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Eosinophilic Fasciitis Following Infection With COVID-19

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Abstract

Presentation

27-year-old male with a six-week history of joint and muscle pain with swelling.

Diagnosis

Eosinophilic fasciitis (EF) secondary to COVID-19 infection.

Laboratory investigations revealed raised inflammatory markers and peripheral eosinophilia.

MRI of the thighs and right forearm/wrist revealed fascial thickening and hyperenhancement.

Fascial biopsy showed infiltration with lymphocytes, plasma cells and eosinophils.

Treatment

Corticosteroids followed by mycophenolate.

Discussion

EF is a rare connective tissue disorder, with limited current literature, typically presenting with pain and swelling of the skin and soft tissues.

EF has been previously described in the context of inflammatory conditions such as myocarditis and Guillain-Barre. There is at least one case in the literature describing the clinical manifestations of EF in the context of COVID-19 since 2022.

Introduction

This case discusses the rare condition eosinophilic fasciitis (EF). As of 2018, only 300 cases of eosinophilic fasciitis had been described in literature[1]. This case outlines a difficult scenario and highlights the challenge when dealing with a non-specific presentation, as the differential diagnosis initially is broad. This is even more challenging when considering a rare diagnosis

such as EF. This case highlights the importance an effective multidisciplinary approach to obtaining a diagnosis and outlining an appropriate management plan[2].

The purpose of this case study is to discuss a rare condition, in the context of a now common disease; COVID-19, to provide a systematic description of obtaining this diagnosis and provide a background on EF and its current management.

Case Report

A 27-year-old male presented with a six-week history of diffuse joint and muscle pain with swelling immediately following a diagnosis of COVID-19.

Upon initial examination, he had swelling and erythema of the thighs and forearms with tenderness on palpation.

Laboratory investigations revealed raised inflammatory markers and peripheral eosinophilia. The differential diagnosis at this stage included hypereosinophilic syndromes, scleroderma, polymyositis, dermatomyositis, and Churg-Strauss syndrome. The patient was commenced on corticosteroids.

He subsequently had MRI scans of his thighs and left forearm/wrist. These revealed fascial thickening and hyperenhancement (Figures 1 and 2).

He then had skin, fascial and muscle biopsies of the left thigh. The fascial biopsy showed infiltration with lymphocytes and plasma cells and, to a lesser degree, eosinophils. No significant abnormality was identified in the muscle or skin on biopsy.

Based on the combination of the history, clinical findings, laboratory investigations, radiological findings and histopathology results, the unifying diagnosis was EF secondary to COVID-19 infection.

Following initial treatment with corticosteroids, this was switched to Mycophenolate four weeks later due to persistent symptoms.

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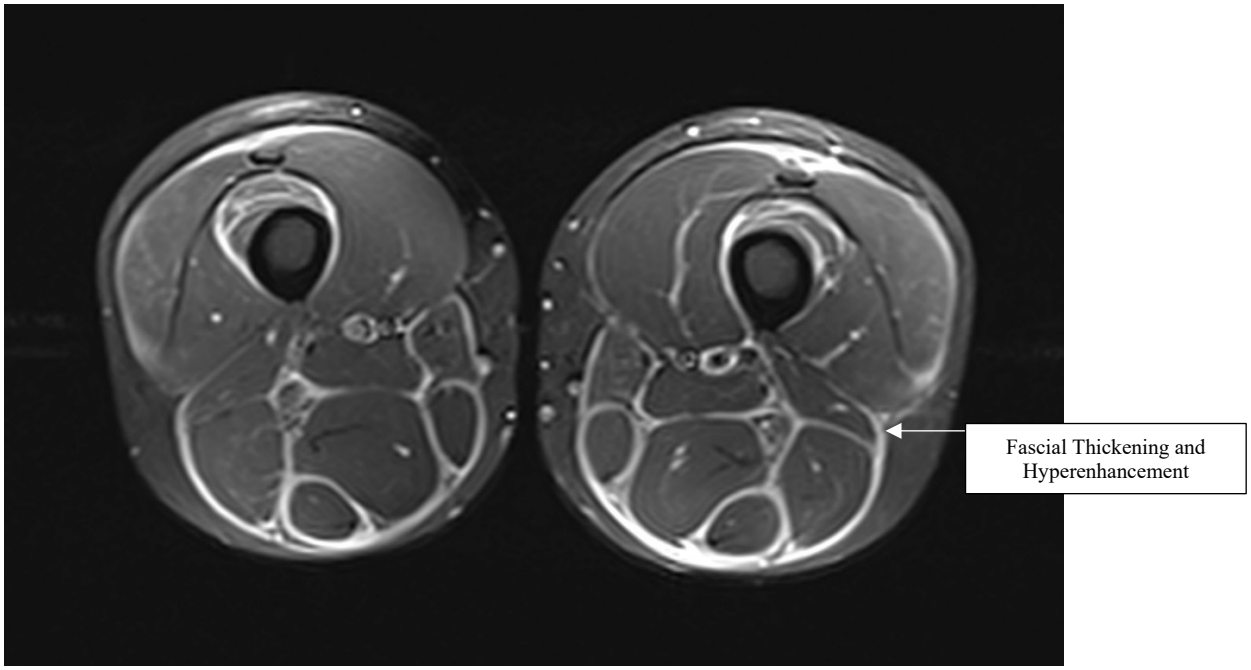

