

A unique case of dermatomyositis associated with anti-TIF1 γ antibody and chondrosarcoma



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INTRODUCTION

Dermatomyositis is a rare autoimmune disease characterized by skin inflammation and muscle weakness with an incidence between 0.5 and 1 cases per 100 000 individuals per year, the majority being women in the fifth or sixth decade of life.¹ Characteristic skin findings include violaceous and poikilodermatous patches, Gottron sign, Gottron papules, heliotrope sign, periorbital edema, and periungual telangiectasias. The diagnosis of dermatomyositis is associated with an increased risk of malignancy, particularly within 1 year of symptom onset.² The majority of these malignancies are aerorespiratory or gynecologic in origin.² Here, we describe a patient with paraneoplastic dermatomyositis associated with chondrosarcoma of the humerus.

CASE REPORT

A 38-year-old white woman presented to the dermatology department for evaluation of a rash on her eyelids, face, scalp, arms, and hands that had been present for several months. The rash had previously been diagnosed as rosacea and psoriasis. During this time, she had also noted intermittent low-grade fevers, general malaise, and diffuse joint and muscle aches. Her past medical history was significant for a pulmonary hamartoma and papillary thyroid carcinoma, both of which had been surgically resected without evidence of recurrence.

Abbreviations used:

TIF1 γ : transcription intermediary factor 1 γ
CT: computed tomography



Fig 1. Clinical features of dermatomyositis, including facial erythema, heliotrope sign, periorbital edema, and V sign of the chest.

The patient's dermatologic examination showed erythematous telangiectatic patches on her eyelids, face, arms, upper back, and chest (Fig 1). In addition, she had well-demarcated, thin, psoriasiform pink plaques on her elbows and erythema with scale over

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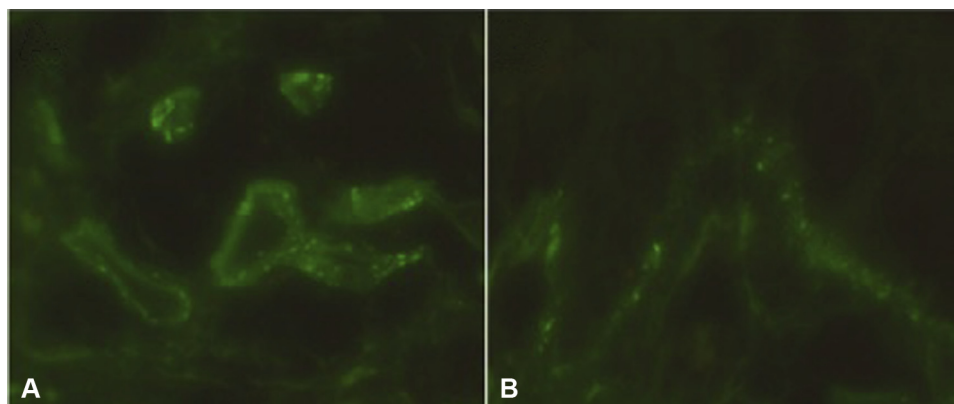


Fig 2. Direct immunofluorescence of lesional skin showing C5b-9 deposits in (A) vessel walls of the reticular dermis and (B) along the dermoepidermal junction, with a negative lupus band test result.

much of her scalp. She was evaluated by a rheumatologist within the same week and was found to have relatively normal muscle tone and strength and no evidence of synovitis. Laboratory studies showed slight elevations in creatine kinase and aldolase, with subsequent levels within the normal range, and an intermittently mildly elevated erythrocyte sedimentation rate. The myositis panel (Myositis Extended Panel; ARUP Laboratories, Salt Lake City, UT) results were positive for anti-TIF1 γ (transcription intermediary factor 1 γ) antibody. Additional testing including antinuclear antibody screening, anti-double-stranded DNA, anti-Ro, anti-La, anti-Smith, anti-ribonucleoprotein; complete metabolic panel and complete blood count were unremarkable. Electromyography study showed isolated myopathic changes of the tensor fascia latae muscle, without clear inflammatory features. Results of a skin biopsy of the upper portion of the right arm were consistent with poikiloderma or dermatomyositis. Direct immunofluorescence (Beutner Laboratories, Buffalo, NY) of lesional skin showed C5b-9 deposits in vessel walls of the reticular dermis (Fig 2, A) and along the dermoepidermal junction with a negative lupus band test result (Fig 2, B). In conjunction with the negative serologic test results, the direct immunofluorescence findings were 96.8% specific for dermatomyositis.³ In sum, these laboratory study results, in the context of the patient's clinical presentation, were consistent with a diagnosis of dermatomyositis.

