

Anti-TIF1 γ Antibody-Positive Dermatomyositis: A Case Report and Literature Review Emphasizing on Malignancy Screening Interval

Sonphet Chirasuthat MD*, Pintip Ngamjanyaporn MD**,
Kumutnart Chanprapaph MD*.

*Division of Dermatology, Department of Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

**Division of Allergy Immunology and Rheumatology, Department of Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

ABSTRACT:

Anti-transcription intermediary factor 1 gamma (TIF1- γ) antibody-positive dermatomyositis (DM) is highly associated with malignancy; thus, cancer screening is essential. Malignancies associated with DM frequently manifest around the time of development of the skin rash, and the risk of malignancy were believed to be high up to three years after the diagnosis of DM. Herein, we report a 54-year-old Thai man who presented with erythematous plaques on the head, neck, and extremities, accompanied with dysphagia for 6 months, and was subsequently diagnosed with amyopathic DM based on positive antinuclear antibody, normal muscle enzymes, and clinicopathologic findings. Routine malignancy screening was performed at the disease onset and revealed negative results. However, after approximately five years, he presented with otologic symptoms. Computed tomography scan of nasopharynx showed an infiltrative lesion at left-sided nasopharynx, and the nasopharyngeal mucosa biopsy revealed non-keratinizing nasopharyngeal carcinoma. Since anti-TIF1 γ antibodies are linked to an increased risk of cancer, it is crucial for physicians to develop cancer screening plans tailored to the specific population. Extending cancer screening beyond the recommended three-year period using a risk-stratified, cost-effective, and age-appropriate approach may be beneficial for the detection of cancer in DM patients while minimizing unnecessary and invasive investigations.

Key words: dermatomyositis, malignancy, anti-transcription intermediary factor 1 gamma, nasopharyngeal carcinoma

Introduction

Dermatomyositis (DM) is a systemic autoimmune disease characterized by chronic inflammation in multiple organs, most commonly the skin and muscles. It is diagnosed based on the classification criteria of Bohan and Peter¹. For more than a century, DM has been linked to the underlying malignancy; the first association was reported by Stertz in 1916^{2,3}. Older age, male sex, and the presence of dysphagia have been indicated as risk factors for developing cancers^{4,5}. Recently, strong associations have also been reported between internal malignancies and anti-transcription intermediary factor 1 γ (TIF1 γ) autoantibodies. The prevalence of malignancy in patients with

DM is estimated to be 15–30%^{1,6}. As a result, cancer screening and prompt therapeutic intervention are critical for DM patients. An appropriate interval and duration of cancer surveillance in patients with DM is unclear, but previous studies and recent expert recommendations suggest that continued surveillance be maintained for at least 36 months from the onset of DM⁵. We herein report a case of nasopharyngeal carcinoma (NPC) diagnosed five years after the onset of anti-TIF1 γ antibody-positive amyopathic DM. We suggest that cancer surveillance may need to be extended longer in anti-TIF1 γ -positive patients with high risk and persistently active disease.

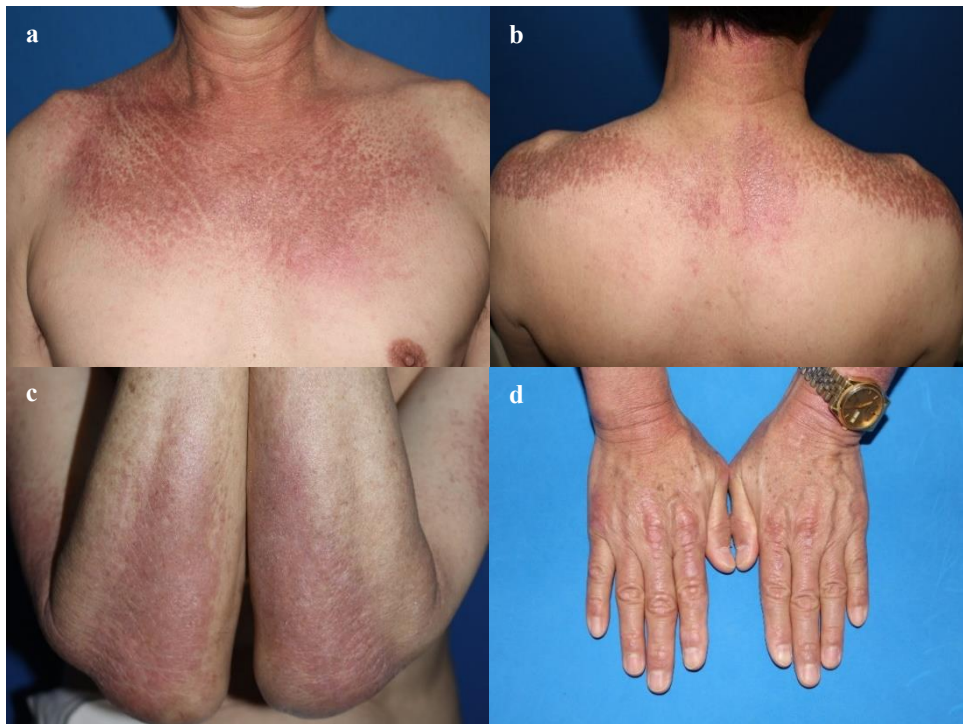


Figure 1 a V-neck sign and b Shawl sign with “Red on white” feature, c Gottron’s sign, d Hyperkeratotic Gottron’s papules

