

Development of Majocchi's granuloma amid hospitalization: A case report

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ABSTRACT

Majocchi's granuloma is an uncommon fungal infection often associated with dermatophyte invasion, particularly *Trichophyton rubrum*. Herein, we present the case of a thirty-year-old female with systemic lupus erythematosus presenting millimeter papules in her low extremities. Majocchi's granuloma manifests through a diverse range of skin lesions, emphasizing the role of histopathology in its diagnosis. Notably, chronic dermatophytosis and immunosuppression stand out as significant risk factors. This case underscores the importance of considering risk factors, accurate diagnosis through histopathology and the need for tailored treatment in immunocompromised individuals.

Key words: Granuloma, *Trichophyton rubrum*, Dermatophytes, Mycoses, Immunodeficiency

INTRODUCTION

Majocchi's granuloma (MG) was first described in 1883 as an intracutaneous and subcutaneous granulomatous inflammation that emerges as a result of invasion by a dermatophyte fungus. The most frequently identified microorganism is *Trichophyton rubrum*, yet other non-dermatophytic fungi have also been described, such as *Aspergillus spp.* [1]. MG is predominantly associated with local physical skin trauma and the disruption of hair follicles [2]. There are two forms of MG. The first form presents in healthy individuals as a perifollicular papular form, which is a localized skin infection that predominantly occurs on the legs. The second form, observed in immunosuppressed hosts, presents as deep subcutaneous nodular or plaque lesions that may develop in any hair-bearing part of the body yet are most often seen on the forearms, hands, and legs [3]. Diagnosis is based on the detection of granulomas in the mid and deep dermis through histopathology [2].

CASE REPORT

A thirty-year-old female, originally from Mexico, was evaluated by the dermatology service due to the presence of a cutaneous lesion on her lower limbs. She had a history of systemic lupus erythematosus (SLE), lupus myopericarditis (LM), and catastrophic antiphospholipid syndrome (CAPS). She was undergoing treatment with prednisone at a dose of 60 mg, acenocoumarol, amiodarone, and levetiracetam. The lesions were bilaterally distributed on the dorsal region of her feet, tending to be symmetrical. They were characterized by millimeter-sized papules with a range of colors from reddish-brown to light brown. Some of these papules had scales on their surface and crusts (Fig. 1). The patient reported these lesions as asymptomatic with one week of progression. Additionally, she presented onychopathy that affected all ten toenails, characterized by chromonychia, pachyonychia, some with subungual hyperkeratosis, and purple discoloration (Fig. 2). A biopsy of the skin was performed for both culture and pathology.

How to cite this article: Vilchis Flores OE, López Jiménez FC, Barrera Godínez A, Domínguez Cherit J. Development of Majocchi's granuloma amid hospitalization: A case report. Our Dermatol Online. 2024;15(3):287-289.

Submission: 16.01.2024; **Acceptance:** 25.03.2024

DOI: 10.7241/ourd.20243.16



Figure 1: a) Onychopathy. b) Confluent millimetric papules in a patient with Majocchi's granuloma.



Figure 2: Onychopathy affecting all 10 toenails.

The pathology report indicated granulomatous and suppurative dermatitis with septate and angular filaments, along with the presence of pseudo vesicles and dermatophytes, consistent with GM (Fig. 3), and the skin biopsy culture yielded the presence of *Trichophyton rubrum*. The patient was prescribed oral terbinafine 250 mg for six weeks. During her approach, she received multiple plasmapheresis therapies and, after 42 days, she experienced a series of complications related to CAPS, resulting in a critical state leading to her demise.

