Autoamputation in a 45-Year-Old Female with Systemic Lupus Erythematosus Overlap with Systemic Sclerosis: A Case Report

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Introduction. Systemic lupus erythematosus (SLE) and systemic sclerosis (SSc) are complex autoimmune conditions that can co-exist with 6.8% prevalence based on cohort studies. This case report details the clinical journey of a 45-year-old female with an SLE-SSc overlap syndrome particularly presenting with autoamputation of digits, which is a rare and debilitating complication of SSc, with a scarcity of published reports as of writing.

Case description. This patient was diagnosed with SLE nearly a decade ago, presenting with alopecia, joint pains, malar rash, and a positive antinuclear antibody test. Initial treatment with prednisone and hydroxychloroquine showed improvement, but hydroxychloroquine was discontinued due to adverse effects. Subsequently, she developed skin tightness, deformities in her digits, and progressive vision loss, consistent with SSc, but she did not seek timely medical attention. During the COVID-19 pandemic, her symptoms worsened, leading to hand weakness, digit shortening, and loss of fingernails. She was eventually diagnosed with SSc by a rheumatologist. The patient commenced treatment with prednisone (10 mg daily) and mycophenolate mofetil (500 mg thrice daily). Six months into treatment, she showed significant improvement in skin pliability and hand functionality, with regrowth of fingernails. The patient demonstrated excellent adherence to the treatment regimen and regular follow-up visits, resulting in continued improvement in her condition.

Conclusion. SLE-SSc overlap syndromes pose diagnostic challenges due to shared clinical features. This case underscores the need for early recognition and tailored treatment strategies, as evidenced by the patient's positive response to combined immunosuppressive therapy. Addressing these complexities requires ongoing research and interdisciplinary collaboration to optimize patient outcomes.

Keywords. *Autoamputation, Scleroderma, Systemic sclerosis, Systemic lupus erythematosus, Overlap syndrome*

Introduction

Systemic sclerosis (SSc), also known as scleroderma, is a rare fibrosing autoimmune disease, whose low incidence and low prevalence mean that primary care physicians rarely encounter or diagnose it.[1] It is a highly morbid condition with a higher mortality rate than other connective tissue disorders. It primarily causes skin tightening in the extremities and face, often preceded by Raynaud phenomenon (RP). Over time, digital ulcers may develop, leading to fingertip loss in severe cases. Patients can also experience calcifications, itching, and telangiectasias. The disease affects multiple organs, commonly the lungs, kidneys, gastrointestinal, musculoskeletal, and cardiac systems.[2] Higher mortality in SSc has been associated with numerous risk factors, including demographic characteristics, clinical features, autoantibodies, organ involvement, and laboratory and imaging findings.[3]

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Vascular complications are nearly always observed in SSc, with RP being the most prevalent, affecting over 95% of patients. Digital ulcers frequently complicate RP, sometimes progressing to tissue necrosis, bacterial infections, or autoamputation.[4]

Autoamputation refers to the spontaneous detachment of a body part due to chronic underlying pathology. While uncommon, it has been documented in case reports involving various appendages, including digits, the pinna, the penis, the appendix, the breast, the tongue, and certain visceral tumors. Several conditions can lead to autoamputation, such as diabetes, atherosclerosis, ainhum, pseudoainhum, vascular insufficiency in visceral tumors, and different forms of gangrene, including dry, wet, and gas gangrene.[5]

Meanwhile acro-osteolysis refers to the resorption of distal phalanges in the hands and feet. It is associated with genetic disorders, rheumatic diseases (such as psoriatic arthritis and SSc), hyperparathyroidism, neuropathy, digital ischemia, and trauma. Unlike autoamputation, which involves the complete detachment of a digit, acro-osteolysis is a progressive bone loss that may predispose to autoamputation.[6]

Autoamputation, along with RP, digital ulcers, and gangrene, represent the hallmark clinical features resulting from microvascular involvement in SSc.[7] Autoamputation occurs in only 14–29% of scleroderma cases, following recurrent digital tip ulcers, which affect 31.8–71.4% (median, 45.2%) of patients, based on a Canadian systematic review.[8] Although interstitial lung disease and pulmonary arterial hypertension are the primary causes of death in SSc patients, RP and digital ulcers continue to pose significant clinical challenges, greatly affecting patients' daily activities and overall quality of life.[4]