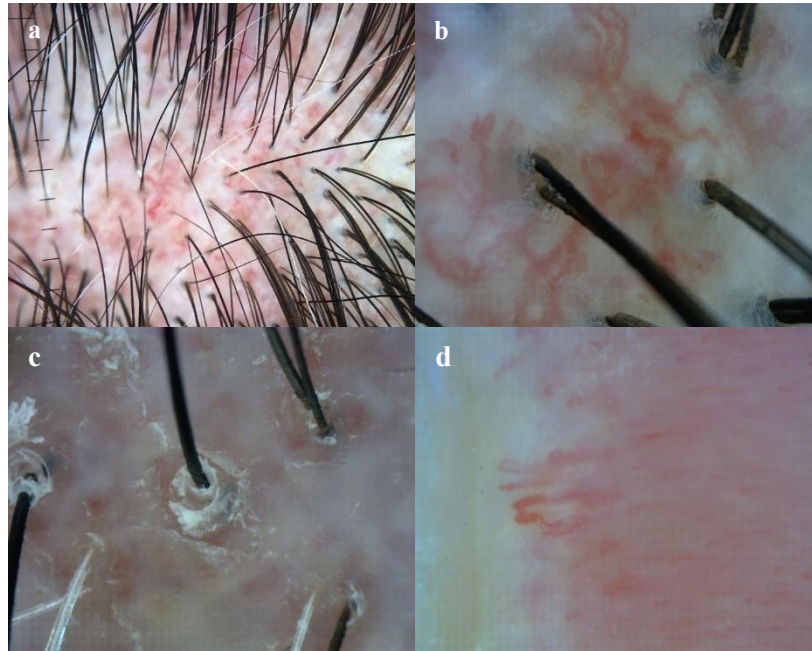


Figure 2 Trichoscopic features: **a** perifollicular red-brown hyperpigmentation **b** interfollicular location of aberrant vessel **c** perifollicular scale; onychoscopic features: **d** tortuous and giant capillaries with avascular area

Case Presentation

A 54-year-old Thai man presented with pruritic erythematous rash on the head, neck, upper extremities, and thighs, together with dysphagia for 6 months. He was an ex-smoker with a 10-pack-year history of smoking. Physical examination revealed blanchable erythematous plaques predominantly located on the extensor surfaces, including the elbows, knees, and dorsum of the hands over the knuckles, as well as the proximal and distal interphalangeal joints (Gottron papules), which were distinctly hyperkeratotic. Ragged cuticles and periungual telangiectasia on both hands were noticed. There were hypopigmented and telangiectatic patches (“red on white”) that extended from the scalp and face to the upper back and chest. V-neck sign, Shawl sign, and Holster sign were also observed (Figure 1a–d). Muscle weakness was absent. Trichoscopic examination of the scalp revealed perifollicular red-brown hyperpigmentation and scales,

together with numerous interfollicular aberrant vessels (Figure 2a–c). The onychoscopic examination of the nailfolds demonstrated tortuous and giant capillaries admixed with avascular areas (Figure 2d). The patient was tested positive for anti-nuclear antibody at a titer of 1:320 and 1:80 with fine and coarse speckle patterns, respectively. The anti-TIF1 γ antibody was positive (2+) by immunoblot assay. His serum creatine phosphokinase and aldolase levels were negative. A skin punch biopsy obtained from the dorsum of hand revealed focal interface dermatitis with sparse superficial perivascular infiltration of predominantly lymphocytes and a few melanophages. Direct immunofluorescence illustrated non-specific findings. Quadriceps muscle biopsy showed mild atrophic and regenerating fibers without hypertrophic, necrotic, or degenerated fibers. Electromyography demonstrated a non-specific polyphasic motor unit action potential of the

right deltoid muscle. Based on the history, clinicopathological, and serological findings, the patient was diagnosed with amyopathic DM. Cancer screening, including nasopharyngeal examination, genitourinary inspection, computed tomography (CT) scan of the chest and whole abdomen, as well as positron emission tomography (PET) scan, were performed and did not reveal any evidence of malignancy. A pulmonary function test revealed no evidence of interstitial lung disease. He was initially treated with topical tacrolimus, oral prednisolone, and hydroxychloroquine. Due to the disease worsening following outdoor activities, proper photoprotective measures were advised, while methotrexate and mycophenolate mofetil were added over time. The patient underwent consistent biannual follow-up, revealing no abnormal findings; however, after five years and two months from the onset of DM, the patient presented to the otolaryngology department complaining of tinnitus and hear impairment on the left ear. He also developed a new onset of blood-tinged

