



Original research Articles

Pyoderma Gangrenosum As Early Manifestation of Dermatomyositis

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Abstract:- An elderly female in her 60s with multiple comorbidities presented with chronic lower limb ulcers. After a skin biopsy, the patient was diagnosed with pyoderma gangrenosum, and immunosuppressive therapy was initiated; however, the lesions remained refractory. Ten years later, she developed seronegative rheumatoid arthritis and was started on methotrexate, corticosteroids, and later adalimumab, resulting in partial improvement. In 2025, the patient developed proximal muscle weakness along with multiple other systemic manifestations. Following extensive laboratory and imaging investigations, a diagnosis of dermatomyositis was finally established. This case represents an unusual presentation and a challenging diagnosis of Dermatomyositis.

Keywords : Dermatomyositis, pyoderma gangrenosum, seronegative rheumatoid arthritis, myositis-specific autoantibodies, myopathy.

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Introduction:

Dermatomyositis is an idiopathic inflammatory myopathy characterized by progressive symmetrical muscle weakness and characteristic cutaneous findings. The estimated incidence is 9.63 cases per million population, with a peak age of onset of approximately 50 years in adults. It is twice as common in women as in men, with no racial predilection[1]. Skin manifestations may precede or occur concurrently with the muscle disease, Pathognomonic cutaneous manifestations include heliotrope rash and Gottron papules. It may evolve into multisystem involvement. Systemic manifestations include arthritis, Raynaud phenomenon, interstitial lung disease, cardiac involvement in the form of myocarditis, AV block, and heart failure, gastrointestinal symptoms,

constitutional symptoms, and an increased risk of malignancy [2]. In this case, the patient presented with an unusual presentation, non-pathognomonic cutaneous manifestations, and complicated multisystem involvement. The case also reflects the diagnostic dilemma, the devastating complications resulting from misdiagnosis, and the importance of continuous reassessment and follow-up.

Case :

A 66-year-old woman with poorly controlled diabetes mellitus, vitiligo, hypertension, ischemic heart disease status post PCI, and osteopenia had a prolonged and complex clinical course. Her illness began in 2012 with chronic recurrent non-healing lower limb ulcers that were initially managed as diabetic foot ulcers with intensive wound care and frequent dressing changes. Due to persistent ulceration and poor healing, further dermatologic evaluation was pursued, and skin biopsy confirmed pyoderma gangrenosum (PG). Despite treatment with topical and systemic corticosteroids, tacrolimus, cyclosporine, methotrexate, .and adalimumab, her ulcers remained refractory with recurrent flares.

In 2022, she developed inflammatory arthritis involving the wrists and small joints of the hands. Rheumatologic workup revealed negative RF, anti-CCP, and ANA, and she was managed as seronegative inflammatoryarthritis with methotrexate and subsequently adalimumab.

In 2025, her condition significantly deteriorated. She became wheelchairbound and developed progressive proximal muscle weakness, dysphagia to solids and liquids, exertional dyspnea, Raynaud phenomenon, heliotrope rash, and Gottron papules. Examination demonstrated symmetrical proximal muscle weakness (3/5 proximally and 4/5 distally) in addition to persistent lower limb ulcers.

Investigations:

Laboratory investigations showed markedly elevated creatine kinase (CK 2389 U/L), elevated inflammatory markers (ESR 28 mm/hr, CRP 3 mg/dL), mildly elevated liver enzymes (ALT 94 U/L, AST 64 U/L), and poor glycemic control (HbA1c 8.7%). Autoimmune serology remained negative, including ANA, RF, anti-CCP, and anti-dsDNA.

Table 1 : Key laboratory findings

Test	Result
CK	2389 U/L
ESR	28mm/hr
CRP	3 mg/dL
ALT	94 U/L
AST	64 U/L
HbA1c	8.7%
ANA	Negative
RF	Negative
Anti-CCP	Negative
Anti-dsDNA	Negatives

Imaging Findings:

MRI of the pelvis and both thighs demonstrated diffuse, nearly symmetric muscle edema involving multiple pelvic and proximal thigh muscle groups, consistent with active inflammatory myositis.

HRCT chest revealed early dermatomyositis-associated interstitial lung disease (ILD).

Based on the characteristic cutaneous manifestations, progressive proximal muscle weakness, elevated muscle enzymes, and supportive imaging findings, a diagnosis of dermatomyositis was established in a patient with longstanding pyoderma gangrenosum and seronegative inflammatory arthritis.

Final Diagnosis: Dermatomyositis with associated ILD occurring in a patient with longstanding pyoderma gangrenosum and seronegative inflammatory arthritis.

Discussion:

First: The diagnostic dilemma in SNRA

A 10-year observational study conducted in Finland showed that the majority of patients who were initially labeled as SNRA were eventually reclassified into multiple different diagnoses, including polymyalgia rheumatica (15.6%), psoriatic arthritis (10.6%), osteoarthritis (10.3%), spondyloarthritis (8.7%), reactive arthritis (3.7%), crystal arthritis including gout (2.3%) and CPPD (3.9%), and vasculitis (0.5%). Only a minority, accounting for 3% of seronegative patients, developed definite rheumatoid arthritis, became seropositive, or developed typical RA erosions [3].

