Inflammatory myopathy in the proximal lower limb: Rare presentation of lymphoma

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Introduction

Inflammatory myopathy, myositis, refers to a category of uncommon autoimmune disorders that entail chronic inflammation and muscular weakness and predominantly target the musculoskeletal system(1). The etiology of inflammatory myopathy remains elusive; however, it is postulated that a confluence of genetic susceptibility, environmental factors, and immune response dysregulation may contribute to its manifestation(2, 3).

There are mainly 4 types of inflammatory myopathy: dermatomyositis (DM), polymyositis (PM), overlap syndromes, and juvenile myositis(4).

The manifestation of DM is commonly observed through bilateral proximal skeletal muscle weakness, which is frequently accompanied by distinctive dermatological signs. A heliotrope flare-up localized on eyelids, Gottron's papules, and periungual telangiectasia are the most prominent symptoms of DM(5). The Bohan and Peter criteria are frequently utilized in the diagnosis of dermatomyositis, incorporating a range of clinical, laboratory, electromyography, and muscle biopsy assessments(6).

PM is characterized by muscle inflammation without significant skin involvement(7). Overlap syndromes are characterized by the manifestation of features that are common to both inflammatory myopathy and an overlapping autoimmune disease. Organ involvement associated with systemic lupus erythematosus (SLE) and skin manifestations may be observed in patients(8).

Juvenile myositis encompasses inflammatory myopathies that occur in children. Juvenile myositis in children may demonstrate the same clinical presentations as adults, however, they may also manifest distinct characteristics, such as high skin involvement and a greater incidence of calcinosis(9).

Although the etiology of most cases of inflammatory myopathy remains unknown or is attributed to autoimmune factors, there have been limited reports of inflammatory myopathy presenting as an initial indication of an underlying tumor(10).

Case presentation

A 43-year-old woman was admitted to our rheumatology outpatient clinic with a primary complaint of lower limb edema and dyspnea on exertion. Clinical findings in a hospitalized patient include: tachycardia (Heart rate [HR] 110) , tachypnea (respiratory rate [RR] 26 per min), blood pressure [BP] : 110/75, Body temperature: 38 , pale conjunctiva, decrease in the intensity of heart sounds ,decreased breath sounds at the base of the right lung and the left half of the chest, as well as nonpitting edema in the right lower extremity with normal and symmetric pulses .

The pericardial effusion and thickened pericardium were reported in the echocardiography. The CT scan revealed left-sided pneumothorax and right-sided pleural effusion. Additionally, collapse consolidation of the lower lobes was reported in both lungs.

Abdominal ultrasound and Doppler ultrasound of the right lower limb veins were reported as normal. Broad-spectrum antibiotics were initiated for the patient, and they underwent pericardiocentesis. Pericardial fluid drainage and pericardial biopsy were performed. The pericardial fluid analysis showed exudative fluid with negative cultures, and no malignant cells were observed in the cytology examination. The biopsy results were consistent with pericardial fibrinosis. The patient was discharged without a definitive diagnosis and was prescribed colchicine medication.

During follow-up, the patient did not show improvement and continued to experience palpitations and exertional dyspnea. Further investigations were conducted, including CT angiography and CT scan of the abdomen and pelvis, which were reported as normal. Cardiac magnetic resonance imaging (MRI) was also performed, revealing thickened pericardium along with signal changes in the ascending aorta. Considering the overall findings, there is a possibility of rheumatological problems, and the patient will undergo evaluation and examination by a rheumatologist.

Based on the further examinations, the patient has been diagnosed with weakness (3/5) in the right lower extremity. Considering the signal changes in the ascending aorta on the MRI, PET scan was performed. PET scan findings include: several intense hypermetabolic foci in pericardium, mild hypermetabolism in walls of ascending aorta. Moderately hypermetabolic gastric wall thickening in the pylorus/antrum regions. Diffuse intense hypermetabolism in muscles of neck, chest wall and trunk abdomen, pelvis and right tight (especially in vastus intermedius).

