Dermatomyositis and malignancy

Tina Hu MD MSc Ophir Vinik MD MScCH

Dermatomyositis is an idiopathic autoimmune connective tissue disease. It is typically characterized by proximal muscle weakness and skin rashes, but is known to have a spectrum of cutaneous and muscle involvement.[1] Dermatomyositis is associated with a 6-fold higher risk of malignancy compared with the general population, particularly in the first 2 years after diagnosis.[2,3] Worsening or recurrence of cutaneous manifestations might reflect underlying malignancy. Here we describe a case of amyopathic dermatomyositis in which a patient presented to a family medicine clinic with a subsequent concurrent diagnosis of breast cancer. This case highlights the importance of family physicians becoming familiar with diagnosing and managing this condition, screening for potential malignancy, and using a multidisciplinary approach to management of cancer-associated dermatomyositis.

Case

A 56-year-old woman with no relevant medical history who was taking no medications presented to a walk-in clinic with an erythematous and pruritic facial rash, initially diagnosed as contact dermatitis and treated with topical steroids. The photosensitive rash persisted and she developed erythematous papules over her metacarpophalangeal joints and erythema over her eyelids, upper back, lateral thighs, and periungual area. There was no history of muscle weakness, constitutional symptoms, dyspnea or respiratory symptoms, bowel symptoms, or dysphagia. Her vital signs and findings of cardiac and respiratory examinations were normal. There were no findings of active synovitis on joint examination. She had normal muscle strength in the upper and lower extremities, proximally and distally. Her neck flexor strength was greater than 4 out of 5 at presentation. Findings of a skin examination showed manifestations consistent with dermatomyositis, including the *V* sign (**Figure 1**), Gottron papules (**Figure 2**), heliotrope eruption, the holster sign, and periungual telangiectases (**Table 1**).

Before referral to a rheumatologist, the primary care physician investigated her complete blood count and differential; levels of creatinine, transaminases, creatine kinase (CK), and thyroid-stimulating

Editor's key points

- Dermatomyositis is an idiopathic autoimmune connective tissue disease characterized by proximal muscle weakness and skin rashes. It is associated with a 6-fold higher risk of malignancy compared with the general population, particularly in the first 2 years after diagnosis.
- The initial evaluation for dermatomyositis involves taking a detailed history and performing a physical examination. Magnetic resonance imaging of muscles is a noninvasive method to identify myositis and guide the choice of site for muscle biopsy, which is needed for confirmatory tissue diagnosis. Thorough screening for malignancy at the time of dermatomyositis diagnosis is important. Myositis-specific antibodies are useful in supporting diagnosis and provide additional information related to prognosis, extramuscular manifestations, and risk of malignancy.
- A multidisciplinary approach to diagnosis and treatment involving family physicians, rheumatologists, dermatologists, and medical oncologists is important in the management of cancer-associated dermatomyositis.

Points de repère du rédacteur

- La dermatomyosite est une maladie auto-immune et idiopathique des tissus conjonctifs qui se caractérise par une faiblesse des muscles proximaux et des éruptions cutanées. Elle est associée à un risque 6 fois plus élevé de malignité que celui dans la population générale, surtout durant les 2 premières années après le diagnostic.
- L'évaluation initiale de la dermatomyosite exige une anamnèse détaillée et un examen physique. L'imagerie par résonance magnétique des muscles est une méthode non invasive pour identifier la myosite et orienter le choix du site de la biopsie du muscle, qui est requise pour confirmer le diagnostic à partir des tissus. Il est important de procéder à un dépistage rigoureux de la malignité au moment du diagnostic de la dermatomyosite. La détection d'anticorps spécifiques à la myosite est utile pour corroborer le diagnostic et fournir des renseignements supplémentaires concernant le pronostic, les manifestations extramusculaires et le risque de cancer.
- Dans la prise en charge d'une dermatomyosite associée au cancer, il importe d'adopter une approche multidisciplinaire à l'égard du diagnostic et du traitement, à laquelle participent des médecins de famille, des rhumatologues, des dermatologues et des oncologues médicaux.

