



# Clinically Amyopathic Paraneoplastic Dermatomyositis, Secondary to Breast Cancer

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## Abstract

Dermatomyositis (DM) is an idiopathic inflammatory disease that affects the skin, striated muscles, and other organs. About 20% of the cases correspond to Clinically Amyopathic Dermatomyositis (CADM), a subgroup of DM. This consists of characteristic skin findings of DM, but without myopathic associate. In both situations, 20% to 30% are associated with malignancy, especially with ovarian, breast and lung cancer. This case report aims to emphasize the importance of being familiar with the clinical presentation of the disease and the significant association with malignancies, once early diagnosis reduces patient mortality.

**Keywords:** Dermatomyositis; Myositis; Idiopathic inflammatory myopathy; Malignance

## Introduction

Dermatomyositis (DM) is an inflammatory myopathy, clinically heterogeneous, affecting the skin along with striated muscles, usually in combination with a constellation of systemic manifestations [1]. It is hard to achieve reliable incidence and prevalence data due to the difficulty to establish diagnosis, especially since it can show a polymorphic presentation, sometimes even without typical cutaneous or muscular findings [1,2]. In USA, prevalence is estimated to be around 1 to 6 per 100,000 adult patients [3]. Women are 2 times more affected than man and, even though all ethnic groups are affected, it seems to be more common in African-Americans [4,5]. It presents in 2 peaks of incidence, one between adolescence, in Juvenile DM, and other around 40 and 60 years-old [4].

Patients with DM present up to 7x higher incidence of cancers when compared to general populations, especially when developed in older ages. Since this relation is solid and well established, clinicians should be alert when assisting DM patients [6,7].

We present an illustrative case report of a female adult patient referred to our outpatient dermatological clinic with photosensitivity and intense pruritus that we could confirm DM, in association with breast cancer.

## Case Presentation

Female patient, 41 years old, seamstress, resident of the interior of Santa Catarina, with a previous history of cutaneous melanoma, in follow-up at the Oncology Hospital, has been referred to the Dermatology Service due to intensely erythematous and itchy skin lesions with about 6 months of evolution. She reported significant worsening when exposed to the sun.

On examination, a Fitzpatrick II photo type patient, with multiple melanocytic nevi (dysplastic nevus syndrome), presented a bilateral eyelids edema and erythema (Figure 1), in addition to significant poikiloderma on the anterior chest and in the posterior cervical region (Figure 2, 3). In the cervical region, a lichenified plaque, clearly sparing sun-protected areas. On the back of the hands, erythematous and coalescent papules, with a smooth surface, over the joints (Figure 4). Periungual fold of the hands showed dilatation of the capilar loops on dermoscopy (Figure 5). Finally, livedo reticularis in the upper and lower limbs (Figure 6).

Due the clinical hypothesis of dermatomyositis, the patient actively denied questions about

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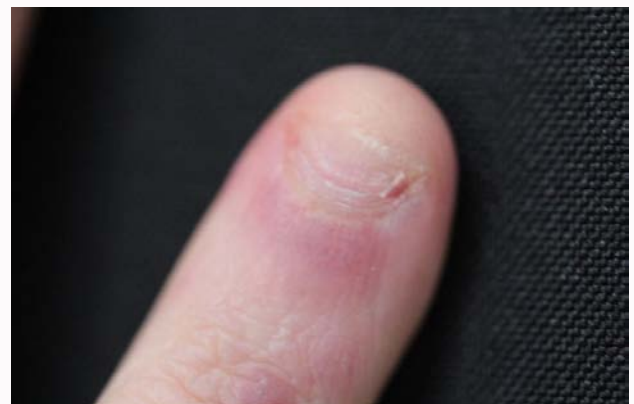
**Figure 1:** Bilateral eyelids edema and erythema (Heliotrope rash).



**Figure 4:** Erythematous and coalescent papules.



**Figure 2:** Poikiloderma on the anterior chest.



**Figure 5:** Periungual fold.



**Figure 3:** Poikiloderma in the posterior cervical region.



**Figure 6:** Livedo reticularis in the upper and lower limbs.

muscle pain or weakness, fever, weight loss and night sweats. She had a mammography with BIRADS 4 report, waiting for mastology evaluation.