On the other hand, systemic lupus erythematosus (SLE) is a chronic autoimmune disorder that affects multiple systems and follows a pattern of relapses and remissions. It presents with a wide range of symptoms, from mild to severe, potentially life-threatening conditions, such as skin manifestations and kidney involvement. Due to this drastic variability, early diagnosis and treatment require a high degree of clinical suspicion.[9]

About 6.8–14.7% of SSc patients have overlapping SLE, termed SLE-SSc overlap syndrome.[10] Patients with SLE-SSc overlap syndrome tend to have fewer cutaneous symptoms typical of SSc[11]; however, as of writing, there is a scarcity of statistical data available on the prevalence of digital ulcers or autoamputation in this subset of patients.

This paper presents the case of a 45-year-old female previously diagnosed with SLE, exhibiting notable symptoms including alopecia, malar rash, oral ulcers, joint pain, and positive anti-nuclear antibody (ANA). She was initially managed with prednisone and hydroxychloroquine, but due to adverse effects such as gastrointestinal upset and rashes from hydroxychloroquine, the medication was discontinued. Subsequently, the patient experienced progressive symptoms, including skin tautness, non-pitting edema, and deformities in the hands, feet, and face, along with puffy fingers and sclerodactyly. The patient discontinued using prednisone, thinking that it might be the culprit for her progressing symptoms.

Skin involvement stands out as a primary feature of SSc, with its name, scleroderma, reflecting the characteristic skin hardening. Manifestations typically begin with non-pitting edema, progressing to skin thickening and sclerodactyly. Tapering of fingertips and the occurrence of digital ulcers are frequent observations, attributed to ischemia resulting from vasculopathy. Vascular insufficiency may lead to distal finger atrophy and autoamputation, as evidenced in this patient.

This case is unique as it illustrates a rare instance of SLE transitioning into an SLE-SSc overlap syndrome, highlighted by the occurrence of autoamputation, a well-documented complication in SSc but uncommon in SLE. The rarity of both autoamputation in SLE and overlap syndromes further underscores the diagnostic challenge and the need for heightened clinical awareness in such cases.

Case Report

A 45-year-old woman residing in Davao City received a diagnosis of SLE almost a decade ago. Her presentation included alopecia, joint pains, malar rash, and a positive ANA test. Initially, she responded well to tapering doses of prednisone and hydroxychloroquine, experiencing improvement in her condition. However, she encountered setbacks when she developed rashes, gastrointestinal upset, and blurred vision, prompting the discontinuation of hydroxychloroquine. No medical consultation was sought for these symptoms, and it remained unconfirmed whether they were an adverse reaction to hydroxychloroquine. She was off of hydroxychloroquine since then until the current consult, and she relied solely on prednisone for management.

Table 1. Anti-nuclear antibody test report (March 2012)

	Titer	Pattern
Positive	1:80	Speckled

Approximately 7 years ago, the patient began to notice tightness over the skin on her extremities, trunk, back, and face, and gradual vision loss. Swelling in her fingers and tightness in the surrounding skin emerged later. Despite these developments, she did not seek medical attention, and she also stopped taking prednisone, assuming that it might have caused the new symptoms.

The patient's medical history revealed no other comorbidities besides SLE. She had no history of diabetes, hypertension, cardiovascular disease, or any allergies. There were no prior surgical interventions nor any recent hospital admissions. Additionally, she did not smoke, consume alcoholic beverages, or engage in illicit drug use. She worked as a teacher near her locality, with

her school located adjacent to a coal plant. While occupational exposure, like coal mining, increases SSc risk due to silica dust inhalation, the impact of environmental exposure from living near a coal plant remains unclear.[12]

During the pandemic, her ability to seek medical consultation was limited, leading to a worsening of her symptoms. She experienced difficulties holding objects due to hand weakness and observed gradual shortening of her digits, accompanied by the loss of fingernails on both hands and feet. Furthermore, her vision deteriorated, making it challenging for her to read text against a white background. Subsequently, she sought consultation with a rheumatologist, who diagnosed her with SSc (Figure 1).