sputum. Magnetic resonance imaging of the neck shows an infiltrative, enhancing T1-isointense and T2-hyperintense lesion involving the left-sided nasopharynx, including left Rosenmuller fossa, left torus tubarius, and left eustachian tube opening. The lesion also extended to the left choana (Figure 3a, b). Nasopharyngeal mucosa biopsy revealed an atypical Epstein-Barr virus-encoded small RNA-positive cell that was compatible with non-keratinizing NPC. Due to the lack of nodal or distant metastasis, it was graded as stage III (T3N0M0) NPC, according to the American Joint Committee on Cancer system. After completing six cycles of concurrent chemoradiotherapy (CCRT) combined with intravenous cisplatin (40 mg/cycle), a three-month follow-up nasopharyngeal MRI showed a decrease in size of the mass; requiring further close monitoring. The rash substantially improved after completing CCRT (Figure 4a–d) and gradual tapering of immunosuppressive drugs was successfully achieved over time.

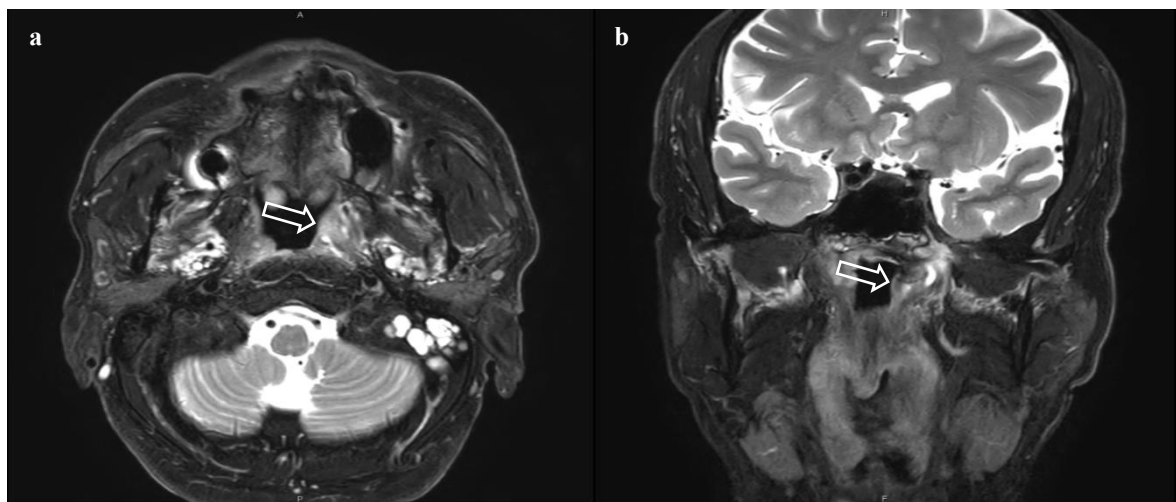


Figure 3 **a** Axial and **b** coronal views of MRI of the neck (T2 phase): an infiltrative lesion involving the left-sided nasopharynx, including Rosenmuller fossa, torus tubarius, and eustachian tube opening



Figure 4 Five months after completing six cycles of CCRT combined with intravenous cisplatin, the lesions resolved with post inflammatory hyperpigmentation on **a** neck, **b** shoulders, **c** elbows, and **d** dorsum of hands

Discussion

Dermatomyositis (DM) is a relatively rare disease that can be found worldwide. The incidence of DM ranges from 2 to 9 per million among various populations⁷. Women are twice as likely as men to be affected by the disease without racial predilection. The clinical expression of DM is heterogeneous and exhibits distinctive cutaneous, scalp, and microvascular abnormalities that may have diagnostic and prognostic relevance. Trichoscopic findings (e.g., perifollicular red-brown pigmentation, peri/interfollicular scale, and perifollicular aberrant vessels) and nailfold capillaroscopic findings (e.g., enlarged capillaries, disorganized capillaries, and avascular areas) have been described and were also observed in our case^{8,9}. Anti-TIF1 γ antibody-positive DM is further

associated with extensive characteristic skin lesions such as palmar papules, photosensitive erythema, heliotrope rash, V-neck rash, nailfold telangiectasia, and the holster sign. Some proposed anti-TIF1 γ antibody-positive DM-specific findings include hyperkeratotic Gottron papules and hypopigmented telangiectatic patches (“red on white”). Systemic symptoms, including Raynaud phenomenon, arthritis/arthralgia, and interstitial lung disease, are significantly less frequent in anti-TIF1 γ antibody-positive DM than in antibody-negative DM⁴. Our case highlighted the association between anti-TIF1 γ positivity and these clinical findings.