DISCUSSION

Herein, we report the case of a woman with a clinical, microbiological, and histopathologic presentation consistent with MG. In the approach of this entity, it is important to look for risk factors such as chronic dermatophytosis, like tinea unguium as our patient had, and immunocompromised disease, in this case, SLE. She had been treated with oral corticosteroids lending her to an immunocompromised state. It has been described that host factors significantly influence the natural history of MG; in a patient with an immunosuppression state, granuloma, abscesses, and mycetoma may occur [4-6]. MG is an uncommon

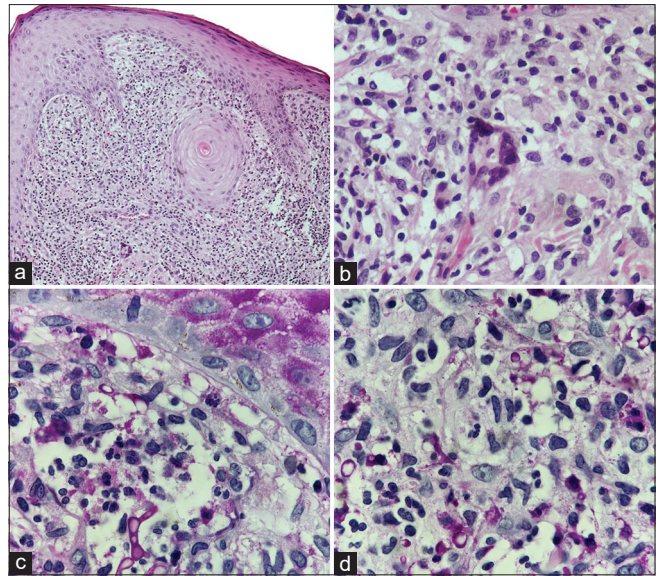


Figure 3: Pathological features a) (H&E 20x) Multinucleated giant cells and inflammatory infiltrate predominantly neutrophilic with macrophages. b) (H&E 40x) Presence of septate, angled hyphae with pseudovesicles. cd) Periodic acid-Schiff 100x.

Table 1: Differential diagnosis for Majocchi's granuloma based on the most frequently observed lesion type [3,7]

Type of Lesion	Differential Diagnosis
Nodule (63.5%)	Erythema nodosum
	Kaposi sarcoma
	Foreign body granuloma
	Mycobacterial infection
	Lichen planus
Plaque (43.5%)	Psoriasis
	Nummular dermatitis
	Sarcoidosis
	Discoid lupus erythematosus
	Acne vulgaris
Papule (24.3%)	Rosacea
	Insect bites
	Folliculitis
Ulcer (3.5%)	Neuropathic ulcers
	Venous ulcers
	Pyoderma gangrenosum
	Cutaneous leishmaniasis
	Diabetic foot ulcers
Abscess (2.6%)	Hidradenitis suppurativa
	Furunculosis

fungal infection that may be confused with bacterial infections or other skin diseases, leading to patients receiving antibiotics or topical steroids which delayed definitive diagnosis [2]. Due to the wide spectrum of lesions that may be observed in MG, it should be differentiated from several diseases that present similar lesion patterns (Table 1) [3]. The most common lesion types in MG are nodules (63.5%), plaques (43.5%), papules (24.3%), ulcers (3.5%),

and abscesses (2.6%) [7]. There is no standardized algorithm for making the diagnosis of MG. It has been reported that potassium hydroxide (KOH) staining alone is insufficient to confirm the diagnosis [8]. In contrast, studies recommend performing a biopsy when there is clinical suspicion of MG, as well as using staining methods such as periodic acid–Schiff (PAS) or Gomori methenamine silver (GMS), which are effective for detecting fungal elements [2,9].

CONCLUSION

There has been an increase in reported cases of MG in the last six years, which may be related to underdiagnosis in the past and the increased use of certain immunosuppressive drugs [2]. Treatment of fungal infections depends on the etiologic agent. Although MG usually responds well to terbinafine treatment, non-dermatophyte species such as *Aspergillus* may be resistant to antifungal antibiotics, making the identification of the causative agent an important step in the approach to this condition [7]. It is important to review the history of onychomycosis and treat it in time to prevent deep infection [10]. Topical antifungal drugs alone cannot completely cure deep fungal infection, which may lead to a relapse of the disease. Under conditions of immunosuppression required longer treatment periods [6].

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki. The authors certify that they have obtained all appropriate patient consent forms, in

which the patients gave their consent for images and other clinical information to be included in the journal.

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Source of Support: This article has no funding source.

Conflict of Interest: The authors have no conflict of interest to declare.