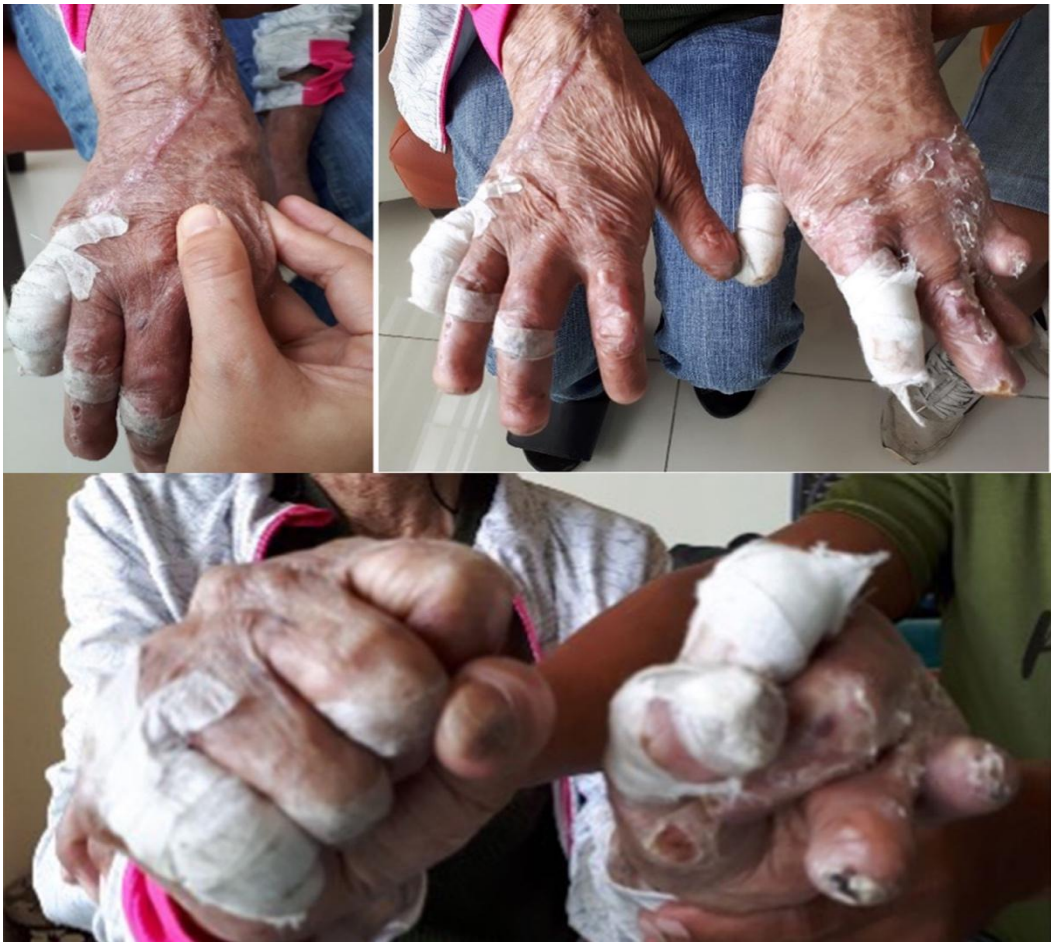

Figure 1. Dorsal and palmar aspects of the hand. Shown are sclerodactyly and autoamputation of digits but improved skin tautness and lightening of skin color, now able to form a fist after 2 months of treatment.

Based on the joint American College of Rheumatology (ACR) and European League Against Rheumatism (EULAR) 2013 criteria for SSc,[13] the patient can be diagnosed with definite SSc through clinic features alone, which are skin thickening of the fingers of both hands as well as fingertip lesions (Table 2). SSc-related antibodies (anti-centromere, anti-topoisomerase I, and anti-RNA polymerase III) were not done due to unavailability in our locality. The presence of interstitial lung disease and pulmonary hypertension were not determined, due the patient's non-compliance to diagnostics; however, these were reinforced, and the patient was advised to come back with the requested work-up.