An increased risk of cancer in DM has been well described for over a century. In our case, amyopathic DM was diagnosed due to the lack

of muscle involvement for at least 2 years after the development of cutaneous manifestations. Like classic DM, amyopathic DM also shows an association with malignancy. Some consider the risk to be similar, while others believe it is reduced⁷. Reports on associated malignancies include lung, breast, ovary, pancreas, stomach, colon, prostate, and nasopharynx. NPC is one of the most common malignancies associated with DM, particularly in Asians^{5,7,10}. Previous studies conducted in the Asian population have consistently reported a prevalence of NPC ranging from 17.6% to 89.0% among cases of cancer-associated dermatomyositis (CDM)⁵. These findings emphasize that laryngoscopy assessment should be included in malignancy screening among DM patients, especially in the endemic populations such as China and Southeast Asia.

Myositis-specific autoantibodies (MSA), including anti-TIF1 γ , anti-aminoacyl-tRNA synthetases (ARSs), anti-clinically amyopathic DM-140 (CADM-140) / melanoma differentiation-associated gene 5 (MDA5), anti-Mi-2, and anti-nuclear matrix protein 2 (NXP2) antibodies, have been implicated in classifying DM subtypes with distinct clinical manifestations and prognosis. Among MSA, the risk of malignancy varies substantially, with anti-TIF1 γ and anti-NXP2 most consistently associated with cancer, whereas anti-Mi-2 is generally linked to a lower malignancy risk and a more favorable prognosis. In contrast, anti-ARSs and anti-MDA5 antibodies are more commonly associated with interstitial lung disease rather than malignancy, underscoring the importance of antibody-specific risk stratification¹¹. Consistent with this risk profile, the anti-TIF1 γ antibody has been strongly related to CDM. TIF1 γ , a member of the tripartite motif-containing family, regulates transcription, cell growth, and apoptosis^{2,4}. TIF1 γ inhibits transforming growth factor- β signaling by ubiquitinating SMAD4. The increased expression of these proteins in several

tumoral tissues may be related to a misguided immunologic anti-tumoral response. This relationship would explain an etiopathogenetic connection between neoplasms and adult DM associated with anti-TIF1 γ antibodies^{2,4}. DM patients with a positive anti-TIF1 γ antibody have an 8–27-fold higher risk of cancer than those without anti-TIF1 γ antibody^{4,12}. Anti-TIF1 γ antibodies have also been found in juvenile DM but are rarely complicated by malignancies.

We conducted a literature search in PubMed for studies on CDM with anti-TIF1 γ positivity using the keywords 'dermatomyositis,' 'anti-transcription intermediary factor 1 gamma,' and 'malignancy,' limited to English-language articles published between 2010 and 2024 (Table 1). Case reports of ten males and twelve females, with a mean age of 58.1 years, were included. The majority of anti-TIF1 γ -positive patients with cancer were diagnosed concurrently with DM (16 of 22); three patients were diagnosed with cancer before the onset of DM. The longest duration of cancer preceding the onset of DM was observed to be thirty months. Among the three patients who were diagnosed with cancer after the onset of DM, the most delayed onset of cancer occurred 22 months thereafter. According to Teo et al.¹³, 90% of NPC cases occurred following DM onset, and DM manifestations preceded the diagnosis of NPC by approximately eight months. Ogawa-Momohara et al.³ reported that malignancies were discovered after DM diagnosis in 78.3% of anti-TIF1 γ -positive patients and 66.7% of anti-TIF1 γ -negative patients. The mean interval from DM to cancer diagnosis was 2.2 months in anti-TIF1 γ -positive patients and 20 months in the negative ones. Momohara et al.³ also reported that 87% of anti-TIF1 γ -positive DM patients with cancer received their cancer diagnosis within six months of DM onset, while Lau et al.⁵ demonstrated a similar incidence (90%) within a year of DM onset. The highest cancer risk

occurred within the first year of DM and decline over time. However, in our case, coexisting malignancy occurred much further from the onset of DM. Within this context, the International Myositis Assessment and Clinical Studies Group (IMACS) guideline provides a structured, risk-stratified framework for malignancy surveillance in idiopathic inflammatory myopathies¹⁴. Our patient fulfilled multiple IMACS high-risk criteria, placing him in the highest cancer-risk category. Although IMACS recommendations emphasize surveillance during the first three years after disease onset, the current recommendations are largely based on expert consensus and acknowledge uncertainty regarding the optimal timing and frequency of screening. To the best of our knowledge, there was one prior case report where malignancy developed five years after the diagnosis of amyopathic DM. Together with this report, we suggest that physicians be aware of the possibility of malignancies occurring after the diagnosis of DM for more than three years, especially in high-risk patients.

