Severe plaque psoriasis with systemic lupus erythematosus: A case report with comorbidities

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Abstract

This is a case report of a 45-year-old female patient who was diagnosed with severe plaque psoriasis and systemic lupus erythematosus (SLE) with comorbidities, including hypertension, rheumatoid arthritis, diabetes mellitus with diabetic nephropathy (grade II), and lupus nephritis (Class I). The patient had been experiencing severe itching and burning sensation for a year and a half and had been diagnosed with SLE in July 2021. The case discusses the patient's symptoms, diagnosis, and treatment. Patient examination revealed multiple joint tenderness, swan neck deformity, boutonniere deformity of the thumb and erythematous medium to large-sized plaques on various body parts. The case also includes investigation results, such as CBC, creatinine, SGPT, electrolyte levels, Hbs Ag, anti-ds DNA, ANA/ANF, and skin biopsy for histopathology. The diagnosis was severe plaque psoriasis with SLE, rheumatoid arthritis, diabetes mellitus with diabetic nephropathy (grade II), and hypertension. The treatment included various medications and topical ointments. This case report highlights the challenges in managing patients with multiple comorbidities and the importance of a comprehensive approach to patient care.

Keywords: Severe plaque psoriasis, Systemic lupus erythematosus (SLE), Comorbidities.

Introduction:

Immune-mediated inflammatory diseases (IMIDs) are a set of chronic diseases and the manifestation of the pathological immune response and constant inflammation or tissue injury.[1] Despite the common features in terms of genetic susceptibility and disease pathways, the presence of multiple IMIDs in a patient may have diagnostic and management implications that are distinct from those in patients with solitary IMIDs.[2] This case report describes the successful therapeutic approach initially in a 45-year-old with severe chronic plaque psoriasis, systemic lupus erythematosus, and other diseases, complicating the process. Psoriasis is a chronic skin disorder that, like most skin conditions, shows frequent relapses and is estimated to affect 2-3% of the world's population. This is through increasing the rate of division and making the keratinocytes change dimensions and create what appears as erythematous scaly plates. Psoriasis as a skin disorder has genetic predisposition factors, environmental factors, and immunological changes, and the main attention is paid to the pro-inflammatory cytokines IL-23 and Th-17.[3] Psoriasis is a chronic inflammatory skin disease and is divided into five types, but plaque psoriasis is the most common type of the disease that can dramatically affect the patient's quality of life and can be related to cardiovascular disease and metabolic syndrome. On the other hand, systemic lupus erythematosus is a chronic multisystem autoimmune disorder due to the presence of autoantibodies directed against nuclear antigens that produce inflammation and tissue damage of various internal organs. SLE has been described to affect skin, joints, kidneys, the body's central nervous system, and other organs and present in different clinical variations. SLE has a multifactorial, polygenic heritage, and there are genetic, environmental, as well as hormonal influences that impact the immune system and self-tolerance.[3,4] It is quite unusual to have both psoriasis and lupus in the same patient; however, it has been found in approximately 0. 8% among patients with eczema, but mortality during the therapy was 100%. For example, it was reported to be 1% among the SLE patients. Despite these differences, their low incidence is linked to the differences in genetic susceptibility and immune response alterations that characterize these two diseases. While psoriasis is mostly T cell mediated inflammation involving Th17 cells, SLE is associated with B cell synchronization and autoantibody synthesis. The above-mentioned diseases can be present at the same time making it challenging in diagnosing, treating and coming up with management plans.[5]

Case Presentation:

A 45-year-old female housemaid from Mohammadpur, Dhaka, Bangladesh, attended the dermatology and venereology department of Bangladesh Medical College Hospital with erythematous multiple medium- to large-size plaques containing silvery white scale. The lesions affected the head and neck, chest, abdomen, back, forearms, arms, and lower limbs. These lesions had started developing one and a half years before the beginning of intense itching and burning. The patient was diagnosed with SLE and lupus nephritis (Class I) in July 2021. She also had hypertension, rheumatoid arthritis, and diabetes mellitus with grade 2 diabetic nephropathy since February 2009. There was no family history of psoriasis or SLE. The patient was able to ambulate and was oriented to place, person, and time.

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She had a blood pressure of 150/100 mmHg, a pulse of 88/min, and a respiratory rate of 16b/min, with no fever. She had multiple joint pain and displayed both swan neck deformity and boutonniere deformity. The skin examination revealed that the patient had erythematous plaques with silvery scales in the chest, back, abdomen, limbs, scalp, and face. Auspitz sign was positive. PASI score represented a case of severe psoriasis that is erythematous, scaling, and indurated severer than third, involving more than a quarter of body surface area.