Table 2. Joint American College of Rheumatology and European League Against Rheumatism 2013 criteria for systemic sclerosis, with the patient's score

Item	Sub-item	Weight/Score	Patient's score
Skin thickening of the fingers of both hands extending proximal to the metacarpophalangeal joints *(sufficient criterion)*		9	9
Skin thickening of the fingers *(only count the highest score)*	Puffy fingers	2	
	Sclerodactyly of the fingers (distal to metacarpophalangeal but proximal to the proximal interphalangeal joints)	4	
Finger-tip lesions *(only count the highest score)*	Digital tip ulcers	2	3
	Fingertip pitting scars	3	
Telangiectasia		2	
Abnormal nailfold capillaries		2	
Pulmonary arterial hypertension (PAH) and/or interstitial lung disease (ILD) (maximum score is 2)	PAH	2	
	ILD		
Raynaud's phenomenon		3	
Scleroderma-related antibodies (any of anti-centromere, anti-topoisomerase I)	Anti-centromere	3	
	Anti-topoisomerase I	3	
	Anti-RNA polymerase III	3	
TOTAL			12

Autoamputation can occur in various conditions, including diabetes, atherosclerosis, vasculitis, Buerger disease, and frostbite. In this case, differentials were ruled out based on the absence of diabetes, smoking history, or systemic vasculitis markers. The patient's history of RP, digital ulcers, and skin thickening strongly suggested SSc-related vascular disease as the underlying cause.

Blurring of vision, which was one of the main complaints of the patient, can arise from various ocular complications associated with SSc. Common causes include keratoconjunctivitis sicca (dry eye syndrome) resulting from lacrimal gland fibrosis leading to decreased tear production and subsequent corneal dryness, and retinal vasculopathy, where microvascular abnormalities affect the retinal circulation, potentially leading to vision impairment. Management typically involves addressing the underlying SSc activity with systemic immunosuppressive therapy, as well as providing supportive ocular treatments, such as artificial tears, for dry eye symptoms. Regular ophthalmologic evaluations are essential for early detection and management of these complications.[14]

In determining overlap syndrome, the presence of the two disease entities must be established, given that there are several findings present in both diseases. The patient, more than 10 years ago, first presented with malar rash, alopecia, and joint pains with an ANA of 1:80 speckled pattern. These findings all meet the Systemic Lupus Collaborating Clinics (SLICC) 2012 criteria[15] requiring at least one clinical and one immunological criteria, with a total of four criteria met. Aside from meeting the SLICC criteria, literature also favors the diagnosis of SLE, since malar rash and alopecia are hallmark features in SLE and not likely present in SSc. Furthermore, a speckled pattern in the ANA favors diagnosis of SLE rather than SSc.[16,17]

The patient was treated with low-dose prednisone (10 mg/day) to control inflammatory features of SLE while minimizing the risk of scleroderma renal crisis, a known complication of high-dose corticosteroids in SSc.[18] Additionally, mycophenolate mofetil (500 mg thrice daily) was initiated due to its effectiveness in managing skin involvement in SSc and its immunosuppressive role in SLE, as supported by clinical studies.[19] This regimen addresses the overlapping autoimmune features, aiming to reduce inflammation, prevent further disease progression, and improve functional outcomes.

In addition to pharmacologic treatment, the patient was advised on non-pharmacologic interventions aimed at preventing further complications and improving function. Hand protection and wound care were emphasized to reduce the risk of digital ulcers and

infections, which are common in SSc.[20] Physical therapy and hand exercises were encouraged to maintain mobility and prevent contractures, which can significantly impact quality of life.[21] Additionally, patient education focused on cold avoidance and early recognition of digital ischemia, which are critical in preventing further vascular complications.[22] These interventions, alongside immunosuppressive therapy, were crucial in managing the patient's SLE-SSc overlap syndrome and preventing further autoamputation.

Six months post initiation, the patient returned to our institution for a follow-up evaluation. She reported a notable improvement in the stiffness of her skin, with increased pliability observed, particularly in her extremities, allowing for pinching, a feat previously unattainable. Furthermore, she regained functionality in her hands, evidenced by her ability to grasp objects, and there was observable regrowth of her fingernails (Figure 2).