However, to minimize unnecessary investigations, a risk-stratified, cost-effective, and age-appropriate screening protocol is recommended. Furthermore, an attempt to correlate cancer progression with anti-TIF1 γ showed that the anti-TIF1 γ -positive group with cancer had a significantly greater frequency of metastatic disease than those with negative anti-TIF1 γ antibodies (91% versus 50%, $p < 0.0046$)¹⁵. Nevertheless, our review showed a similar number of metastatic versus non-metastatic diseases among anti-TIF1 γ -positive patients (7 versus 9). Future studies are needed to confirm this association.

Conclusion

Prompt screening for cancers endemic to the patient population is important for DM patients in both the classic and amyopathic subtypes. Extending a period of malignancy surveillance after the onset of DM beyond the recommended three-year period in anti-TIF1 γ -positive DM patients may confer additional clinical benefit.

Table 1 Review of reports on anti-TIF1 γ antibody-positive DM and malignancy

Study	Age (years)/ Sex	Race/ ethnicity	Antibodies	Skin Histopathology	DM subtype	Malignancy type/ staging	Onset of malignancy and DM	DM treatment(s)	Follow-up
Our case	54/M	Asian	ANA: 1:320 (fine speckle)/ 1:80 (coarse speckle) Anti-TIF1 α : negative Anti-TIF1 γ : positive 2+	Focal interface dermatitis with sparse superficial perivascular infiltration of lymphocytes and a few melanophages	Amyopathic DM	NPC (non-keratinizing undifferentiated subtype)/ stage III (T3N0M0)	5 years after DM diagnosis	Topical tacrolimus, oral prednisolone 5 mg/day, hydroxychloroquine 200 mg/day, methotrexate 7.5 mg/week, mycophenolate mofetil 1500 mg/day	Improved
Ito et al. 2013 ¹⁶	59/M	Asian	ANA: 1:80 (homogeneous and speckled pattern) Anti-TIF1 γ/α : positive	Mild dermal periadnexal lymphocytic infiltration and mucinosis	Amyopathic DM	Scirrhous gastric adenocarcinoma/ stage IB (T1bN1M0)	Concurrent	Oral prednisolone 60 mg/day	Improved
Kabuto et al. 2014 ¹⁷	65/M	Asian	ANA: 1:40 Anti-Jo1, Anti-ssDNA, Anti-dsDNA, Anti-Sm, Anti-Ro (SS-A), Anti-La (SS-B), and Anti-RNP: negative Anti-TIF1 γ : positive	Vacuolar degeneration of the basement membrane zone and perivascular lymphocyte infiltration	Classic DM	Oropharyngeal carcinoma/ stage IV	12 months after DM diagnosis	Oral prednisolone 80 mg/day and IVIG	Died in a few months due to distant metastasis
Kubeček et al. 2016 ¹⁸	43/F	Caucasian	Anti-TIF1 γ : positive	NA	Classic DM	Breast adenocarcinoma/ stage IIIC (T1N3M0)	Concurrent	IV methylprednisolone 5 $\times$ 1000 mg alternate days and oral methylprednisolone 32 mg/day	Improved
Ogawa et al. 2016 ¹⁹	63/F	Asian	ANA: 1:40 (speckled pattern) Anti-MDA5 and Anti-ARS: negative Anti-TIF1 γ : positive	NA	Clinically amyopathic DM	Breast cancer/ early stage	2.5 year before DM diagnosis	Topical tacrolimus	Improved
Palterer et al. 2017 ²	78/F	Caucasian	ANA: high-titer (speckled pattern) Anti-OJ, Anti-EJ, Anti-PL12, Anti-PL7, Anti-SRP, Anti-Mi2a, Anti-Mi2b, Anti-MDA5, Anti-NXP2, and Anti-SAE1: negative Anti-TIF1 γ : positive	NA	Classic DM	Myelodysplastic syndrome	Concurrent	IV 6-methylprednisolone 1 g/day for 3 days, IVIG 30 g/day for 4 days, and methotrexate 15 mg/weekly	Improved (patient died 1 year later due to aspiration pneumonia)
Aritomi et al. 2018 ²⁰	63/F	Asian	ANA: 1:640 (speckled and cytoplasmic patterns) Anti-ARS and Anti-Mi-2: negative Anti-Ro60 and Anti-Ro52: positive Anti-TIF1 γ/α : positive	NA	Classic DM	SCLC/ limited stage	5 weeks before DM diagnosis	Oral prednisone 1 mg/kg/day	Died in 5 months after the diagnosis of SCLC

