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Medicine

Unusual Association: Dermatomyositis Diagnosis Tied to Rare Presence of TPO Autoantibodies

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Abstract **Case Report**

The co-occurrence of autoimmune diseases is prevalent and largely documented. However, the simultaneous presence of dermatomyositis and autoimmune thyroid disorders remains comparably uncommon, despite both being autoimmune in nature. In this report, we present a case of a 60-year-old Bangladeshi American individual delineating clinical manifestations consistent with dermatomyositis, including Gottron's papules, the V-sign, Shawl sign, and skin abnormalities, noticeably hypopigmented areas on the scalp and face. Although muscle biopsy results in this patient did not align strictly with classical dermatomyositis, they illustrated a combination of necrotizing myopathy and dermatomyositis. Notably, laboratory findings conceded the presence of TPO autoantibodies, despite the absence of clinical signs or symptoms of hypothyroidism. This discovery recommends the possibility of an underlying autoimmune thyroid condition. Our case prompts consideration of whether a distinct subtype of dermatomyositis may be associated with autoimmune thyroid conditions, even in the absence of overt thyroid manifestations.

Keywords: Dermatomyositis, Autoimmune Thyroid Disorder, Co-occurrence of Autoimmune Diseases, TPO Autoantibodies.

INTRODUCTION

Autoimmune diseases can coexist with other autoimmune disorders, as evidenced by the condition called polyautoimmunity [1,2]. These diseases manifest as multifarious illnesses targeting numerous sites in the body [3]. Tolerance against self-antigens is ruptured, and the body starts damaging its own cells, tissues, and organs [4]. Until 2017, the American Autoimmune Related Disease Association allocated more than 100 autoimmune diseases, making it the third most prevalent illness in the USA [4]. Dermatomyositis (DM) is an autoimmune disorder presenting with cutaneous manifestations such as Gottron's papules, Heliotrope rash, and Shawl's sign, as well as inflammatory muscle changes and proximal muscle weakness [5,6]. Autoimmune conditions affecting the thyroid gland, including Hashimoto's thyroiditis and Graves' disease, are among the most specific disorders [7,8] and are often checked in conjunction with other autoimmune diseases. Dermatomyositis is a systemic autoimmune disease, and its coexistence with other systemic autoimmune disorders like Mixed Connective Tissue Disease (MCTD), Progressive Systemic Sclerosis (PSS), and Systemic Lupus Erythematosus (SLE) has been documented [9]. Autoimmune thyroiditis is an organ-specific autoimmune disease that has been found to coexist with systemic autoimmune disorders such as PSS, SLE, and Rheumatoid Arthritis (RA) [10–12]. However, reported cases associating DM with AIT are relatively low. We report a case of clinical dermatomyositis presenting with TPO antibodies.

THE CASE

A 60-year-old Bangladeshi American male with no significant past medical history. He presented to the primary care physician's office with generalized weakness that started two and a half months ago and has been gradually progressive. Lately, he has been experiencing difficulties with climbing stairs, lifting his hands against gravity, getting up from a chair, and carrying heavy objects to the extent that his activities of daily living are compromised, necessitating assistance from his daughter.

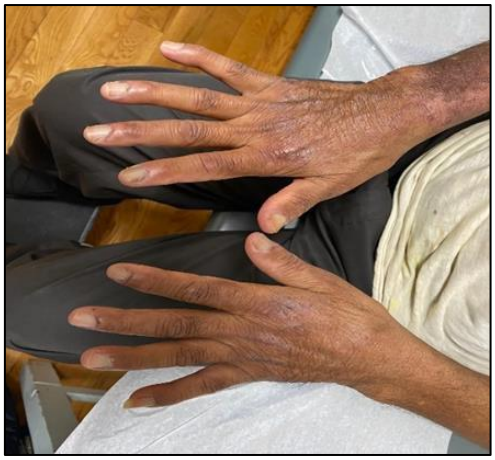

Figure 1: Gotton's papules-Shiny, raised, frequently scaly protrusions located on the knuckles of the fingers

