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Unilateral Granulomatous Rosacea in an 80-Year-Old Male

Abir Boulhilat[1]*, Meriem Khalidi[1], Rachid Frikh[1], Naoufal Hjira[1]

[1]Department of Dermatology, Mohammed V Military Instruction Hospital, Rabat

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***Corresponding author:** Abir Boulhilat
Department of Dermatology, Mohammed V Military Instruction Hospital, Rabat

Abstract **Case Report**

Granulomatous rosacea (GR) is a rare, chronic inflammatory variant of rosacea characterized by its distinct histopathology and resistance to standard therapies. We report a rare case of unilateral GR in an 80-year-old male. The patient presented with a three-month history of a right-sided facial eruption, following years of isolated unilateral erythema. Clinical examination revealed purpuric papules and lupoid inflammatory nodules. Histopathology confirmed a peri-follicular lymphoplasmacytic infiltrate with non-caseating epithelioid granulomas and Demodex folliculorum. The patient showed partial improvement with oral doxycycline and topical metronidazole. This case highlights the importance of histopathological evaluation in atypical, unilateral facial dermatoses.

Keywords: Granulomatous rosacea, unilateral rosacea, granulomatosis.

INTRODUCTION

Rosacea is a chronic inflammatory dermatosis primarily affecting the central face, with a higher prevalence observed in middle-aged women. It typically presents with a spectrum of clinical features, including flushing, persistent erythema, telangiectasia, and inflammatory papulopustules. While rosacea is classically a bilateral and symmetric condition, unilateral presentations are exceptionally rare and frequently lead to significant diagnostic delay [1]. Among its clinical variants, granulomatous rosacea (GR) remains a relatively rare entity, accounting for approximately 10% of cases. It is distinguished clinically by firm, yellow, brown, or erythematous papules and nodules on a background of relatively normal-appearing skin, and histopathologically by the presence of non-caseating epithelioid granulomas. Some authors suggest the pathophysiology involves a delayed-type hypersensitivity reaction to Demodex folliculorum [2]. Because unilateral GR is exceedingly rare in the literature, it often mimics other granulomatous diseases such as sarcoidosis, lupus miliaris disseminatus faciei (LMDF), or localized infections [3]. Herein, we present a distinctive case of unilateral granulomatous rosacea in an 80-year-old male, emphasizing the critical role of histopathology and diascopy in reaching a definitive diagnosis.

CASE PRESENTATION

An 80-year-old male presented to our dermatology department with a three-month history of a persistent facial eruption. The patient noted the onset was gradual and specifically localized to the right side of the face. He reported mild pruritus but denied any history of episodic flushing, ocular stinging, or triggers such as heat, alcohol, or spicy foods. His past medical history was unremarkable for chronic inflammatory skin diseases or systemic granulomatous disorders. Prior to consultation, he had been treated unsuccessfully with systemic amoxicillin/clavulanic acid and topical fusidic acid.

Clinical examination revealed multiple, discrete, firm, erythematous-to-purpuric papules and inflammatory nodules. These lesions were strictly confined to the right malar region, the mandibular line, and the right side of the nose, showing a clear unilateral distribution (Figure 1: Right-sided facial papules and nodules) (figure 2: no papules, nodules or conjunctival hypermie on the left side). Notably, diascopy (vitreous pressure) revealed a "lupoid" appearance with an apple-jelly hue. Ocular examination was significant for right-sided conjunctival hyperemia and mild blepharitis (figure 3 : right side conjunctival hypermia), while the left eye remained unaffected (figure 2: no papules, nodules or conjunctival hypermie on the left side). There was no evidence of telangiectasia or comedones. Systemic examination, including lymph node palpation, was negative for lymphadenopathy. All baseline

laboratory investigations (Complete blood count, ACE (Angiotensin-converting enzyme) levels, and Chest X-ray) were within normal limits.

A 6-mm punch biopsy was performed from a representative nodule on the right cheek. Histopathological analysis showed a dense, primarily perifollicular inflammatory infiltrate in the dermis. Characteristically, the specimen revealed non-caseating epithelioid granulomas containing multinucleated giant cells and a significant presence of *Demodex folliculorum* mites within the pilosebaceous units (figure 4 : Demodex tails in dermoscopy with wood light). To rule out infectious etiologies, special stains including Giemsa, Periodic acid-Schiff (PAS), and modified Ziehl-Neelsen (ZN) were performed, all of which were negative for fungal or mycobacterial organisms.