Reports of Investigations
• ANA/ANF-Reactive
• Anti ds DNA-Reactive
• Anti-CCP-77.40 U/ml
• RA Test-Positive
• iPTH-285.80 pg/ml
• Phosphate-3.30 mg/dl
• Calcium-9.01 mg/dl
• C3-1.28 gm/L
• C4-0.31 gm/L

Skin biopsy revealed features suggestive of psoriasis, including hyperkeratosis, parakeratosis, acanthosis, and Munro microabscesses. The diagnosis was severe plaque psoriasis with SLE, lupus nephritis (class I), rheumatoid arthritis, diabetes mellitus with diabetic nephropathy (grade II), and hypertension.

Treatment
Multidisciplinary Treatment approach was initiated:
• Deucravacitinib: 6mg daily
• Antihistamine
• Topical Potent Steroid
• Liquid Paraffin
• Anti-Hypertensive Medication
• Anti-Diabetic Medication

Discussion:

The patient presented with multiple medium- to large-size plaques in different body parts such as the scalp, chest, abdomen, back, forearms, arms, and lower limbs. She complained of itching and burning sensations that lasted for about one and a half years before she decided to consult a doctor. The patient was diagnosed with SLE in July 2021 and has lupus nephritis (Class I), hypertension, and rheumatoid arthritis. Moreover, she had a past medical history of diabetes mellitus with grade 2 diabetic nephropathy since February 2009.

