II–III), a dry nonproductive cough, reduced exercise tolerance, and intermittent fatigue. She denied fever, weight loss, hemoptysis, chest pain, or orthopnea. On physical examination during the current evaluation, she was afebrile and hemodynamically stable with normal oxygen saturation at rest on room air. Cardiovascular examination was unremarkable with no evidence of right heart strain. Respiratory examination revealed fine bibasilar inspiratory (Velcro-like) crackles without wheeze. Peripheral joint examination revealed no active synovitis, swelling, or effusion; mild residual skin thickening was noted over the fingers and distal forearms, with no new digital ulcers, pitting scars, or telangiectasias. Spinal examination demonstrated preserved lumbar range of motion without spinal tenderness, but reproducible pain was elicited during sacroiliac joint provocation maneuvers (positive FABER/Patrick test and sacroiliac compression test bilaterally). There was no evidence of enthesitis, dactylitis, or peripheral inflammatory arthritis. Ophthalmologic history and examination were negative for anterior uveitis, and there were no cutaneous findings suggestive of psoriasis.

Magnetic resonance imaging of the sacroiliac joints, performed with dedicated short tau inversion recovery (STIR), T1, and post-gadolinium sequences, demonstrated bilateral subchondral bone-marrow edema involving both iliac and sacral surfaces with corresponding post-contrast enhancement, findings consistent with active sacroiliitis as defined by ASAS criteria (Figure 1); no definite structural changes such as erosions, sclerosis, or ankylosis were identified. High-resolution computed tomography of the chest revealed new bilateral, predominantly basal and subpleural reticulation with traction bronchiectasis and early honeycombing, radiographic features consistent with a usual interstitial pneumonia (UIP) pattern (Figure 2). Plain radiographs of the sacroiliac joints and lumbar spine were unremarkable.

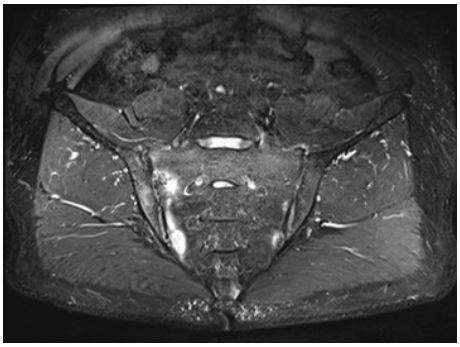

Figure 1. *Coronal T2 fat-suppressed MRI showing bilateral subchondral bone marrow edema of the sacroiliac joints, right greater than left, consistent with active inflammatory sacroiliitis.*

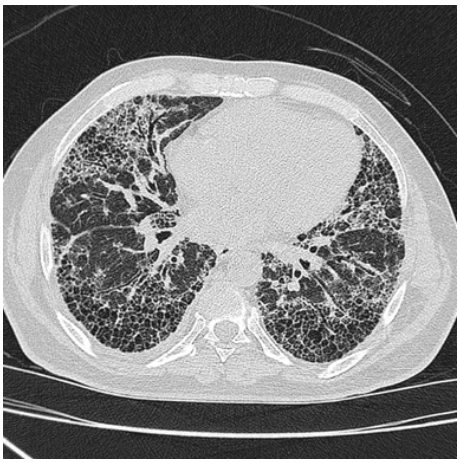

Figure 2. *High-resolution chest CT showing basal and subpleural honeycombing with traction bronchiectasis, consistent with a Usual Interstitial Pneumonia (UIP) pattern.*

HLA-B27 testing by flow cytometry was negative. Repeat serologic panel demonstrated persistent high-titer ANA, persistently positive anti-Scl-70 antibody, and low-titer anti-dsDNA antibody; complement levels remained normal. Routine laboratory studies, including complete blood count, renal function, liver enzymes, creatine kinase, and

urinalysis, were within normal reference ranges. Inflammatory markers (erythrocyte sedimentation rate and C-reactive protein) were mildly elevated. Screening for tuberculosis (interferon-gamma release assay), hepatitis B, hepatitis C, and human immunodeficiency virus was negative prior to subsequent escalation of immunosuppression. Transthoracic echocardiography was repeated and showed preserved biventricular function with no evidence of pulmonary hypertension. Pulmonary function testing demonstrated a restrictive pattern with reduced diffusing capacity for carbon monoxide, consistent with the radiographic findings of new-onset ILD. Taking together the clinical features (inflammatory back pain without defining spondyloarthritis features), imaging findings (bilateral active sacroiliitis), and negative HLA-B27 status in the absence of psoriasis, uveitis, inflammatory bowel disease, or family history of spondyloarthritis, the sacroiliitis was judged most consistent with an atypical musculoskeletal manifestation of the underlying SLE–SSc overlap syndrome rather than a concurrent axial spondyloarthritis. Infectious, tuberculous, and mechanical etiologies were considered and excluded.