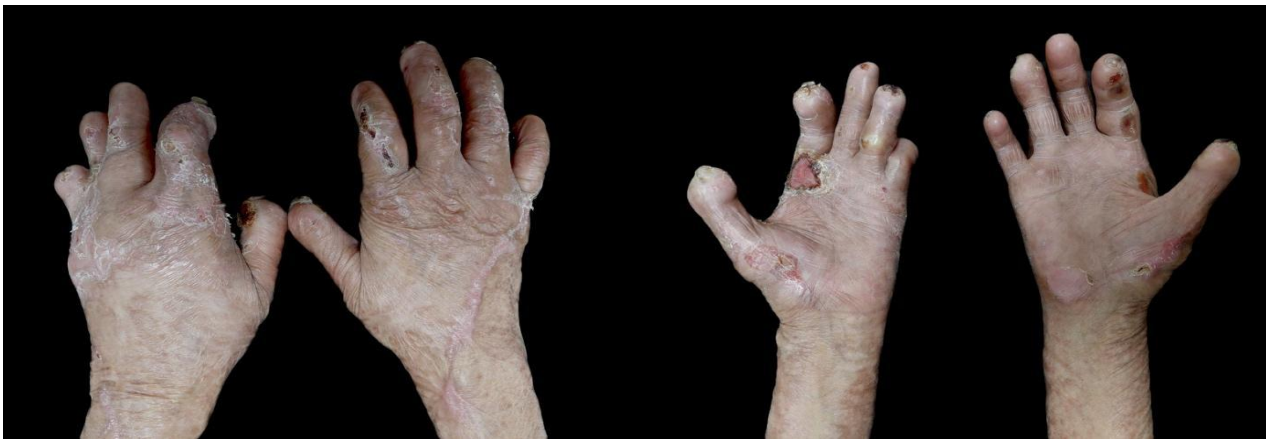

Figure 2. **Dorsal and palmar aspect of the hand after 6 months of treatment.** A remarkable improvement is seen in terms of discoloration, skin tautness, and function.

Table 3. Physical examination upon follow-up consult

General	Awake, oriented, conversant Not in distress
Head, eyes, ears, nose, and throat	Anicteric sclerae, pink conjunctivae
Neck	No visible mass No cervical lymphadenopathy
Chest	Equal chest expansion Clear breath sounds No wheezing or rales
Cardiac	Adynamic precordium Regular heart rate and rhythm No murmurs
Gastrointestinal tract	Soft, non-tender, flabby abdomen Normal bowel sounds
Skin	Tightening of skin on extremities, trunk, back, and face Sclerodactyly Loss of tips of digits Salt and pepper lesions at the back Dry skin

Table 4. Timeline of Digital Changes Leading to Autoamputation

Time frame	Clinical events and observations
~2015 (7 years prior to consultation)	▪ Onset of skin tightness (extremities, trunk, back) ▪ Development of digital deformities, facial changes, and vision loss ▪ Emergence of finger swelling and progressive skin tightening
2020–2021 (During the COVID-19 pandemic)	▪ Limited access to medical care → symptom worsening ▪ Hand weakness, difficulty holding objects ▪ Gradual shortening of digits, fingernail loss (both hands and feet)
2022 (Consultation & Diagnosis)	▪ Sought consultation with a rheumatologist ▪ Diagnosed with systemic sclerosis
2022 (Treatment Initiation)	▪ Started prednisone (10 mg daily) + mycophenolate mofetil (500 mg thrice daily) ▪ Patient adhered to treatment
Six Months Post-Treatment (Follow-up in 2022)	▪ Improvement in skin pliability (extremities) ▪ Regained ability to pinch and grasp objects Observable fingernail regrowth

The patient demonstrated consistent medication adherence and maintained regular follow-up appointments, facilitating ongoing monitoring of her progress. Notably, she exhibited discernible improvement since the initiation of treatment. Referrals to dermatology and ophthalmology were also advised.

Discussion

SLE is a global systemic autoimmune disease affecting individuals worldwide, with an estimated incidence of 5.14 (ranging from 1.4 to 15.13) per 100,000 persons and a prevalence of 78.73 per 100,000 persons.[23] Predominantly afflicting women of childbearing age, SLE manifests with a spectrum of constitutional signs and symptoms, including alopecia, malar and discoid rash, arthritis, anemia, photosensitivity, painless oral ulcers, nephritic edema, severe abdominal pain and vomiting, headache, seizures, muscle weakness, and even psychosis. The clinical course of lupus is unpredictable, characterized by periods of flares and remissions, with cumulative damage over time significantly impacting quality of life and organ function.[24] Treatment primarily revolves around glucocorticoids, which often yield a favorable response.[25]

SSc, commonly referred to as scleroderma, represents a rare autoimmune, fibrosing systemic disease that poses diagnostic challenges for general practitioners due to its low incidence and prevalence. With an estimated occurrence of 1 in 10,000 individuals, SSc predominantly affects women and typically emerges between ages 30 and 50.[23] Manifesting with skin and internal organ involvement, SSc presents a perplexing clinical picture that varies widely among patients.