Skin biopsy and laboratory tests were performed. Histopathological examination showed atrophy and rectification of the epidermal ridges, vacuolar interface changes with occasional apoptotic keratinocytes. In the dermis, neovessels, edema and perivascular lymphoplasmacytic inflammatory infiltrate with melanophages and Civatte bodies were observed. PAS staining showed thickening of the basement membrane and colloidal iron confirmed the increase of mucin deposition in the dermis. Findings consistent with the clinical

hypothesis of dermatomyositis (Figure 7).

Laboratory tests showed normal blood count, increase ESR level (30 mm), normal CRP level, normal LDH level (255), normal muscle enzymes levels (CK 64; AST 25; ALT 28; Aldolase 2,9), negatives ANA, antibodies anti-Mi-2 and anti-MDA5, but positive for Anti Tiff  $\gamma/\alpha$  (Anti-155/140).

Once established the diagnosis of amyopathic dermatomyositis, we started treatment with prednisone 0.5/mg/kg/day and hydroxychloroquine 5.0 mg/kg/day, in addition to strict photo protection and topical corticotherapy.

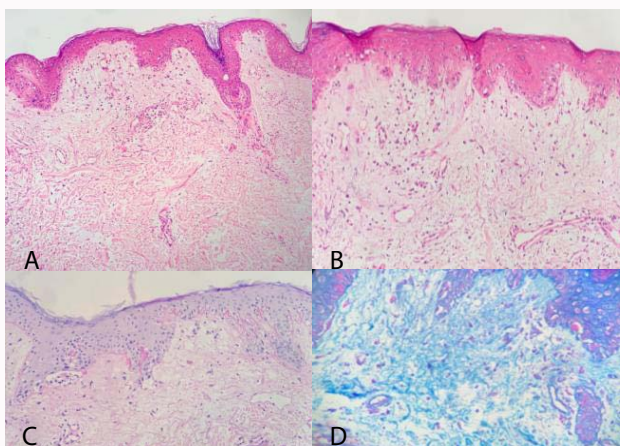


Figure 7: Histopathological findings.



Figure 8: Complete resolution of the lesions.

During mastology investigation, core biopsy diagnosed invasive ductal carcinoma.

Three months follow-up, the patient did not show any lesions or symptoms improvement despite the treatment and neoadjuvant chemotherapy initiation for breast cancer. After one year follow-up, the patient had completed neoadjuvant chemotherapy and submitted to surgical treatment and radiotherapy. At this point, without systemic treatment for dermatomyositis (only photo protective and topical corticoid), the patient presented complete resolution of symptoms and lesions, defining for sure the impression of paraneoplastic manifestation. The patient is followed up at the clinic, with no recurrence of the condition after 6 months (Figure 8, 9).

## Discussion

Classical DM (typical skin changes plus muscle symptoms) is the usual presentation associated with internal malignancies, presenting the most consistent data around this association. On the other hand, literature accepts that probably, like our patient, Clinical Amyopathic DM has the same increased cancer incidence in adult older patients as Classical DM. According to literature, it is safe to relate DM with internal malignancy within a period of 5 years or less [7,8].

Most widely accepted diagnostic criteria for DM, proposed by Bohan and Peter, fail to consider patients with minimal or no myositis [9,10]. Without myositis, patients must present 3 major cutaneous criteria or at least 2 major and 1 minor (Table 1); supported by



Figure 9: Complete resolution of the lesions.

a consistent cutaneous biopsy. Naturally, clinical and serological evidence of myositis should be absent for at least 6 months after cutaneous disease onset [8,11]. Some author also suggest to exclude patient in use of immunosuppressive drugs, once these patients could be considered early treated, masking or even preventing myositis.

Our patient had marked photosensitivity along with intense pruritus. We could verify the 3 major cutaneous criteria (heliotrope rash, Gottron's sign and papules), corroborated by a consistent cutaneous histopathology. She actively denied muscle weakness, pain or fatigue. Laboratory panel showed only altered acute inflammatory markers, but with negative muscle enzymes [11].