In contrast, a retrospective study conducted in the USA to assess long-term outcomes, changes in diagnosis, drug-free remission, and the need for biologic or targeted synthetic DMARD therapy showed that only 12.8% of patients had a change in diagnosis, while the majority of patients maintained their diagnosis over time [4].

Another observational study conducted in Sweden assessed the impact of RA on hand grip force during the early years after diagnosis. The study also showed that the majority (72%) of the study sample was confirmed as true SNRA, while 28% were later found to have other diagnoses, including polymyalgia rheumatica (6.5%), crystal arthritis such as gout or pseudogout (6.6%), malignancy-related arthritis (7.4%), seronegative spondyloarthritis (4.4%), and other systemic inflammatory diseases (3.1%) [5].

In our case, the patient initially presented with PG in 2012. Ten years later, she developed inflammatory arthritis and met the criteria for the diagnosis of SNRA in 2022. Her condition deteriorated further afterward until the final diagnosis of dermatomyositis was established by the end of 2025.

Based on the previous studies, despite the significant variation in the percentages of confirmed cases, and although our case presented earlier, we conclude that SNRA is usually not a single disease and should be considered a provisional diagnosis, emphasizing the importance of continuous diagnostic reassessment and careful follow-up.

Second: Pyoderma gangrenosum as a cutaneous sign of connective tissue disease

A systematic review conducted in 2024 studied the association between pyoderma gangrenosum and autoimmune connective tissue disorders. It showed that the vast majority of cases, accounting for 85.9%, were associated with RA, while the remaining cases were associated with multiple other autoimmune connective tissue diseases, including systemic lupus erythematosus (12%), overlap syndromes (2.6%) such as SLE + antiphospholipid syndrome and SLE + Sjögren's syndrome, systemic sclerosis (1.3%), antiphospholipid syndrome (0.4%), and Sjögren's syndrome (0.4%).

The study concluded that patients with new-onset PG, especially females with lower limb involvement, should be evaluated for underlying autoimmune connective tissue disease, particularly RA, which accounts for the largest proportion of patients [6].

As in our case, the patient initially presented with PG, then years later, after progressive deterioration of the patient's condition, therapy failure, and a long list of investigations, the diagnosis of dermatomyositis was established.

Another systematic review regarding inflammatory arthritis-associated PG showed that rheumatoid arthritis was the most common associated condition (50.4% of cases). In most patients (76%), arthritis preceded PG, suggesting that PG is usually a late complication rather than an early sign of inflammatory arthritis[7].

In contrast to our case, the patient presented with PG first and was diagnosed with dermatomyositis years later.

The study also highlighted the frequent misdiagnosis of PG as cellulitis or soft tissue infection. As mentioned in our case, the patient was initially labeled as having a diabetic foot, then later, after dermatology assessment and skin biopsy, the diagnosis of PG was established.

Another population-based cohort study conducted in Korea investigated the association between PG and all-cause as well as cause-specific mortality risks. The study concluded that patients with PG had significantly higher overall and cause-specific mortality compared with the general population. Importantly, mortality related to connective tissue and rheumatoid diseases was markedly increased in patients with PG, indicating a strong association between PG and systemic autoimmune disease [8].

These findings support the concept that PG can act as a clinical marker of underlying connective tissue disease. As in our case, the initial presentation was PG, which later progressed to multisystem involvement in the form of inflammatory arthritis, followed by inflammatory myositis and dermatomyositis-associated ILD. Based on the significant impact of PG on mortality, the study emphasized the importance of early recognition of systemic autoimmune disease in patients with PG and the need for regular follow-up.

Third: Coexistence of two myositis-specific autoantibodies

A retrospective study conducted in Taiwan investigated the possibility of coexistence of multiple myositis-specific antibodies in patients with idiopathic inflammatory myopathies. The study found that 84.8% of the study sample had one MSA, while 15.2% had two or more MSAs [9].

The second group was retested using ANA immunofluorescence and ELISA for confirmation. The true prevalence of patients with two or more MSAs was only 5.3%, demonstrating that the coexistence of multiple

MSAs is rare but should still be considered [9].

The study also showed that patients with two or more MSAs usually exhibit the clinical features of one dominant subtype, and there was no significant difference in disease severity between patients with one MSA and those with two MSAs. However, high false-positive rates in line blot assays should be kept in mind, emphasizing the need for confirmatory testing.

Conclusion:

The diagnosis of seronegative rheumatoid arthritis is challenging and carries a high risk of misdiagnosis, which requires regular reassessment and follow-up. Pyoderma gangrenosum can serve as a clinical marker of underlying connective tissue disease, as it has been found to be strongly associated with multiple connective tissue diseases. It is also associated with higher cause-specific mortality, highlighting the importance of early recognition and follow-up. The coexistence of multiple MSAs is rare, although these patients usually exhibit the clinical features of one dominant subtype, with no significant difference in disease severity.

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