Based on the increased uptake in the muscles of the right thigh, further investigations were requested for the muscles of the right leg and thigh using MRI and electromyography (EMG)- NCS (Nerve Conduction Studies) for the patient. The findings indicated inflammatory myopathy, and the MRI results were reported

as follows: diffuse muscular edema along right tight muscles. Based on these findings, further tests were requested for the patient to investigate the possibility of inflammatory myopathy.)LDH: 1083/230UL , Aldolase : 33.5/7.6 U/L)(table 1)

The patient underwent muscle biopsy, which revealed severe inflammatory myopathy with fascicular necrosis and prominent chronic fasciitis with MHC1 markedly upregulated. (Fig 1&2)

The patient was placed under treatment with IVIG (intravenous immunoglobulin) and MTX (methotrexate) for a duration of 3 months for the diagnosis of inflammatory myopathy. Subsequently, the patient underwent corticosteroid therapy as part of the treatment plan.

The patient had a favorable response to treatment, and significant clinical improvement was observed. However, due to severe hair loss, methotrexate was discontinued, and Mycophenolate mofetil was started but due to inadequate clinical response, patient was admitted to the hospital to receive rituximab medication.

During the hospitalization, the patient developed acute abdominal symptoms. Based on the imaging findings and examination, the diagnosis of bowel perforation was suggested in the context of vasculitis. The patient was scheduled for surgery, and a biopsy of the intestine was obtained, which was consistent with high grade diffuse large B-cell lymphoma.

The patient was referred to an oncologist for further management after receiving this diagnosis. They were placed under the care of an oncologist and started treatment with chemotherapy. The patient will continue to be monitored and treated by the oncologist.

In the latest follow-up reports, the patient's condition remained stable.

DISSCUSSION

The correlation between inflammatory myopathies and the occurrence of cancer has been recognized for almost a century, yet its interpretation and importance have remained ambiguous(11). Hill and colleagues have published a comprehensive dataset that provides substantial evidence regarding the association between myositis and malignancy(12). A total of 618 individuals with dermatomyositis and 914 individuals with polymyositis were successfully identified in the study. The incidence of cancer was observed in approximately 30% of patients with DM and 15% of patients with PM, with a notable majority of tumors being identified subsequent to the initial diagnosis of myopathy.

The correlation between myopathies, which manifest as a component of a paraneoplastic syndrome, and the presence of cancer is widely acknowledged within the scientific community(13). Nevertheless, the progress of epidemiological investigations in this area has been impeded by limited sample sizes, the influence of referral bias, and inconsistencies in diagnostic methodologies.

The spectrum of tumors linked to DM or PM mirrors the distribution observed in the broader population, with the potential deviations being a heightened occurrence of cervical(14), lung(15), ovarian(16), pancreatic(17), bladder(18), and gastric carcinomas(19), as well as non-Hodgkin lymphoma(20). The occurrence of cancer can be ascertained prior to, during, or subsequent to the diagnosis of myositis, with a notable surge in frequency observed within the two-year timeframe encompassing the onset and progression of myositis. Furthermore, it is worth noting that in certain individuals, the manifestation of myositis is initially identified during a relapse of a previously diagnosed neoplasm, whereas in other cases, myositis resurfaces coinciding with the onset of evident malignancy. Our patient was diagnosed with inflammatory myopathy based on clinical presentations. This specific instance exemplifies the significance of possessing comprehensive understanding regarding correlated paraneoplastic syndromes, as such knowledge can prove instrumental in resolving infrequent yet critical diagnostic dilemmas. The timely identification of malignancy is of utmost importance in instances involving polymyositis. The acquisition of any subtle indications that can assist clinicians in their diagnostic endeavors is of utmost significance. Consequently, our investigation underscores the criticality of contemplating neoplasms as a potential differential diagnosis for patients who exhibit symptoms of myopathy. Despite its infrequency, myopathy can manifest as the initial symptom during presentation,

thereby furnishing clinicians with a pivotal clue that may facilitate an earlier identification of concealed malignancies.

Conclusion

In conclusion, our case presented a female with inflammatory myopathy who presented a lymphoma, which is a rare underlying of lymphoma cancer.

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Author contributions

All authors approved the final manuscript.

Availability of data and material

Considering that this study is about a rare disease availability to patients and data may hard to some extent.