Therapeutic Interventions

Methotrexate at a stable weekly dose of 15 mg subcutaneously had previously yielded satisfactory control of inflammatory arthritis and stabilization of skin thickening over the preceding two years. Following confirmation of new-onset ILD on HRCT, methotrexate was discontinued in view of its potential to cause or confound pulmonary toxicity. Hydroxychloroquine 400 mg daily was continued for its established benefit in SLE-related skin and articular disease, and low-dose prednisolone was maintained at the lowest effective dose, with subsequent taper to minimize long-term glucocorticoid exposure given the coexistence of SSc. Mycophenolate mofetil was initiated and gradually escalated, over several weeks, to 1500 mg twice daily as tolerated. The patient underwent vaccination review, pneumococcal and influenza immunization, and standard tuberculosis screening prior to and during immunosuppressive escalation. Despite adequate dosing and good adherence to mycophenolate, her ILD progressed both clinically (worsening exertional dyspnea and reduced exercise tolerance) and radiographically (increased extent of fibrotic reticulation and honeycombing on follow-up HRCT) over a period of several months. The antifibrotic agent nintedanib was added at 150 mg twice daily, with gradual dose titration to manage gastrointestinal side effects, in accordance with the evidence-based established by the SENSCIS trial for SSc-associated ILD.[15]

Concurrent with the evolution of her pulmonary disease, the patient continued to experience inflammatory low-back pain characterized by nocturnal worsening, prolonged morning stiffness, and improvement with movement. NSAIDs were prescribed intermittently and in the lowest effective doses under proton-pump inhibitor cover, with partial symptomatic benefit; however, their use was deliberately minimized given concerns about SSc-associated gastrointestinal dysmotility, gastroesophageal reflux, and the well-recognized renal and cardiovascular risks of chronic NSAID therapy in patients with active connective-tissue disease. Low-dose oral glucocorticoids provided only modest additional benefit and were not escalated due to the risk of precipitating scleroderma renal crisis in the setting of anti-Scl-70 positivity. Referral for physiotherapy with a structured program of spinal mobility and posture-focused exercises was made, and the patient was counseled on sleep ergonomics.

Given the continued progression of ILD despite optimized mycophenolate mofetil and nintedanib, and after multidisciplinary discussion involving rheumatology, pulmonology, and the patient herself, rituximab was initiated as rescue B-cell–depleting therapy in accordance with the evidence supporting its use in refractory CTD-ILD.[16,17] The patient received induction therapy with two intravenous infusions of rituximab 1 g, administered two weeks apart, with standard premedication (intravenous corticosteroid, antihistamine, and paracetamol), and screening for hepatitis B, hepatitis C, and tuberculosis was performed prior to each infusion. Serum immunoglobulin levels were checked at baseline and were within normal limits. The patient tolerated both infusions without infusion-related reactions, allergic events, or infectious complications. Mycophenolate mofetil and nintedanib were continued during and after rituximab induction, and hydroxychloroquine was maintained.

Outcomes

Following rituximab induction, the patient demonstrated stabilization of her interstitial lung disease, with no further clinical deterioration in exertional dyspnea, cough, or exercise tolerance, and no progression of fibrotic changes on subsequent follow-up HRCT. In parallel, she reported a pronounced and progressive reduction in inflammatory axial pain, with the resolution of nocturnal symptoms, the disappearance of prolonged morning stiffness, and the restoration of unimpaired spinal mobility during daily activities. Within several weeks of the second infusion, her axial symptoms had diminished sufficiently to allow complete discontinuation of NSAIDs, which she has not required since. Peripheral joint examination remained free of synovitis, and there was no recurrence of inflammatory arthritis. Inflammatory markers normalized, and serum complement levels remained within the reference range. Rituximab maintenance was planned every six months based on clinical response, B-cell repopulation status, and tolerability, in accordance with published protocols for CTD-ILD.[16,17] At the most recent follow-up, the patient remained clinically stable on combination mycophenolate mofetil, nintedanib, hydroxychloroquine, and maintenance rituximab, with no respiratory decline, no recurrence of axial symptoms, and no serious adverse events attributable to therapy.