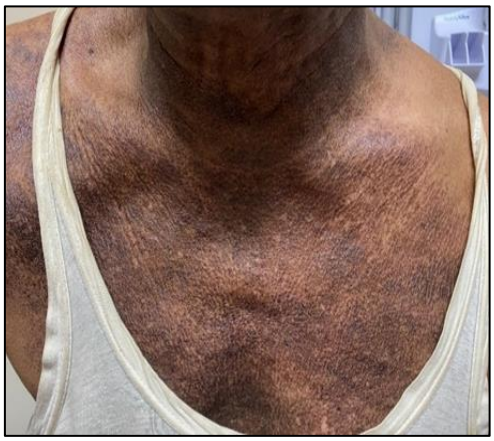

Figure 2: "V sign"- Patchy, Irregular or scattered macular erythema on the sun-exposed areas of upper chest and the front of the neck

The weakness is associated with cramp-like muscle pain. Upon inquiry, the patient denied any symptom-free periods since the onset, diurnal variation, or previous similar episodes. Additionally, the patient endorsed the development of pruritic, painless, non-scaly erythematous skin rashes involving the face, chest, upper extremities, and back a week prior to the weakness, followed by skin blackening. Reportedly, the patient also experienced swallowing difficulties, particularly with solid food, relative constipation, and a weight loss of 14 lbs. over the last 2 months. On inquiry, the patient denied fever, photosensitivity, skin tightening, double vision, dizziness, vertigo, oral ulcers, neck swelling, chest pain, palpitations, cough, shortness of breath, abdominal pain, abdominal distension, rectal bleeding, joint pain/swelling, heat or cold intolerance, tremors, Raynaud's phenomenon, any recent travel history, or use of offending drugs such as statins. The family and social history were unremarkable.

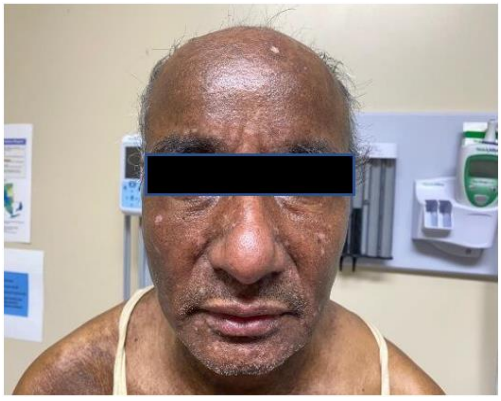

Figure 3: Hypopigmented areas in scalp and face

During the examination, hyperpigmented, non-scaly, non-tender, pruritic macular and patchy skin lesions were observed on the anterior chest wall, back of the neck, and extensor surfaces of both upper extremities, exhibiting characteristic signs such as the "V-sign (Fig-2)," "Shawl sign (fig-4)," and "Gottron's papules (Fig-1)," alongside hypopigmented areas on the scalp (Fig-3). Furthermore, the patient demonstrated profound weakness in the proximal muscle groups, with ⅗ muscle strength in both upper and lower extremities. All other systemic examinations revealed no abnormalities, including the examination of the thyroid gland. Vital signs were within normal limits.

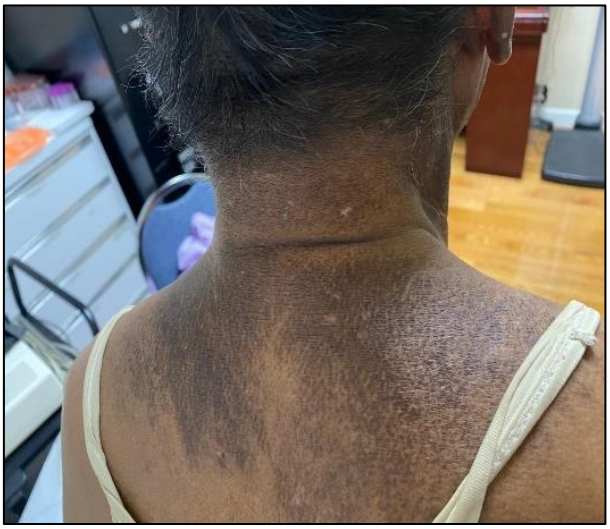

Figure 4: The shawl sign- broad, flat, reddish area that manifests on the upper back, shoulders, and the back of the neck