Figure 1: Contrast-enhanced MRI of the lower thigh demonstrating fascial thickening and hyperenhancement.

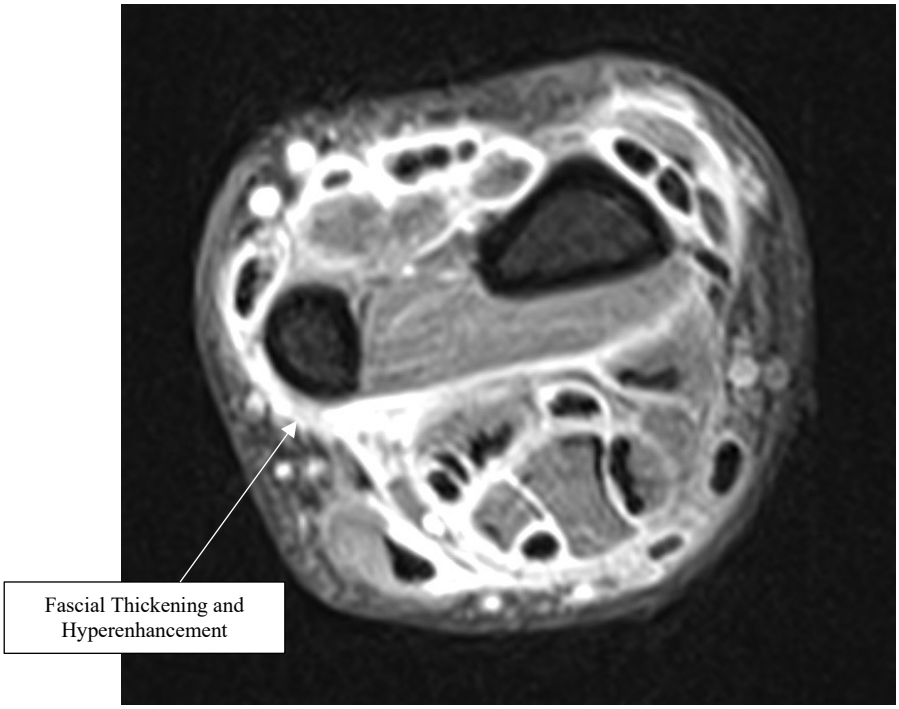

Figure 2: Contrast-enhanced MRI of the forearm demonstrating fascial thickening and hyperenhancement.

Discussion

EF is a rare connective tissue disorder that typically presents with progressive pain and swelling of the skin and soft tissues[3]. EF was initially described by Shulman in 1974[4]. The exact aetiology is unknown with theories ranging from infectious to drug-related causes. Perhaps most relevant to this case is the proposal of an aberrant immune response as the cause, supported by documented cases of peripheral hypergammaglobulinemia and raised IgG and C3 in biopsy samples[5]. Due to the rarity of the disease, a diagnostic criterion does not exist. However, clinical features combined with peripheral eosinophilia, hypergammaglobulinemia and raised ESR support the diagnosis. Further investigation with MRI typically demonstrates increased signal intensity within the fascia with fascial enhancement following administration of gadolinium. These are the findings that occurred in this case. The diagnosis is confirmed with a full-thickness wedge biopsy of the affected skin which typically demonstrates an accumulation of lymphocytes, macrophages, and plasma cells. Eosinophils are not always present on biopsy[5].

Some patients' symptoms resolve spontaneously without medical management. If this is not the case, the mainstay of treatment is glucocorticoids[5].
The clinical course in this case was immediately preceded by infection with COVID-19.
COVID-19 has been linked to multiple inflammatory conditions including myocarditis, Guillain-Barre, and multisystem inflammatory syndrome in children[6-8]. There is at least one other case in the literature describing the clinical manifestations of eosinophilic fasciitis in the context of COVID-19[9]. Adding to the literature is important in aiding diagnosis and treatment of such cases.

Declarations of Conflict of Interest:
None declared.

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