Serological auto antibodies are important for the diagnosis and useful for classifying clinical subsets of DM (Table 2) [12]. Our patient showed positive Anti Tiff  $\gamma/\alpha$  (Anti-155/140), but negative anti-Mi-2 and anti-MDA5. According to Muro et al., Anti Tiff  $\gamma/\alpha$  positivity corroborates to her clinical findings, since she presented intense photosensitivity and poikiloderma in photo exposed skin [12]. Other relevant aspect to be mention is the serological relation with malignancies. Positive Anti Tiff  $\gamma/\alpha$  (Anti-155/140) seem to be associated with paraneoplastic DM [13-15].

Due to the age of the onset (high probability in patients in the fourth or fifth decade of life) [16], we worked to diagnose or exclude associated malignancy. The most commonly internal malignancies associated with DM are ovarian and breast cancers, in women; and pulmonary cancers in men [17].

Patient had a history of invasive cutaneous melanoma, about 10 years-ago, so we examined her whole skin. Clinically patient presents dysplastic nevus syndrome. One pigmented lesion was clinically atypical, so we did it an excisional biopsy, but gladly histopathological exam showed only a Clark Nevus, with moderate atypia, but without sufficient criteria for malignancy. In parallel, she had a nodule on her breast, with a BIRADS-IV evaluation on her mammography. A core biopsy confirmed a ductal invasive carcinoma. Literature does not recommend a fixed screening for patients diagnosed with DM [6-8,17]. Screening should be done according to patients age as already established, outside DM scenario, for example oncotic cervical cytology and mammography for women, along with prostate specific antigen for men, from a particular age. Complementary exams can be performed to confirm or exclude a clinical suspicion identified during careful medical history and complete clinical examination.

Main treatment strategy seems to be focused on the neoplasia,

**Table 1:** Major cutaneous criteria.

<b>Major Cutaneous Criteria:</b>	
1. Heliotrope rash:	Macular violaceous erythema with or without associated scale of the eyelids or periorbital skin.
2. Gottron's papules:	Violaceous papules or small plaques overlying the dorsal and dorsal-lateral aspects of interphalangeal or metacarpophalangeal joints.
3. Gottron's sign:	Macular violaceous erythema with or without associated scale-hyperkeratosis, pigmentary change, or telangiectasia involving extensor aspects of the knuckles, elbows, knees, or medial malleoli.
<b>Minor Cutaneous Criteria:</b>	
1. Macular violaceous erythema	Involving:
	1. Scalp or anterior hairline
	2. Malar eminences of face, or forehead, or chin
	3. V-area of neck or upper chest (V-sign)
	4. Nape of the neck or posterior aspects of shoulders (Shawl sign)
	5. Extensor surfaces of the arms or forearms
	6. Linear streaking overlying extensor tendons on the dorsal aspects of the hands
	7. Peringueal areas
	8. Lateral surface of the thighs of hips (Holster sign)
	9. Medial malleoli
* Involvement of each above anatomic region qualifies as a single minor criterion	
2. Periungual nail fold telangiectasia or cuticular hemorrhage-infarct with or without dystrophic cuticles	
3. Poikoloderma	
4. Mechanic's hand lesions	
5. Cutaneous calcinosis	
6. Cutaneous ulcers	
7. Pruritus	

**Table 2:** Cutaneous findings.

<b>Cutaneous Findings:</b>	<b>Autoantibodies:</b>
Hair loss, Oral ulcers	Anti-MDA5
Photosensitivity	Anti-Mi-2, anti-TIF1
V-neck sign, shawl sign (scalp, face, neck, back erythroderma)	anti-TIF1
Inverse Gottron	Anti-MDA5 (erythematous, tender)
	anti-TIF1 (not erythematous, not tender)
Cuticular overgrowth	Anti-Mi-2, anti-TIF1 (juvenile DM)
Nailfold punctate hemorrhage	Anti-Mi-2
Mechanic's hands	Anti-ARS, anti-MDA5, anti-PM/Scl
Skin ulcers	Anti-MDA5 (digital pulp/periungual)
	Anti-TIF1 (juvenile DM)
Calcinosis	Anti-NXP2 (juvenile DM)

although it is reasonable to follow dermatomyositis treatment guidelines. Strict photo protection, along with topical corticosteroids and, depending on the severity of signs and symptoms, hydroxychloroquine, systemic steroids and immunosuppressant agents (generally, methotrexate and azathioprine) [2,10,11]. However, as shown in our case, the breast cancer treatment is what made the difference and was able to control patient's lesions e symptoms. Multi professional approach is essential in the care of these patients.