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Competing interests

The authors declare that they have no competing interests

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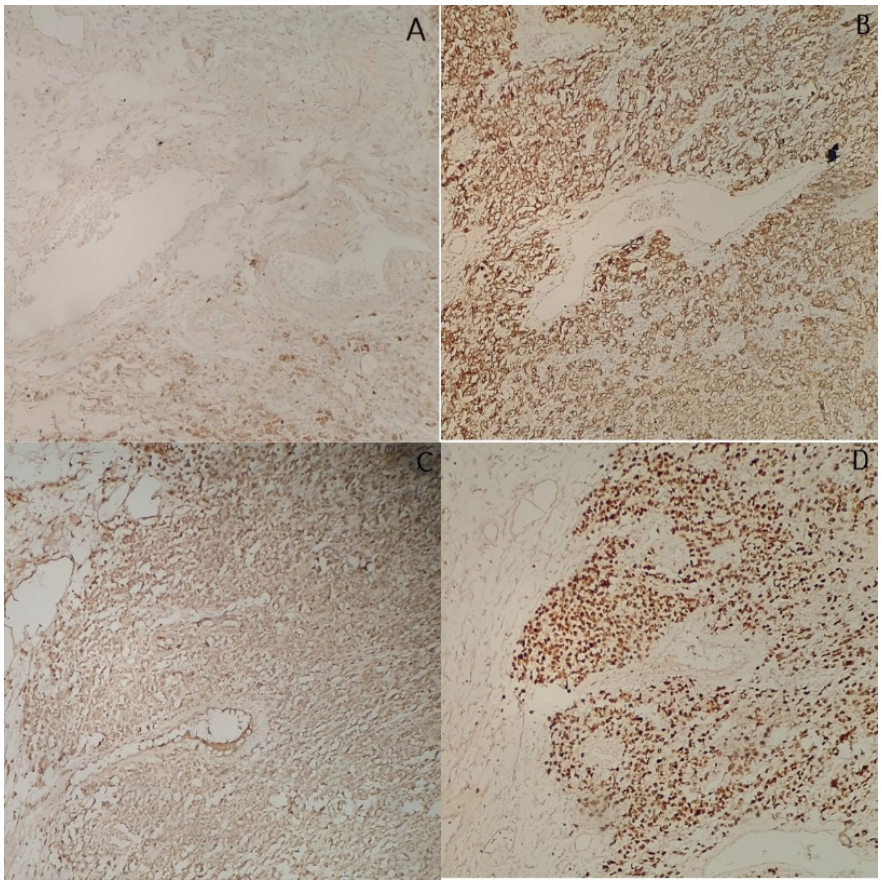
Table 1: laboratory test findings

HBS Ag	Negative
HCV Ab	Negative
HIV Ab	Negative
Mono test	Negative
CMV IGM	Negative
IGRA	Negative
ESR	30/20
CRP	Negative
F ANA	Negative
C ANCA	Negative
P ANCA	Negative
Anti-smith ab	Negative
Anti SSA	Negative
Anti SSB	Negative
Anti dsDNA	Negative
Anti-centromere	Negative
Wright	Negative
Coombs wright	Negative
C3	76 (90-180)
C4	4 (10-40)
Urine analysis	Normal
Albumin	3.7 (3.5-5.2)

HBS Ag	Negative
Creatinine	0.8
AST	31
ALT	27
ALKP	144
TSH	2.8 (Normal)
LDH	1083/230 UL
Aldolase	33.5/7.6UL
WBC	8760
HB	11.2 g/dl
MCV	95
PLT	352000
LYM	14.5%
PMN	68%

Figures

Fig 1: A-E: BCL2, CD 20, c-MYC, KI67, and BCL6 expression in lymphoma cancer by immunohistochemistry (IHC)