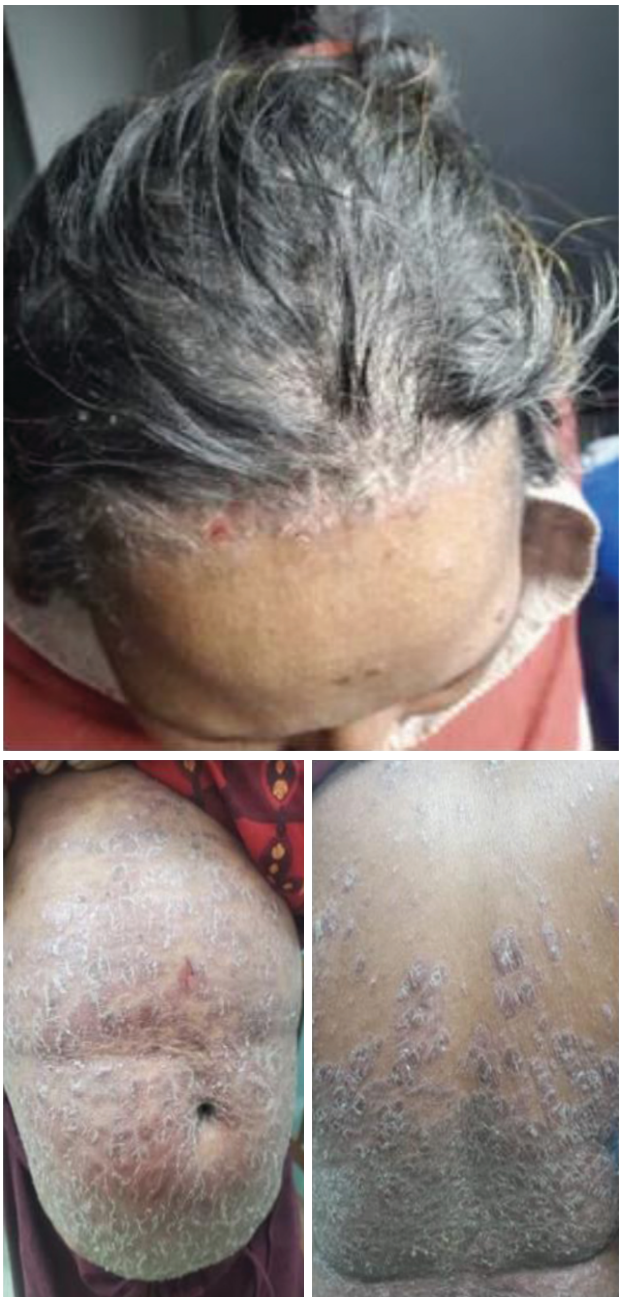

Figure 1: First visit, Plaque psoriasis on scalp, abdomen, back

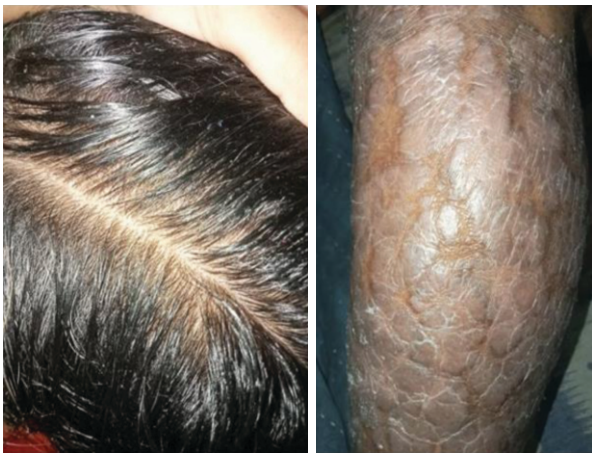

Figure 2: After 2 months' treatment, Plaque psoriasis with Systemic Lupus Erythematosus on scalp and arms

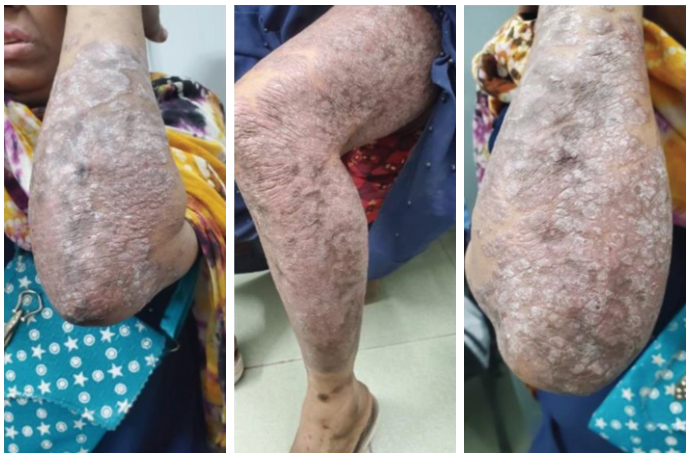

Figure 3: After 4 months of treatment, Severe plaque psoriasis with Systemic Lupus Erythematosus on arms and knees