The patient's unremitting joint pain and muscle aches, particularly of the right shoulder, prompted a 3-phase bone scan. This showed a focal area of radiotracer uptake in the proximal aspect of the right humerus. Subsequent magnetic resonance imaging to both evaluate for myositis and better characterize the bony lesion showed no muscle inflammation but

did, however, show an osteolytic lesion with features concerning for chondrosarcoma (Fig 3). A radical resection of the proximal aspect of the right humerus with prosthetic reconstruction was performed, and surgical pathology findings confirmed high-grade chondrosarcoma. Preoperative computed tomography (CT) scan results of the chest, abdomen, and pelvis were otherwise negative and have continued to be negative on follow-up. Additional negative malignancy workup has included lactate dehydrogenase, serum protein electrophoresis, complete blood count, mammography, and Pap test.

Initial treatment included hydroxychloroquine and triamcinolone ointment/cream. Hydroxychloroquine was discontinued after 1 month because of gastrointestinal adverse effects. The patient experienced worsening of her skin disease and began taking mycophenolate mofetil, titrated up to 2 g daily. After 6 months of topical steroids, mycophenolate 2 g daily, and intermittent methylprednisolone therapy, monthly intravenous immune globulin infusions of 2 g/kg were started because of inadequate disease control. The mycophenolate dosage was also increased to 3 g daily. This regimen has led to improved erythema and increased muscle endurance and energy.

DISCUSSION

Observational studies cite variable frequencies of malignancy (6%-60%) associated with dermatomyositis.^{2,4} Patients who are older than 45 years of age at the time of diagnosis are more likely to develop malignant disease.⁴ Lung, nasopharyngeal, and ovarian cancer are the most common paraneoplastic malignancies associated with dermatomyositis.^{2,4}

There are few case reports of dermatomyositis associated with chondrosarcoma.⁵⁻⁸ Interestingly, in

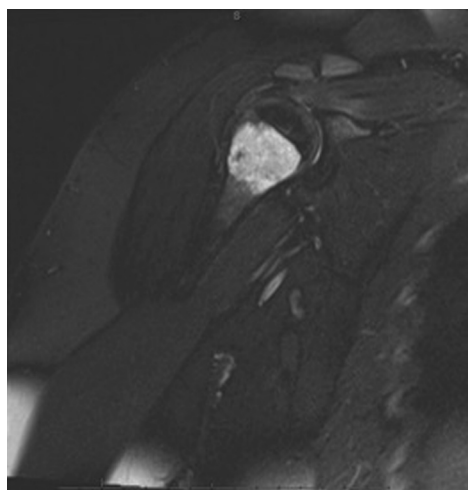


Fig 3. Magnetic resonance imaging with contrast showing a well-demarcated osteolytic lesion in the proximal aspect of the right humerus with features concerning for chondrosarcoma.

1 of the cases, the tumor was found incidentally upon evaluation of low-grade arthralgia of the knees accompanying a *Legionella pneumonia* infection.⁵ In our case, the chondrosarcoma of the humerus was also discovered somewhat incidentally while the patient's right shoulder pain was being investigated. Given that muscle weakness is the most common musculoskeletal complaint in dermatomyositis, these 2 reports highlight the importance of a thorough evaluation of joint pain in patients with dermatomyositis because this symptom may be a sign of paraneoplastic disease.

To our knowledge, we report the first case of chondrosarcoma-associated dermatomyositis in conjunction with a positive anti-TIF1 γ antibody test result. A complete evaluation of dermatomyositis should include testing for myositis-specific autoantibodies, including anti-TIF1 γ , because positive anti-TIF1 γ antibody status carries an estimated 18-fold higher risk of paraneoplastic disease.⁹ Meta-analysis has found a positive predictive value of 58% and negative predictive value of 95% for anti-TIF1 γ status and paraneoplastic disease.¹⁰ Selva-O'Callaghan

et al⁹ suggest that a patient with dermatomyositis who tests negative for anti-TIF1 γ should receive a single positron emission tomography/CT study to reaffirm the absence of malignancy. In contrast, patients with dermatomyositis and a positive anti-TIF1 γ antibody test result should receive yearly positron emission tomography/CT examinations for at least 3 to 5 years after their dermatomyositis diagnosis.⁹ Regardless of autoantibody status, until additional evidence becomes available, current practice dictates that all patients should have a comprehensive malignancy evaluation upon diagnosis of dermatomyositis.

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