## Conclusion

We reported a well documented case of clinically amioopathic paraneoplastic dermatomyositis that lead to the diagnosis of a ductal invasive mammary carcinoma seeking to draw attention to this condition. Dermatomyositis in all of its spectrum's disease carries a

huge burden to the patient and clinicians should be able to correctly diagnosis and being alert to the possibility of subjacent neoplasia. Patient was able to receive best care for her breast cancer and remains in follow up in both clinics.

## References

1. DeWane ME, Waldman R, Lu J. Dermatomyositis: Clinical features and pathogenesis. *J Am Acad Dermatol.* 2020;82(2):267-81.
2. Waldman R, DeWane BA, Lu J. Dermatomyositis: Diagnosis and treatment. *J Am Acad Dermatol.* 2020;82(2):283-96.
3. Furst DE, Amato AA, Iorga SR, Gajria K, Fernandes AW. Epidemiology of adult idiopathic inflammatory myopathies in a U.S. managed care plan. *Muscle Nerve.* 2012;45(5):676-83.
4. Findlay AR, Goyal NA, Mozaffar T. An overview of polymyositis and

- dermatomyositis. *Muscle Nerve*. 2015;51(5):638-56.
5. Aussy A, Boyer O, Cordel N. Dermatomyositis and immune-mediated necrotizing myopathies: A window on autoimmunity and cancer. *Front Immunol*. 2017;8:992.
  6. Hill CL, Zhang Y, Sigurgeirsson B, Pukkala E, Mellekjær L, Airio A, et al. Frequency of specific cancer types in dermatomyositis and polymyositis: A population based study. *Lancet*. 2001;357(9250):96-100.
  7. Bowerman K, Pearson DR, Okawa RN, Werth P. Malignancy in dermatomyositis: A retrospective study of 201 patients seen at the University of Pennsylvania. *J Am Acad Dermatol*. 2020;83(1):117-22.
  8. Galimberti F, Li Y, Fernandez AP. Clinically amyopathic dermatomyositis: clinical features, response to medications and malignancy associated risk factors in a specific tertiary-carecentre cohort. *Br J Dermatol*. 2016;174(1):158-64.
  9. Bohan A, Peter JB. Polymyositis and dermatomyositis (first of two parts). *N Engl J Med*. 1975;292(7):344-7.
  10. Bohan A, Peter JB. Polymyositis and dermatomyositis (second of two parts). *N Engl J Med*. 1975;292(8):403-7.
  11. Bailey EE, Fiorentino DF. Amyopathic dermatomyositis: Definitions, diagnosis and management. *Curr Rheumatol Rep*. 2014;16(12):465.
  12. Muro Y, Sugiura K, Akiyama M. Cutaneous manifestations in dermatomyositis: Key clinical and serological features. *Clin Rev Allergy Immunol*. 2016;51(3):293-302.
  13. Trallero-Aragu E, Rodrigo-Pend J, Selva-O'Callaghan A, Xavier Martínez-Gómez X, Bosch X, Labrador-Horrillo M, et al. Usefulness of anti-p155 autoantibody for diagnosing cancer-associated dermatomyositis: A systematic review and meta-analysis. *Arthritis Rheum*. 2012;64(2):523-32.
  14. Fujimoto M, Hamaguchi Y, Kaji K, Matsushita T, Ichimura Y, Kodera M, et al. Myositis-specific anti-155/140 autoantibodies target transcription intermediary factor 1 family proteins. *Arthritis Rheum*. 2012;64(2):513-22.
  15. Maier L, Betteridge Z, Udvardi A, Schmid-Simbeck M, Seeber A, Volc-Platzer B. Paraneoplastic Dermatomyositis: Relevance of myositis-specific autoantibodies in a small cohort. *J Eur Acad Dermatol Venereol*. 2020;34(2):e50-1.
  16. Ortigosa LCM, Reis VMS. Dermatomyositis. *An Bras Dermatol*. 2008;83(3):247-59.
  17. Di Rollo D, Abeni D, Tracanna M, Capo A, Amerio P. Cancer risk in Dermatomyositis: A systematic review of the literature. *G Ital Dermatol Venereol*. 2014;149(5):525-37.