Irish Medical Journal
Established 1867

*Issue: Ir Med J; Vol 113; No. 8; P164*

# Anti-TIF1-$\gamma$ Paraneoplastic Dermatomyositis: A Novel Association with Mantle Cell Lymphoma

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**Abstract**

***Presentation***
We present the case of a 67-year-old otherwise healthy male who presented with an erythematous rash, symmetrical proximal muscle weakness, myalgia and arthralgia of the shoulders and hips, compatible with a working diagnosis of dermatomyositis.

***Diagnosis***
Laboratory data confirmed elevated creatine kinase (CK) and liver enzymes but normal inflammatory markers. Myositis antibody profile was positive for anti-TIF1-γ, a highly specific antibody for myositis and strongly associated with malignancy, which prompted extensive cancer screening. We describe the clinical course and investigations leading to the simultaneous diagnosis of mantle cell lymphoma (MCL).

***Treatment***
Patient was treated with high-dose prednisolone with good clinical response.

***Conclusion***
This case highlights the usefulness of myositis–specific antibody (MSA) screening in inflammatory myositis, which in many cases, can become lifesaving by revealing an underlying concealed malignancy that would otherwise go unnoticed.

## Introduction

Dermatomyositis (DM) is an idiopathic autoimmune condition characterized by muscle weakness with distinctive cutaneous manifestations. It is a subtype of a heterogeneous group of acquired idiopathic inflammatory myopathy (IIM).

Increased incidence of malignancy in dermatomyositis is well established.[1] The role of specific autoimmune antibody testing has revolutionised the outlook in IIM, leading to earlier detection and better prediction of cancer-associated myositis.[2–4] Here we present a case of a positive anti-transcription intermediary factor 1-gamma antibody (anti-TIF1-γ) paraneoplastic dermatomyositis associated with MCL, which were simultaneously diagnosed.

**Case Report**

A 67-year-old Caucasian gentleman presented with a two-week history of muscle weakness and erythematous rash affecting his face, neck, elbows, hands and chest. He reported fatigue, myalgia, and arthralgia in his shoulders and hips to the extent that he was unable to perform daily activities, especially over-head tasks and required crutches to ambulate. He has a background of osteoarthritis, hypertension, and dyslipidemia. He had previously been taking atorvastatin 40mg for over five years preceding this presentation. There was no relevant family history, smoking, or any substance or alcohol misuse. Clinical examination revealed proximal muscle tenderness and weakness with reduced power (Medical Research Council (MRC) grade 3/5) symmetrically in the shoulders and pelvic girdle. There was an erythematous rash over his face, neck, extensor surface of his hands, elbows and anterior upper chest (figure 1). The remainder of his clinical examination and vital signs were unremarkable.

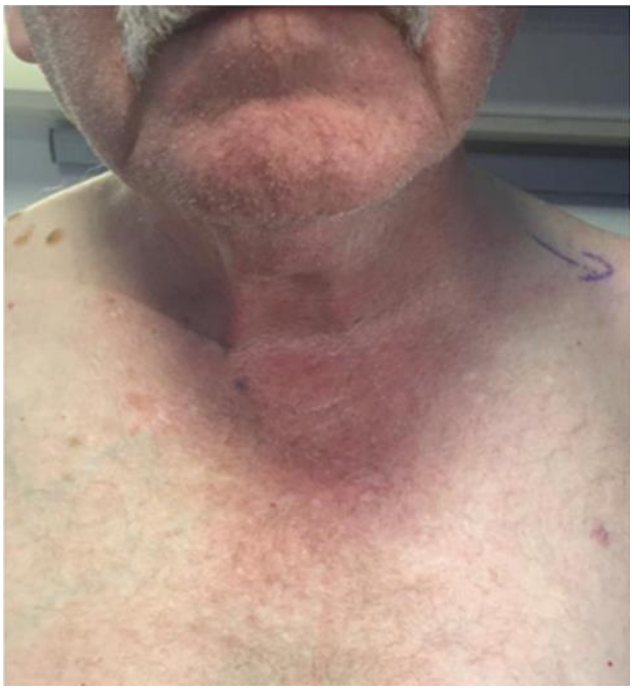

**Figure 1.** Rash on upper chest (“V sign”).

Initial laboratory data showed elevated CK of 3595IU/L (30-190), alanine aminotransferase (ALT) of 93IU/L (<40), lactate dehydrogenase (LDH) at 245U/L (135-225), C-reactive protein (CRP) 6mg/L (0-5), and erythrocyte sedimentation rate (ESR) 14mm/h (0-15). Full blood count (FBC) was normal. A whole-body magnetic resonance imaging (MRI) confirmed diffuse high STIR signal intensity at the proximal musculature of upper and lower limbs with diffuse bone marrow signal throughout the thoracolumbar vertebral spine indicative of hypercellular marrow (figure 2).