Study	Age (years)/ Sex	Race/ ethnicity	Antibodies	Skin Histopathology	DM subtype	Malignancy type/ staging	Onset of malignancy and DM	DM treatment(s)	Follow-up
Karino et al. 2018 ¹	72/M	Asian	ANA: 1:1280 (speckled and nucleolar pattern) Anti-ARS, Anti-Mi-2, and Anti-MDA5: negative Anti-TIF1γ: positive (107 index)	Mononuclear cell infiltrations around vessels at the dermal-epidermal junction	Classic DM	Squamous cell carcinoma of the thymus	Concurrent	Oral prednisolone 1 mg/kg/day	No disease relapse
Teraishi et al. 2018 ²¹	42/F	Asian	ANA and Anti-Jo1: negative Anti-TIF1γ: positive	Vacuolar change in basal keratinocytes and infiltration of lymphocytes around vessels in the upper dermis	Classic DM	-Breast cancer (medullary carcinoma)/ stage I (T1, N0, M0) -Ovarian cancer (serous cystadenocarcinoma)/ stage IIC (T2c, N0, M0)	Concurrent	Oral prednisolone 30-40 mg/day	Improved
Merry et al. 2020 ²²	43/F	Caucasian	ENA, dsDNA, and Anti-CCP: negative ANA: 1:160 Anti-Jo1 and Anti-Mi2: negative Anti-TIF1γ: positive	NA	Classic DM	Leiomyosarcoma/ stage IV	Concurrent	Emollient cream, topical hydrocortisone 1%, topical clobetasol 0.05%, oral prednisolone 40 mg/day	NA
Nakanishi et al. 2020 ¹²	80/F	Asian	ANA: 1:160 (speckled pattern), Anti-ARS, Anti-MDA5, Anti-Mi-2, and Anti-RNP: negative Anti-TIF1γ: positive (125 index)	NA	NA	Lymphoepithelioma-like carcinoma/ stage III	Concurrent	IV methylprednisolone, 1,000 mg for 3 days and oral prednisolone 1 mg/kg/day	Cancer recurrence at 6 months
Sumazaki et al. 2020 ²³	70/M	Asian	ANA: 1:40 (speckled pattern) Anti-Jo1: negative, Anti-TIF1γ: positive (130 index)	Interface dermatitis with basal vacuolar degeneration at the dermal-epidermal junction and mucin deposition	Classic DM	Esophageal cancer of the lower esophagus/ stage IIIB (pT3N2M0)	Concurrent	Methylprednisolone 80 mg, oral prednisolone 60 mg/day, and methotrexate 6 mg/week	Died in 3 years due to cancer recurrence
Arnon et al. 2021 ²⁴	68/M	Asian	Anti-TIF1γ: positive (64 U)	Hyperkeratosis and vacuolar degeneration	Classic DM	SCLC	Concurrent	Methylprednisolone 1 mg/kg twice a day for 2 days and oral prednisone 1mg/kg once a day for 10 days	Remission
Asano et al. 2021 ²⁵	15/M	Asian	ANA: increased 160-fold (nucleolar pattern) Anti-ARS, Anti-MDA5, and Anti-Mi-2: negative Anti-TIF1γ: positive (109 index)	NA	Juvenile DM	Epstein-Barr virus-related NPC	7 months before DM diagnosis	IV methylprednisolone, oral prednisolone 0.6 mg/kg, methotrexate weekly, and IVIG	Improved
Lau et al. 2021 ⁵	49/F	Asian	Anti-TIF1γ: positive 1+	NA	NA	NPC (non-keratinizing undifferentiated subtype)/ stage II (T1N1M0)	Concurrent	NA	No disease relapse
	67/F	Asian	Anti-TIF1γ: positive 2+	NA	NA	NPC (non-keratinizing undifferentiated subtype)/ stage IVB (T4N1M1)	22 months after DM diagnosis	NA	Died in 11 months due to distant metastasis
	64/M	Asian	Anti-TIF1γ: positive 1+	NA	NA	NPC (non-keratinizing undifferentiated subtype)/ stage II (T2N0M0)	Concurrent	NA	No disease relapse