Lab Reports:

Table 1: Results of all the laboratory tests

Test Name	Result	References Range
WBC	5.1	4.5-11.0 K/mcl
RBC	4.07	4.50-5.90 M/mcl
HGB	10.5	13.5-17.5 gm/dl
HCT	31.9	41.0-53.0%
MCV	78.4	80.0-100.0 fL
RDW	14.5	11.5-14.5%
PLT	127	130-400 K/mcl
Sodium	136	136-145 mmol/L
Potassium	4.2	3.5-5.1 mmol/L
Chloride	100	98-108 mmol/L
CO2	27	22-29 mmol/L
Glucose	125	74-110 mg/dl
BUN	18	6.0-23.0 mg/dl
Creatinine	0.52	0.7-1.20 mg/dl
Calcium	8.4	8.6-10.3 mg/dl
Total Protein	5.2	5.7-8.2 g/dl
Albumin	2.9	3.4-5.0 g/dl
Globulin	2.3	1.6-4.0 g/dl
Bilirubin	0.4	0.3-1.2 mg/dl
AST	462	13-40 U/L
ALT	269	7-40 U/L
ALP	59	46-116 U/L
CPK	6985	20-190 U/L
Aldolase	64.5	1-7.5 U/L
TSH	0.793	0.55-4.78 mcIU/ml
FT4	1.24	0.89-1.76 ng/dl

T3 Total	116	60-180 ng/dl
TPO Antibodies	21	<9 IU/mL
ANA	1:1280	<1:40 Neg
ANA Pattern	Nuclear, Speckled	
Anti-SCL	<1.0 Neg	<1.0 Neg
Anti-Jo 1	<1.0 Neg	<1.0 Neg AI
Anti-SM	<1.0 Neg	<1.0 Neg AI
Anti- SM/RNP	<1.0 Neg	<1.0 Neg AI
Anti-LKM	<1.0 Neg	<1.0 Neg AI
RF	<14 Neg	<14 IU/ml
ESR	29	<20 mm/hr
HbA1C	5.2	<5.7%

Investigations for occult malignancy, including CT scans of the chest, abdomen, and pelvis, were normal. Additionally, colonoscopy findings and PSA levels were normal.

Muscle Biopsy Report

Acute and subacute necrosis, along with associated myophagocytosis (rhabdomyositis), was observed, which was non-specific and could result from ischemic changes due to atherosclerosis, microvascular thrombosis, dermatomyositis, trauma, or exposure to toxins/drugs, as well as acute hypokalemia. Immunohistochemical stains revealed numerous scattered CD163-positive macrophages throughout the tissue, with rare CD20-positive B-cells and CD8-positive T-cells. A slight number of scattered CD4-positive T-cell lymphocytes were present predominantly in the endomysial connective tissue.

CONCLUSION

It's not uncommon for autoimmune disorders to occur together, but it's rare to find dermatomyositis alongside TPO antibodies. This patient's symptoms and signs strongly suggest classical dermatomyositis, although the muscle biopsy points towards the mixture of necrotizing myopathy and dermatomyositis, rather than the classical and typical findings of dermatomyositis itself. Despite not showing any signs or symptoms of hypothyroidism, TPO antibodies are waving their flags, indicating an autoimmune thyroid condition. It's like finding a hidden treasure map in an unexpected place! This sparks curiosity – could there be a secret club where a particular type of dermatomyositis and autoimmune thyroid conditions hang out together? This raises the possibility of a specific type of dermatomyositis co-existing with an autoimmune thyroid condition, prompting a thorough investigation during both clinical examination and diagnostic procedures.

Conflicts of interest: The authors declared no conflicts of interest.

Author's Contributions:

We appreciate the contributions of all individuals involved in the entire process, from case discovery to diagnosis. PR, DB, and MC participated in gathering and structuring the information, drafting the manuscript, and conducting the literature review. UC was the primary care physician directly involved in the patient's care.

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