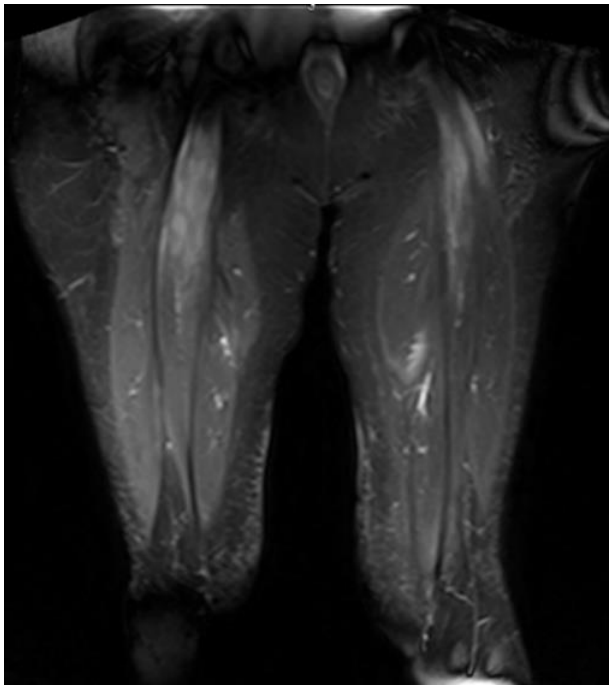

**Figure 2.** MRI showing abnormal muscle signal intensity.

Skin biopsy showed interface dermatitis, consistent with DM. Deltoid muscle biopsy showed perifascicular atrophy with perivascular chronic lymphoplasmacytic inflammation, strongly supporting immune-mediated myopathy. Autoimmune profile was positive for antinuclear antibody (ANA). Myositis panel was positive for anti-TIF1-γ. Serum electrophoresis revealed abnormalities in the gamma region. Electromyography (EMG) was consistent with myopathy. Given his age and diagnosis of dermatomyositis, investigations to outrule underlying malignancy were performed. Computed tomography (CT) of his thorax, abdomen and pelvis, tumour markers, viral screening and gastroscopy were negative.

He was commenced on oral prednisolone 40mg, which led to significant clinical and biochemical improvement including normalisation of CK 6 weeks later. Bone marrow aspirate and trephine biopsy revealed hypercellular marrow, 15% plasmacytosis and aggregates of mature lymphoid cells. Immunohistochemistry and flow cytometry were strongly positive for CD20, CD19, CD79A, cyclin D1, and BCL2. Polymerase Chain Reaction (PCR) detected t(11;14). These findings led to the diagnosis of MCL.

**Discussion**

Dermatomyositis carries a significant risk of malignancy. A meta-analysis indicated a 19-fold risk increase for malignancy in the first year following diagnosis, with men carrying a higher risk.[5] Anti-TIF1-γ is the commonest malignancy-associated MSA, with a cancer prevalence rate of 38-80%.[5,6] Breast cancer was the most prevalent malignancy in the anti-TIF1-γ-positive patients, followed by ovarian cancer and lymphoma.[1] MCL is a rare, aggressive subtype of non-Hodgkin lymphoma with poor prognosis. It is characterised by a strong association with translocation (11;14)(q13;q32) and subsequent overexpression of cyclin D1.[7] Although cutaneous manifestations associated with MCL have previously been reported[8], this case describes the first reported association with confirmed DM. Few reports have described positive treatment outcomes with chemo-immunotherapy regimes involving Rituxmab.[9] Our patient is currently stable on 10mg prednisolone with normal muscle power and resolution of skin manifestations. He is currently being considered for chemo-immunotherapy with Rituximab.

**Declaration of Conflicts of Interest:**
The authors have no conflicts of interest to declare.

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