Study	Age (years)/ Sex	Race/ ethnicity	Antibodies	Skin Histopathology	DM subtype	Malignancy type/ staging	Onset of malignancy and DM	DM treatment(s)	Follow-up
	42/M	Asian	Anti-TIF1γ: positive 1+	NA	NA	NPC (non-keratinizing undifferentiated subtype)/ stage IVA (T0N3M0)	Concurrent	NA	Died in 13 months due to distant metastasis
	48/F	Asian	Anti-TIF1γ: positive 2+	NA	NA	NPC (non-keratinizing undifferentiated subtype)/ stage III (T3N1M0)	Concurrent	NA	No disease relapse
	53/M	Asian	Anti-TIF1γ: positive 1+	NA	Amyopathic DM	NPC (non-keratinizing undifferentiated subtype)/ stage II (T2M0M0)	8 months after DM diagnosis	NA	No disease relapse
H.-L. Liu and Y.-H. Chen 2022 ²⁶	58/F	Asian	Anti-TIF1γ: strongly positive (176 U/ml)	NA	Classic DM	Ovarian serous carcinoma with omental and peritoneal metastasis/ stage IV	Concurrent	Systemic corticosteroids	Improved
Russo et al. 2022 ⁶	69/F	Caucasian	Anti-TIF1γ: positive	Follicular hyperkeratosis, keratotic plugs filling dilated follicular infundibula, vacuolar interface dermatitis, and increased dermal mucin	Wong-type amyopathic DM	Fallopian tube carcinoma	Concurrent	Oral prednisone 1 mg/kg	Remission
Poelman et al. 2023 ²⁷	68/M	NA	ANA: 1:160, (homogenous pattern) Anti-TIF1γ: positive	NA	Classic DM	Papillary urothelial cell carcinoma	Concurrent	IV methylprednisolone 500 mg for 3 days and oral methylprednisolone	Died in 2 years due to distant metastasis

Abbreviations: ANA, anti-nuclear antibodies; ARS, aminoacyl-tRNA synthetases; CCP, cyclic citrullinated peptides; DM, dermatomyositis; dsDNA, double stranded DNA; EJ, glycyl-tRNA synthetase; ENA, extractable nuclear antigen; F, female; IV, intravenous; IVIG, intravenous immunoglobulin; M, male; MDA5, melanoma differentiation associated gene 5; NPC, nasopharyngeal carcinoma; NXP2, nuclear matrix protein 2; OJ, isoleucyl-tRNA synthetase; PL7, threonyl-tRNA synthetase PL12, alanyl-tRNA synthetase; RNP, ribonucleoprotein; SAE1, SUMO Activating Enzyme 1; SCLC, Small cell lung carcinoma; Sm, Smith; SRP, signal recognition particle; SS, Sjögren's syndrome antigen; ssDNA, single stranded DNA; TIF1γ, transcription intermediary factor 1γ; U, unit

Author Contributions

Conceptualization: [K.C.]; Data curation: [P.N.]; Project administration: [S.C.]; Supervision: [K.C.]; Validation: [K.C.]; Writing – original draft: [S.C.]; Writing – review & editing: [K.C.]

Ethics Statements

Ethical approval was not sought for this single-patient case report based on routine clinical care, with no additional interventions or procedures performed for research purposes. Written informed consent was obtained from the patient for the publication and accompanying clinical images.

Funding

This research received no funding.

Acknowledgements

None.

Conflict of Interest

The authors declare that there are no conflicts of interest.

AI Declaration

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this manuscript.

References

1. Karino K, Fujieda Y, Kawamura T, et al. Anti-TIF1γ antibody predicted malignancy of thymic tumor with dermatomyositis as an "autoimmune tumor marker": A case report. *Medicine (Baltimore)* 2018;97:e13563.
2. Palterer B, Vitiello G, Cammelli D. First report of anti-TIF1γ dermatomyositis in a patient with myelodysplastic syndrome. *Reumatismo* 2017;69:75-7.
3. Ogawa-Momohara M, Muro Y, Mitsuma T, et al. Strong correlation between cancer progression and anti-transcription intermediary factor 1γ antibodies in dermatomyositis patients. *Clin Exp Rheumatol* 2018;36:990-5.