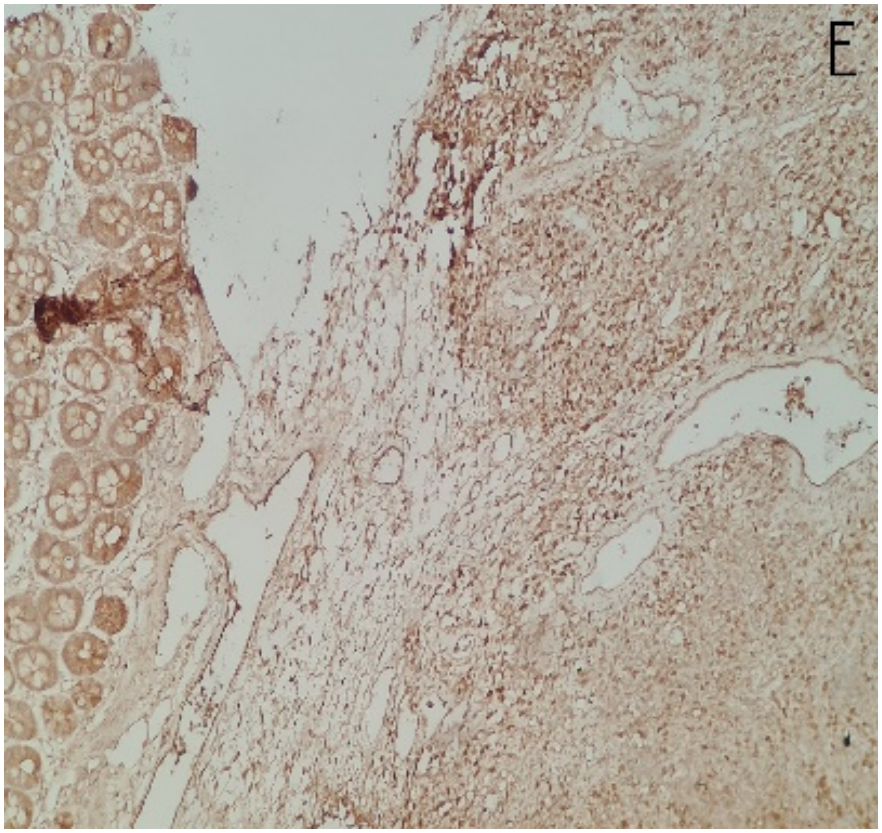
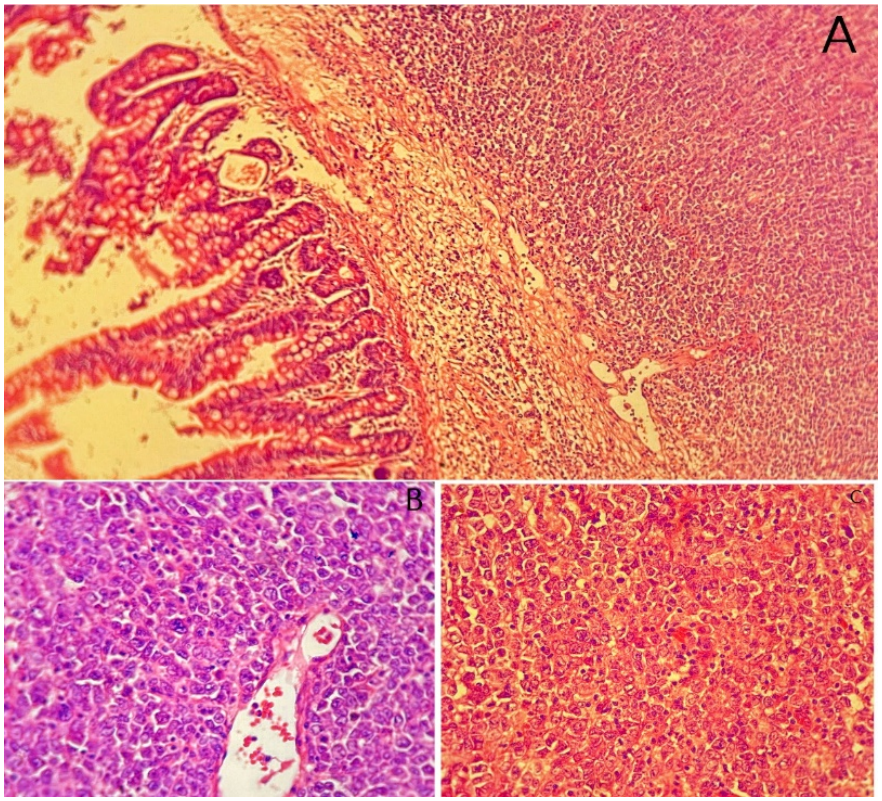


Fig 2 : Microscopic view (histologic) of a biopsy of the intestine (A-C) (H&E, ×10)



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