Based on the clinical and histological findings, a diagnosis of unilateral granulomatous rosacea was established. The patient was initiated on a therapeutic regimen of oral doxycycline (100 mg/day) combined with topical metronidazole (0.75%) applied twice daily. At the three-month follow-up, the patient demonstrated partial clinical improvement with a visible reduction in the size and induration of the nodules. He continues to be monitored for long-term resolution and potential scarring.

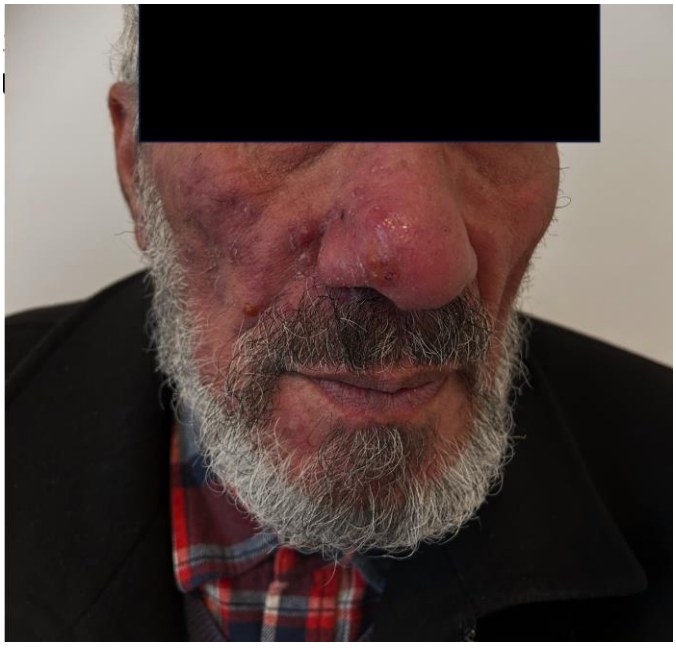

Figure 1: Anterior view showing papulonodular lesions on the right side of the face only

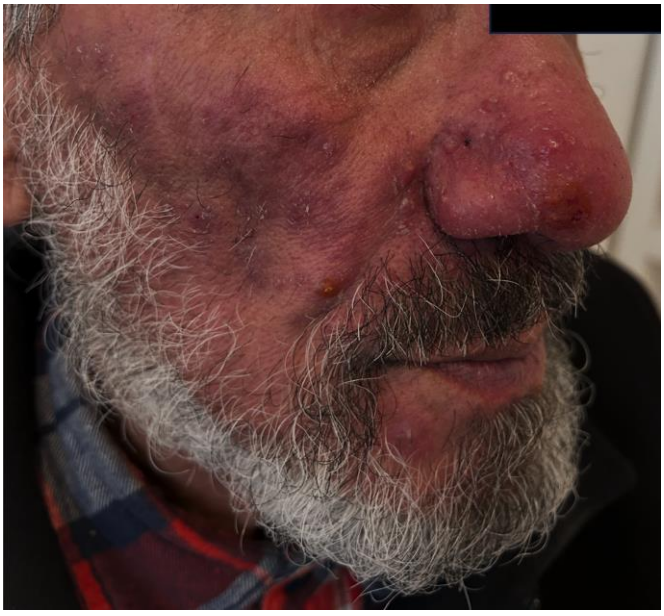

Figure 2: Close up of the right side showing papules and nodules on the cheeks and nose