Discussion

The present case illustrates a distinctly atypical presentation of bilateral active sacroiliitis in a patient with SLE–SSc overlap syndrome complicated by progressive ILD. While peripheral inflammatory arthritis is a well-recognized manifestation in both SLE and SSc, axial skeletal involvement remains rare and under-characterized.[4,5] Published reports describing sacroiliitis in SLE are sparse and consist predominantly of isolated case observations and small case

series. Yilmaz and colleagues, in a cross-sectional study of 281 adult SLE patients, reported inflammatory back pain in approximately 16% and demonstrated active sacroiliitis on MRI in a subset, with the majority of affected patients being HLA-B27 negative.[7] Kayacan Erdogan and colleagues, in a case–control MRI study of 63 SLE patients compared with matched controls, found a significantly higher prevalence of sacroiliitis in patients with SLE and identified elevated C-reactive protein as a risk factor for acute sacroiliitis, supporting the concept of disease-intrinsic inflammatory involvement of the sacroiliac joints rather than a chance coexistence of spondyloarthritis.[6] Tanatar and colleagues described a 16-year-old girl with juvenile SLE who developed bilateral sacroiliitis confirmed by MRI and was ultimately classified as having juvenile spondyloarthritis after exclusion of infection.[8] Gupta and Dhanota reported an adolescent male with SLE and bilateral symmetric active sacroiliitis on MRI in the absence of HLA-B27, which they interpreted as a rare disease-intrinsic manifestation of SLE.[9] Chandrasekhara and colleagues described a case of SLE–dermatomyositis overlap who subsequently developed symptomatic bilateral sacroiliitis and introduced the concept of "lupoid sacroarthropathy."[10] Tarhan and colleagues similarly documented an SLE patient with coexisting ankylosing spondylitis.[11] In contrast to these predominantly lupus-centric reports, the coexistence of sacroiliitis with SLE–SSc overlap appears exceptional. To our knowledge, the present case is among the few published descriptions of MRI-confirmed bilateral active sacroiliitis in this specific overlap phenotype. The consistent features across the published cases—young adult or adolescent patient, bilateral active inflammation on MRI, absence of HLA-B27, and lack of defining spondyloarthritis features—closely parallel the findings in our patient and strengthen the argument that axial inflammation can occur as a disease-intrinsic manifestation within the autoimmune CTD spectrum.[6-11]

In our patient, the absence of HLA-B27 positivity, the lack of personal or family history of psoriasis, inflammatory bowel disease, uveitis, or reactive arthritis, and the absence of enthesitis, dactylitis, or characteristic radiographic changes together substantially reduced the pre-test probability of a concurrent axial spondyloarthritis. The observation of bilaterally symmetric active sacroiliitis on MRI in a patient with serologically active SLE–SSc overlap, along with a rising inflammatory marker profile, is therefore most plausibly interpreted as a rare but genuine musculoskeletal manifestation of the underlying autoimmune overlap, rather than a coincidental seronegative spondyloarthropathy. This interpretation accords with the growing body of evidence from cohort studies and case reports suggesting that sacroiliitis may represent an under-recognized facet of the SLE musculoskeletal phenotype.[6,7,10] It should, however, be acknowledged that the ASAS MRI definition of active sacroiliitis is not disease-specific and that bone-marrow edema may occasionally be observed in mechanical, infectious, and degenerative conditions, as well as in asymptomatic individuals.[12,13] In the present case, alternative etiologies including infection, tuberculosis (which remains relevant in our regional context), and mechanical pathology were actively excluded, and the coincidence of axial inflammation with clinically and serologically active CTD supports autoimmune pathogenesis. The exact mechanism underlying sacroiliac inflammation in SLE and related overlap syndromes remains incompletely understood. Still, it has been proposed that autoimmune activation at the synovio-entheseal interface, immune complex deposition, type I interferon–driven inflammation, and possibly B-cell–dependent pathways—mechanisms that differ fundamentally from the enthesis-driven, IL-17/IL-23–polarized pathogenesis typical of HLA-B27–associated axial spondyloarthritis.[14]