This condition's hallmark blend of autoimmunity, vascular compromise, and tissue fibrosis manifests in a diverse array of clinical presentations, contributing to its diagnostic complexity. Fibrotic changes, driven by compromised blood flow, inflict irreversible damage on vital organs such as the lungs, heart, kidneys, gastrointestinal tract, skin, and joints, even in the disease's nascent stages.[26]

The classification of scleroderma encompasses three principal types: localized scleroderma and morphea, scleroderma-like skin disorders, and SSc, further delineated into subtypes based on the extent and pattern of skin involvement. Diagnosing SSc relies predominantly on clinical assessment, although ancillary laboratory investigations, guided by new classification criteria proposed by the EULAR and the ACR, play a crucial role in confirming the diagnosis. These criteria serve as standardized tools for clinicians, researchers, and regulatory agencies involved in studying and managing SSc, facilitating uniformity and accuracy in diagnostic approaches.[13]

In SSc, characteristic clinical features include sclerodactyly in approximately 95% of cases, RP in 90%, and a positive ANA by immunofluorescence in 95% of cases.[8] This disease is stratified into two main types based on the extent of skin fibrosis: limited cutaneous and diffuse cutaneous. In limited cutaneous SSc, skin involvement is confined to the distal portions of the limbs, including the hands and face, while diffuse cutaneous SSc extends proximally to the elbows and knees.[24]

Approximately 6.8–14.7% of SSc patients present with overlapping SLE, known as SLE-SSc overlap syndrome.[27] These overlap syndromes pose diagnostic challenges as patients exhibit features typical of various autoimmune rheumatic diseases without meeting specific classification criteria.[28] The absence of specific autoantibodies in some cases further complicates diagnosis and treatment initiation, sometimes leading to fatal outcomes before a definitive diagnosis can be made.

The prognosis of patients with autoamputation in SSc-SLE overlap syndrome depends on the severity of vasculopathy, frequency of digital ischemia, and response to immunosuppressive therapy. Compared to isolated SSc, overlap cases tend to present at a younger

age and have a higher incidence of pulmonary arterial hypertension, which can worsen long-term outcomes. While survival rates are comparable between SSc and overlap syndromes, recurrent vascular complications and digital loss contribute to significant morbidity and functional disability. Early intervention with vasodilators, immunosuppressive therapy, and preventive measures against ischemic events plays a critical role in improving prognosis.[29]

Our patient was initially diagnosed with SLE based on the fulfillment of the ACR criteria, presenting with alopecia, malar rash, oral ulcers, joint pains, and a positive ANA. Initial treatment with steroids and hydroxychloroquine yielded a response; however, due to side effects, hydroxychloroquine was discontinued. Subsequently, she developed symptoms suggestive of SSc, including skin tautness, acro-osteolysis, and non-pitting edema, along with RP, which is present in approximately 18–46% of patients with SLE[28] and 96% of SSc.[30] These findings indicated a transition in disease phenotype. Management was adjusted to include prednisone and mycophenolate mofetil, resulting in significant improvement in skin tautness, lightening of skin discoloration, and enhanced range of motion in her fingers within a 2-month period.

Conclusion

Autoimmune rheumatic diseases pose diagnostic challenges due to overlapping features and patient compliance issues. This case highlights the complexity of transitioning from a single disease entity, such as SLE, to managing an overlap syndrome with SSc. The rarity of scleroderma and its complications, like autoamputation, further complicates the diagnosis. Ongoing research and collaboration are essential to improving patient care.

The strengths of this case approach include a careful pattern analysis and a heightened clinical suspicion to identify and differentiate between SLE and SSc, as well as the use of immunosuppressive therapy based on existing guidelines which led to improvement in the patient. However, limitations include a restricted diagnostic work-up, lack of long-term follow-up, and the absence of further evaluation for systemic complications such as interstitial lung disease or cardiac involvement, which was already advised and lined-up for the next consultation.

and treatment would have decreased the risk of development of fracture.

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