4. Motegi SI, Sekiguchi A, Ikeuchi H, et al. Clinical features of anti-transcription intermediary factor 1 γ (TIF1 γ)-positive dermatomyositis with internal malignancy and investigation of the involvement of TIF1 γ expression in tumors in the pathogenesis of cancer-associated dermatomyositis. *J Dermatol* 2020;47:1395-402.
5. Lau L, Huang L, Fu E, Tan TC, Kong KO, Lim MY. Nasopharyngeal carcinoma in dermatomyositis. *Clin Otolaryngol* 2021;46:1082-8.
6. Russo R, Gasparini G, Cozzani E, Gravina B, Parodi A. Paraneoplastic Wong-Type Dermatomyositis Associated with Gynecological Malignancy. *Medicina (Kaunas)*. 2022;58:484.
7. Ee HL, Ng PP, Tan SH. Exacerbation of amyopathic dermatomyositis in Orientals: a high alert for nasopharyngeal carcinoma. *Australas J Dermatol* 2004;45:77-8.
8. Chanprapaph K, Limtong P, Ngamjanyaporn P, Suchonwanit P. Trichoscopic Signs in Dermatomyositis, Systemic Lupus Erythematosus, and Systemic Sclerosis: A Comparative Study of 150 Patients. *Dermatology* 2022;238:677-87.
9. Chanprapaph K, Fakprapai W, Limtong P, Suchonwanit P. Nailfold Capillaroscopy With USB Digital Microscopy in Connective Tissue Diseases: A Comparative Study of 245 Patients and Healthy Controls. *Front Med (Lausanne)* 2021;8:683900.
10. Chen YJ, Wu CY, Shen JL. Predicting factors of malignancy in dermatomyositis and polymyositis: a case-control study. *Br J Dermatol* 2001;144:825-31.
11. Harada Y, Tominaga M, Itoh E, et al. Clinical Characteristics of Anti-TIF-1 γ Antibody-Positive Dermatomyositis Associated with Malignancy. *J Clin Med* 2022;11:1925.
12. Nakanishi Y, Yamaguchi K, Yoshida Y, et al. Coexisting TIF1 γ -positive Primary Pulmonary Lymphoepithelioma-like Carcinoma and Anti-TIF1 γ Antibody-positive Dermatomyositis. *Intern Med* 2020;59:2553-8.
13. Teo P, Tai TH, Choy D. Nasopharyngeal carcinoma with dermatomyositis. *Int J Radiat Oncol Biol Phys* 1989;16:471-4.
14. Oldroyd AGS, Callen JP, Chinoy H, et al. International Guideline for Idiopathic Inflammatory Myopathy-Associated Cancer Screening: an International Myositis Assessment and Clinical Studies Group (IMACS) initiative. *Nat Rev Rheumatol* 2023;19:805-17.
15. Iorizzo LJ, 3rd, Jorizzo JL. The treatment and prognosis of dermatomyositis: an updated review. *J Am Acad Dermatol* 2008;59:99-112.
16. Ito K, Imafuku S, Hamaguchi Y, Fujimoto M, Nakayama J. Case report of anti-transcription intermediary factor-1 γ/α antibody-positive dermatomyositis associated with gastric cancer and immunoglobulin G4-positive pulmonary inflammatory pseudotumor. *J Dermatol* 2013;40:567-9.
17. Kabuto M, Fujimoto N, Teramura K, et al. A case of dermatomyositis with esophageal fistula in whom blind mucosal biopsy detected occult oropharyngeal carcinoma. *Case Rep Dermatol* 2014;6:268-73.
18. Kubeček O, Soukup T, Paulík A, Kopecký J. Dermatomyositis with anti-TIF-1 γ antibodies as a presenting symptom of underlying triple-negative breast cancer: a case report. *BMC Cancer* 2016;16:684.
19. Ogawa M, Sugiura K, Yokota K, Muro Y, Akiyama M. Anti-transcription intermediary factor 1- γ antibody-positive clinically amyopathic dermatomyositis complicated by interstitial lung disease and breast cancer. *J Eur Acad Dermatol Venereol* 2016;30:373-5.
20. Aritomi T, Kido T, Nakano K, et al. Small Cell Lung Cancer Patient with Anti-transcriptional Intermediary Factor 1 γ Antibody Who Developed Dermatomyositis after Successful Chemoradiotherapy. *Intern Med* 2019;58:427-31.
21. Teraishi M, Nakajima K, Ishimoto T, Yamamoto M, Maeda N, Muro Y, et al. Anti-transcription intermediary factor 1 γ antibody titer correlates with clinical symptoms in a patient with recurrent dermatomyositis associated with ovarian cancer. *Int J Rheum Dis* 2018;21:900-2.
22. Merry E, Smrke A, Halai K, et al. Paraneoplastic dermatomyositis associated with metastatic leiomyosarcoma of unknown primary. *Clin Sarcoma Res* 2020;10:15.
23. Sumazaki M, Kaneko K, Ito M, et al. A Case of Dermatomyositis Along with Esophageal Cancer and Screening of Serum Transcriptional Intermediary Factor 1 Gamma Antibodies in

- Various Cancer Patients. *Am J Case Rep* 2020;21:e922004.
24. Arnon J, Elia A, Nevo Y, Lossos A, Nechushtan H. SCLC, Paraneoplastic Dermatomyositis, Positive Transcription Intermediary Factor 1- γ , and Point Mutation in the Transcription Intermediary Factor 1- γ Coding Gene: A Case Report. *JTO Clin Res Rep* 2021;2:100217.
 25. Asano R, Shinoda K, Tsuda R, et al. Anti-TIF1 γ antibody-positive dermatomyositis in a 15-year-old boy with Epstein-Barr virus-related nasopharyngeal cancer receiving nivolumab. *Rheumatology (Oxford)* 2021;60:e197-e9.
 26. Liu HL, Chen YH. Ovoid palatal patch: a portentous sign in dermatomyositis. *Qjm.* 2023;116:377-8.
 27. Poelman A, Neerinckx B, Beuselinck B, De Langhe E. Systemic autoimmune rheumatic diseases as paraneoplastic phenomena: 3 illustrative case reports and narrative review of the literature. *Acta Clin Belg* 2023;78:410-7.