Therapeutic decision-making in this case was substantially shaped by the presence of progressive ILD, which constrained the use of several agents otherwise useful in axial inflammatory disease. NSAIDs, the mainstay of symptomatic therapy in axial spondyloarthritis, were restricted by concerns about SSc-related gastrointestinal dysmotility and renal risk. TNF-α inhibitors, widely used in classic axial spondyloarthritis, are generally avoided in SLE because of the risk of inducing lupus-like phenomena and worsening autoantibody profiles, and evidence supporting IL-17 inhibitors in this population is limited.[9] Methotrexate, although beneficial for the patient's arthritis and skin disease, was withdrawn after ILD developed, and mycophenolate mofetil was initiated as a broader-spectrum immunosuppressant with established efficacy in CTD-ILD. When pulmonary disease progressed despite optimized mycophenolate dosing, nintedanib was added based on the SENSCIS trial, which demonstrated a significant reduction in the rate of decline in forced vital capacity in patients with SSc-ILD treated with this tyrosine kinase inhibitor.[15] The subsequent introduction of rituximab was driven primarily by continued pulmonary progression; growing evidence supports the efficacy of B-cell depletion in CTD-associated ILD, including SSc-ILD, with sustained complete B-cell depletion correlating with stabilization or improvement in pulmonary function.[16,17] Notably, in the present case, rituximab was associated not only with stabilization of ILD but also with marked improvement in inflammatory axial symptoms, enabling complete discontinuation of NSAIDs. Although rituximab is not established as a standard therapy for sacroiliitis, there is biological plausibility for its efficacy in axial inflammation of autoimmune origin: B cells contribute to autoantibody production, antigen presentation, and local pro-inflammatory cytokine release, and B-cell involvement has been documented in the pathogenesis of ankylosing spondylitis.[14,18] The parallel temporal improvement in pulmonary and axial symptoms in our patient, while subject to the limitations inherent in single-patient observations, raises the possibility that B-cell–directed therapy may offer dual benefit in overlap patients with atypical autoimmune sacroiliitis and coexisting ILD. This observation is hypothesis-generating and warrants systematic evaluation in larger CTD-ILD cohorts with dedicated musculoskeletal phenotyping.

Several important limitations of this report should be acknowledged. As a single-patient observation, causal inferences regarding the effect of rituximab on axial symptoms cannot be drawn, and spontaneous fluctuations in inflammatory sacroiliitis, the contribution of ongoing

mycophenolate therapy, regression-to-mean effects, and placebo effects cannot be entirely excluded. Follow-up MRI of the sacroiliac joints after rituximab was not systematically performed, thereby precluding objective imaging confirmation of the resolution of bone marrow edema. Additionally, although the clinical and serological profile strongly supported a CTD-associated sacroiliitis, the absence of a universally accepted diagnostic framework for "lupus-associated" or "CTD-associated" sacroiliitis introduces some degree of diagnostic uncertainty. The strengths of the report include longitudinal follow-up, careful exclusion of alternative etiologies, objective imaging documentation of active sacroiliitis using standard ASAS-compliant MRI criteria, and temporal correlation of both pulmonary and axial outcomes with therapy. Taken together, this case underscores the importance of systematically reassessing new axial symptoms in patients with CTD overlap, maintaining a broad differential diagnosis that includes rare disease-intrinsic manifestations, and tailoring treatment strategies to account for concurrent organ-threatening disease. Clinicians should remain alert to axial musculoskeletal manifestations that fall outside the traditional phenotypes of classic spondyloarthritis or isolated CTD and consider the potential dual therapeutic benefit of B-cell depletion in carefully selected patients with overlap syndromes complicated by progressive ILD.

Conclusion

Sacroiliitis is an uncommon but clinically relevant manifestation in systemic lupus erythematosus–systemic sclerosis overlap. In patients with concurrent interstitial lung disease, therapeutic options may be limited. This case demonstrates that rituximab can stabilize interstitial lung disease and may also provide meaningful improvement in inflammatory axial symptoms. Early recognition of atypical musculoskeletal manifestations and individualized treatment strategies are essential in managing overlap syndromes.

Patient Perspective

"Before my back pain started, I had already been living with joint swelling, Raynaud's, and skin changes for several years. When I developed new pain in my lower back — worst at night and in the mornings — I was worried something had changed in my disease. The breathlessness that came at the same time made everything harder. Being told I had lung disease on top of what I already had, and that my sacroiliac joints were inflamed, was difficult to process. I had to stop methotrexate, which had been helping my joints, and start new medications. The back pain continued for some time, and I used painkillers that I knew were not ideal for my stomach.

After starting rituximab, the change was noticeable. My breathing became more stable, and the back pain — which had been affecting my sleep and daily movement — gradually resolved. I was able to stop the painkillers completely. I feel that my condition is now under better control, and I am grateful that the treatment addressed both problems at the same time. I hope sharing my experience helps other patients and doctors recognize these less common complications early."

Author Contributions

The author confirms sole responsibility for the conception, investigation, design, and writing of the manuscript.

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Ethics Statement

Ethical review and approval were waived for this study because it is a single-case report. Written informed consent has been obtained from the patient for the publication of this paper.

Conflicts of Interest

The author declares no conflict of interest.

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