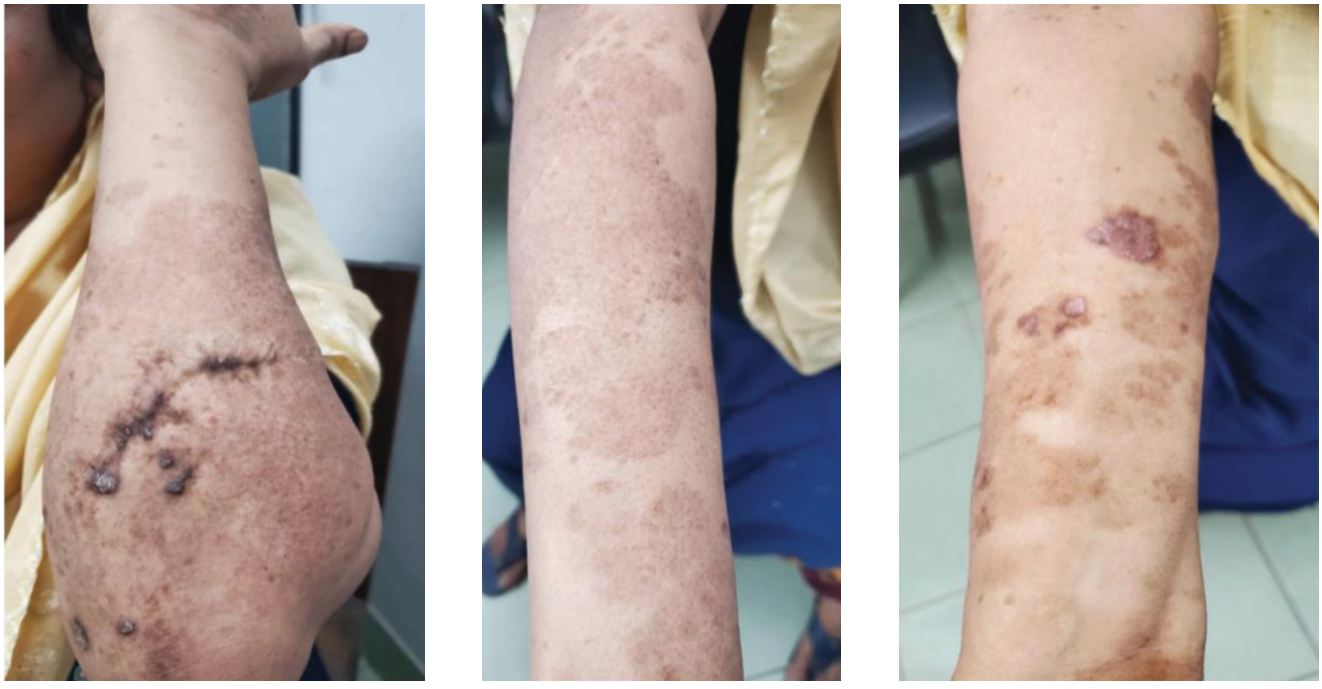

Figure 4: After 6 months of treatment, Severe plaque psoriasis with Systemic Lupus Erythematosus on arms

The patient had not only moderate to severe plaque psoriasis and SLE but also hypertension, rheumatoid arthritis, diabetes mellitus with diabetic nephropathy of the second stage, and lupus nephritis class I. This intricate scenario suggests that there is a need to consider multiple issues and the correlation between different diseases and drug treatment.[6] This made the case even more complicated due to the patient's immunosuppressive medications, which included systemic steroids (Tab. Cortan 20 mg) and methotrexate, among other medications due to other illnesses.[7] Thus, the main challenge in managing such patients is finding the right balance between the need to control the disease and the potential for episodes of immunosuppression or drug interactions.

The physical assessment observed the involvement of multiple joints and tenderness, swan neck deformity, and boutonniere deformity of the thumb pointed towards rheumatoid arthritis. Based on the findings of the integumentary system, the patient developed erythematous, medium- to large-sized plaques over various parts of the body with a silvery-white scaly surface, and a positive Auspitz sign indicates plaque psoriasis. Psoriasis severity was assessed using the PASI, which measures severe erythema, scaling and induration, and BSA involvement >25%. Investigations done included simple count, renal function test, liver function test, ANA/ANF and anti-DNA, and skin biopsy for histology.[8] The skin biopsies also confirmed positive for psoriasis with the clinical characteristics of hyperkeratosis, parakeratosis, acanthosis, and Munro micro abscess. Several management issues are involved in this case, including poly-autoimmunity,

comorbidity, and the drug interactions that multiple medications might cause. The treatment plan also took care of other diseases associated with psoriasis and SLE, some of which are hypertension and diabetes, among others.[9]

This case presents the scenario of multiple autoimmune disorders and raises questions on how to deal with patients who have Ps and SLE. Such pairing is rare due to the genetic susceptibility and etiological processes related to these diseases. This depicts the importance of studying possible interaction effects between diseases, treatment sensitivity and effects, and toxicity profiles, which are central in developing solid treatment modalities for complicated conditions.[10] While Ps has been linked to HLA-Cw6, ERAP1, and IL23R, SLE has been discussed in relation to STAT4, IRF5, and TNFAIP3 polymorphisms. These genetic differences explain why the overlap of Ps-SLE is rare and it is believed to affect approximately 0.69 percent in psoriasis patients and 1.1% of those with SLE.[7] The main mechanism in the pathogenesis of Ps involves the activation of Th1 and Th17 cells and the release of pro-inflammatory cytokines such as TNF, IL-17, and IL-23. These cytokines stimulate excessive growth of keratinocytes and maintain persistent inflammation in the dermis. SLE, on the other hand, is defined by B cell activation, production of autoantibodies against nuclear antigens, and immune complex deposition that leads to inflammation and tissue injury.[11,12] Despite these differences, both conditions have overlapping elements in the context of inflammation, especially Th17 cells and increased concentrations of IL-17 and IL-23 cytokines. There are significant therapeutic complexities in the case of concurrent Ps and SLE since therapies for each may worsen the other.[13] For instance, ultraviolet radiation [UV] commonly used in the treatment of Ps is known to induce or precipitate SLE flare due to DNA damage and apoptotic cell death, which results in leakage of nuclear antigens and the formation of autoantibodies. In contrast, certain drugs used in the treatment of SLE—antimalarial agents including hydroxychloroquine—have been identified to worsen psoriasis. These treatment conflicts suggest that it is wise to approach intervention cautiously.[14,15] Ju HJ et al. conducted a nationwide cross-sectional study using Korean NHI data, finding significant associations between psoriasis, systemic lupus erythematosus (SLE), and autoimmune rheumatic diseases.[16] In this case, the presented work proposes the use Deucravacitinib, an oral selective TYK2 inhibitor, is the key systemic treatment. Deucravacitinib focuses more on TYK2, which could reduce systemic side effects associated with the treatment of both psoriasis and SLE. This selectivity may be particularly helpful since the patient has a number of chronic conditions, including diabetes and hypertension. The presence of associated diseases such as rheumatoid arthritis, diabetes mellitus with diabetic nephropathy, and hypertension alters the clinical scenario and makes management challenging, thus requiring skillful management. These conditions have their particular risks, prognoses, and therapeutic implications that should be addressed within the comprehensive treatment strategy.[17,18]