Figure 1. The *V* sign (photodistributed poikiloderma) on the patient's neck and upper chest

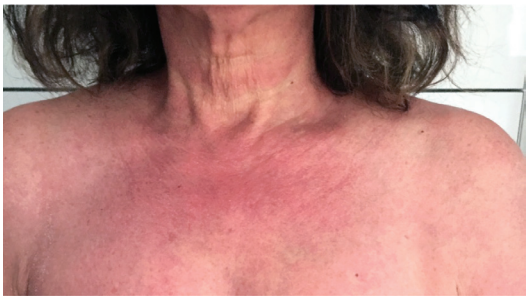
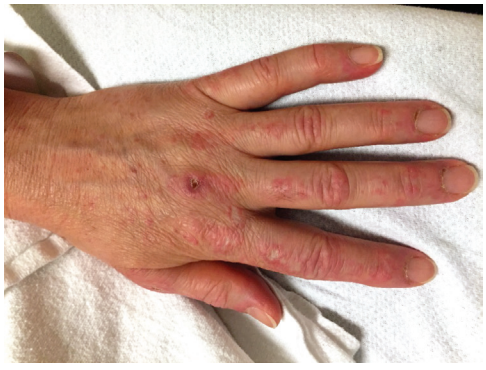


Figure 2. Gottron papules are seen spread over the patient's metacarpophalangeal joints



hormone; and erythrocyte sedimentation rate, all of which were normal. A urinalysis was also completed, and the results were negative for blood, protein, and myoglobin. Tests were done for antinuclear antibodies, double-stranded DNA, and rheumatoid factor, the results of all of which were negative, with normal complement levels. Given the suggestive cutaneous manifestations, a myositis antibody panel was sent by the rheumatologist for testing; results were positive for anti–transcriptional intermediary factor 1–γ (TIF1-γ). Findings of a skin punch biopsy of the left arm showed lichenoid dermatitis, common in dermatomyositis.[4] Electromyography findings did not show myopathic changes. Findings of magnetic resonance imaging of the lower extremity muscles did not reveal inflammatory muscle changes. The patient was therefore diagnosed with anti–TIF1-γ amyopathic dermatomyositis.

Owing to a well-established strong association between dermatomyositis—particularly the anti–TIF1-γ type—and malignancy,[2] the patient underwent a thorough malignancy screening. Findings of a fecal occult blood test, colonoscopy, a Papanicolaou test, and an abdominal-pelvic ultrasound scan were normal, as was her cancer antigen 125 level. Findings of her initial mammogram were normal; however, the patient palpated a unilateral breast mass a few months after the initial mammogram. Findings of a repeat mammogram and ultrasound-guided biopsy identified an invasive ductal carcinoma (triple-negative receptor status). She underwent lumpectomy and adjuvant chemotherapy with cyclophosphamide and docetaxel followed by a course of radiation therapy. Computed tomography findings of the chest, abdomen, and pelvis did not show any metastatic disease and results of a bone scan were negative.

Discussion

Dermatomyositis is an idiopathic autoimmune connective tissue disease, typically characterized by proximal muscle weakness and skin rashes (**Table 1**).[1] The degree of muscle and cutaneous manifestations varies, with some patients having no (amyopathic) or minimal (hypomyopathic) muscle involvement, but active cutaneous disease. Even with muscle involvement, up to 15% of dermatomyositis patients have normal CK levels.[5]

In a patient with suspected dermatomyositis, the initial evaluation involves taking a detailed history and performing a physical examination, including skin inspection and assessment of muscle strength. Patients should be asked about cardiorespiratory symptoms and dysphagia, both of which could indicate more severe disease.[6,7] A normal CK level does not exclude a dermatomyositis diagnosis, and the degree of CK elevation does not necessarily correlate to the degree of muscle weakness.[5] Levels of transaminases (aspartate aminotransferase and alanine aminotransferase) and lactate dehydrogenase can also be elevated, reflecting muscle involvement. Test results for antinuclear antibody are negative in 40% to 60% of patients.[6] Myositis-specific antibodies, found in up to 60% to 80% of dermatomyositis patients,[6] can help define a clinical-serologic profile and might point to associated extramuscular manifestations and prognosis. Magnetic resonance imaging of muscles is a noninvasive method to identify myositis and guide the choice of site for muscle biopsy, which is needed for confirmatory tissue diagnosis.[8] Proper processing of the fresh muscle samples is vital to optimize diagnostic usefulness.[9] Pathologic evaluation should include electron microscopy, as some important pathologic features, such as tubuloreticular inclusions, are not readily seen on light microscopy.[9] A skin biopsy can be helpful, but is not diagnostic. Dermatomyositis skin rashes can show nonspecific pathology similar to other connective tissue diseases such as lupus.[4]