Figure 3: Clear left side

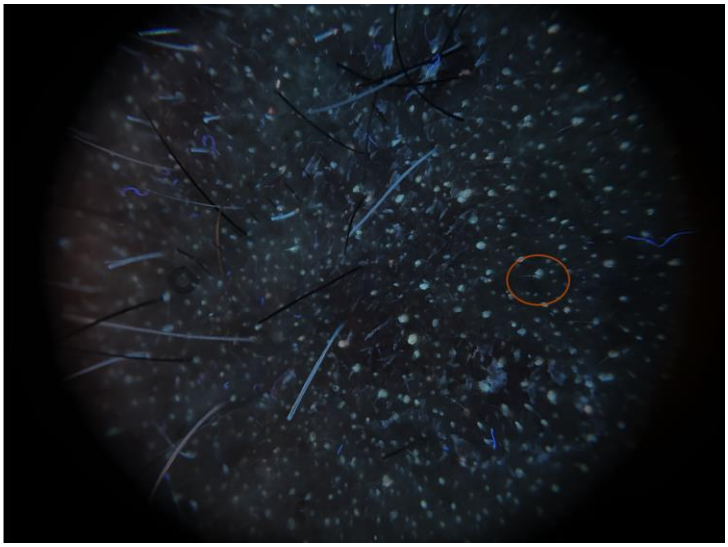

Figure 4: Demodex mites seen in UV dermoscopy

DISCUSSION

Granulomatous rosacea (GR) is an atypical subtype of rosacea that poses a significant diagnostic challenge. Unlike the erythrotelangiectatic or papulopustular subtypes, GR often presents on non-inflamed skin, and classic triggers or flushing may be entirely absent. Consequently, GR can closely mimic other granulomatous diseases [4]. The "apple-jelly" sign observed on diascopy in our patient is a hallmark of the "lupoid" aspect of GR, yet this finding is not pathognomonic; it is classically shared with cutaneous sarcoidosis and lupus miliaris disseminatus faciei (LMDF) [5]. Distinguishing between these is vital, as sarcoidosis requires a systemic workup, including chest imaging and serum angiotensin-converting enzyme (ACE) levels, which were unremarkable in our patient [6]. This distinction was further supported by the absence of plaques or cicatricial infiltration in this case. Similarly, while LMDF mimics the facial distribution of GR, its lesions are typically smaller (1–3 mm) and lack the significant perilesional erythema observed here [7].

The most striking feature of this case is the strictly unilateral distribution. Classic rosacea is characterized by bilateral symmetry, reflecting systemic neurovascular dysregulation [8]. Unilateral cases are exceptionally rare and have been hypothesized to occur due to a "Ruocco's immunocompromised district"—a localized area of skin with altered immunity following a prior subclinical injury or nerve damage [9]. Additionally, the presence of unilateral conjunctival hyperemia in our patient further reinforces the diagnosis of ocular rosacea, which can accompany cutaneous symptoms in up to 20% of cases [5].

Histologically, GR presents a spectrum ranging from simple lymphohistiocytic reactions to well-formed non-caseating epithelioid granulomas. Our case aligns with the patterns described by Mullanax and Kierland (1970) and the later 2004 classifications [4]. In addition, our specimen showed a high density of Demodex folliculorum within the granulomatous infiltrate. While the presence of these mites is a common finding in the general population, their role as a pathogenic driver in GR is highly suspected [10]. It is theorized that an exaggerated delayed-type hypersensitivity reaction to

Demodex proteins or the associated Bacillus oleronius bacteria may trigger the formation of non-caseating granulomas [11]. This logic supported our decision to use oral tetracyclines, which possess both antimicrobial and potent anti-inflammatory properties, specifically the inhibition of matrix metalloproteinases (MMPs) [12] These enzymes degrade the extracellular matrix and drive granuloma formation; their inhibition is critical for clinical remission [12].

Treatment for GR is notoriously difficult compared to other subtypes. While topical metronidazole and oral doxycycline were effective here, resistant cases may require low-dose oral isotretinoin or dapsone [13]. Our patient's partial improvement at three months highlights the chronic nature of the condition and the need for long-term maintenance therapy to prevent permanent dermal scarring

CONCLUSION

Unilateral granulomatous rosacea represents a significant diagnostic challenge due to its rarity and clinical overlap with other granulomatous facial dermatoses. This case underscores the necessity of maintaining a high index of suspicion for rosacea even when the presentation is strictly hemifacial and lacks hallmark symptoms such as flushing. The presence of unilateral ocular symptoms can serve as a vital clinical clue. Ultimately, the integration of diascopy and histopathological examination is essential to distinguish this entity from systemic conditions like sarcoidosis and ensure appropriate management.

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