Table 1: Prevalence rates for each autoimmune rheumatic disease in patients with and without psoriasis

			Univariable Analyses		Multivariable Analyses	
Patient diseases	Prevalence rate*		Crude OR (95% CI)	p value	Adjusted OR (95% CI)[†]	p value
Ankylosing spondylitis						
Controls	100.3	(268/267,230)	Reference		Reference	
Patients with psoriasis	253.0	(676/267,230)	2.526 (2.193-2.910)	<.001	2.418 (2.097-2.789)	<.001
Rheumatoid arthritis						
Controls	101.0	(270/267,230)	Reference		Reference	
Patients with psoriasis	203.6	(544/267,230)	2.017 (1.743-2.334)	<.001	1.947 (1.680-2.256)	<.001
Behçet disease						
Controls	64.4	(172/267,230)	Reference		Reference	
Patients with psoriasis	80.5	(215/267,230)	1.250 (1.023-1.528)	.029	1.212 (1.016-1.474)	.036
Systemic lupus erythematosus						
Controls	48.6	(130/267,230)	Reference		Reference	
Patients with psoriasis	73.7	(197/267,230)	1.516 (1.214-1.891)	<.001	1.448 (1.158-1.810)	<.001
Sjögren syndrome						
Controls	44.9	(120/267,230)	Reference		Reference	
Patients with psoriasis	51.6	(138/267,230)	1.150 (0.900-1.469)	.263	1.115 (0.871-1.428)	.387
Systemic sclerosis						
Controls	10.5	(28/267,230)	Reference		Reference	
Patients with psoriasis	25.8	(69/267,230)	2.465 (1.589-3.824)	<.001	2.410 (1.550-3.749)	<.001
Dermatomyositis/polymyositis						
Controls	9.4	(25/267,230)	Reference		Reference	
Patients with psoriasis	22.1	(59/267,230)	2.360 (1.478-3.768)	<.001	2.303 (1.439-3.686)	<.001

CI, Confidence interval; OR, odds ratio.
*Per 100,000 population.
[†]Adjusted for age, sex, and insurance type.

The use of antihistamines and topical potent steroids can further manage the cutaneous manifestations of psoriasis in a manner which was not effectively covered by the systemic strategy. Together this can act locally that is reducing itching and inflammation, perhaps enhancing the patient's quality of life quicker. The employment of liquid paraffin as an emollient also enhances skin barrier, an element that plays a significant role in handling of psoriasis.[19] Such a case clearly shows that the treatment of a patient should involve several specialists who possess different kinds of knowledge. However, such a treatment plan appears to have enhanced the status of the patient; it should be remembered that further evaluation and possible modification may still be necessary owing to its treatment connotations. As deucravacitinib is a relatively novel therapy, the identification of other related autoimmune disorders and comorbidities may require careful monitoring to determine the efficacy and safety of the treatment.[20] Therefore, this case underscores the difficulties and interventions needed in the treatment of patients with multimorbid autoimmune diseases. It increased awareness towards the requirement of personalized therapeutic management, the risks of drug interactions and side effects, and interprofessional collaboration.

Conclusion:

This case report highlights how Ps and SLE can occur simultaneously and the need to promptly diagnose and treat such conditions. Thus, it stresses proper management of patient care that requires addressing multiple autoimmune diseases and symptoms' interactions. SLE and psoriasis may occur simultaneously, and this calls for the appropriate use of drugs. The compound deucravacitinib has demonstrated effectiveness in both ailments based on the phase trial studies and opens up the possibility of effectively managing multiple autoimmune diseases.

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