Dermatomyositis is associated with a 6-fold increased risk of malignancy compared with the general population.[2,3] Anti–TIF1-γ and anti–nuclear matrix protein–2 have been shown to indicate a particularly high malignancy risk.[2,6] The risk of associated malignancy is

Table 1. Skin lesions of dermatomyositis

LESION	CHARACTERISTICS	PRESENT IN OUR PATIENT
Gottron papules	Violaceous erythematous symmetric papules over dorsal aspects of the interphalangeal or metacarpophalangeal joints	Yes
Gottron sign	Symmetric macular violaceous erythema over dorsal aspects of the interphalangeal joints, olecranon processes, patellas, and medial malleoli	Yes
Heliotrope eruption	Erythematous to violaceous eruption on upper eyelids (periorbital)	Yes
Photodistributed poikiloderma (shawl and *V* signs)	Poikiloderma (both hyperpigmentation and hypopigmentation, telangiectasias, and epidermal atrophy) with a violaceous hue present in photo-exposed skin. The shawl sign presents on the upper back and the *V* sign presents on the neck and upper chest. Often associated with severe pruritus	Yes
Holster sign	Poikiloderma on lateral aspects of thighs	Yes
Facial erythema	Midfacial erythema involving nasolabial folds	No
Scalp changes	Diffuse, with poikilodermic changes and substantial scaling and pruritus	No
Nail changes	Periungual telangiectasias	Yes
Calcinosis cutis	Deposition of calcium in the skin, commonly found in juvenile dermatomyositis	No

highest in the first 2 years after diagnosis, with excess risk of malignancy decreasing with time.[3] Various cancer types have been described in association with dermatomyositis, particularly breast, ovarian, lung, and hematologic cancers, as well as nasopharyngeal cancer in Asian populations.[2,3,7] Clinical risk factors for malignancy in dermatomyositis include older age at disease onset, male sex, severe skin manifestations, dysphagia, resistance to treatment, history of malignancy with risk of relapse, absence of interstitial lung disease, and presence of anti–TIF1-γ and anti–nuclear matrix protein–2.[6,10] Thorough screening for malignancy at the time of dermatomyositis diagnosis is important. However, there are currently no established screening guidelines.[1]

In most patients with classic dermatomyositis, prednisone at a dose of 1 to 1.5 mg/kg per day is the initial treatment.[1] Common steroid-sparing agents include methotrexate and azathioprine.[1] Intravenous immunoglobulin is typically added for patients with severe disease manifestations such as substantial muscle weakness, dysphagia, or respiratory muscle weakness.[1] Treatment of malignancy is frequently insufficient to control the myopathic and cutaneous manifestations of associated dermatomyositis.[1]

Conclusion

There is a well-established association between dermatomyositis and malignancy.[2] A multidisciplinary approach to diagnosis and treatment involving family physicians, rheumatologists, dermatologists, and medical oncologists is important in the management of cancer-associated dermatomyositis.

Dr Hu is a family medicine resident at St Michael's Hospital at the University of Toronto in Ontario. **Dr Vinik** is a staff rheumatologist at St Michael's Hospital and Assistant Professor of Medicine at the University of Toronto.

Competing interests
None declared

Correspondence
Dr Tina Hu; e-mail **tina.hu@mail.utoronto.ca**

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This article has been peer reviewed.
Cet article a fait l'objet d'une révision par des pairs.
Can Fam Physician 2019;65:409-11