Vol. 37 / No. 01 / April 2025
Sinta 2 (Decree No: 200/M/KPT/2020)
Online ISSN : 2549-4082 ; Print ISSN : 1978-4279
Available online at https://e-journal.unair.ac.id/BIKK

Berkala Ilmu Kesehatan Kulit dan Kelamin

Case Report
Periodical of Dermatology and Venereology

Cracking the Crimson Conundrum: a Case Report on Granulomatous Rosacea

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ABSTRACT
Background: Rosacea, a prevalent inflammatory skin condition, commonly affects the central facial area. Granulomatous rosacea, a rare variant of rosacea, presents diagnostic intricacies due to its clinical and histopathological resemblance to other granulomatous dermatoses. **Purpose:** We are presenting this case due to the scarcity of granulomatous rosacea cases, often misdiagnosed, leading to unwarranted treatment options. We describe a case of granulomatous rosacea in a 24-year-old female, elucidating clinical features and diagnostic challenges the patient presented with red, elevated lesions over the central facial region for three months. Clinical examination revealed well-defined erythematous papules. Dermoscopy and histopathological examination confirmed the diagnosis. **Discussion:** Granulomatous rosacea poses a diagnostic problem, necessitating early recognition and tailored management to prevent facial disfigurement and psychological distress. Differential diagnoses often require careful consideration and may involve a combination of clinical, dermoscopic, and histopathological assessments. **Conclusion:** This case underscores the importance of considering granulomatous rosacea in the differential diagnosis of other facial dermatoses.

Keywords: disfiguring, granulomatous, inflammatory.

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| Article info |
Submited: 27-04-2024, Accepted: 15-08-2024, Published: 31-03-2025

BACKGROUND

Rosacea is a widely encountered and persistent inflammatory dermatosis characterized by its predominant manifestation on the central facial area with minimal involvement of extra facial regions.1 The clinical spectrum of rosacea spans from facial erythema to ocular inflammation.2 Granulomatous rosacea is a rare disfiguring variant of rosacea that poses diagnostic intricacies due to its clinical and histopathological resemblance to other granulomatous skin conditions.3 Granulomatous rosacea has an annual incidence of 2-3 cases per 100,000 population.4 The granulomatous rosacea's rarity adds complexity to its recognition and management. The infrequency of granulomatous rosacea in clinical practice underscores the importance of thorough differential diagnosis and awareness among dermatologists. Herein, we describe a 24-year-old female with granulomatous rosacea, shedding light on the clinical features and diagnostic complexities employed in this perplexing clinical entity.

CASE REPORT

A 24-year-old female patient presented to us with red, elevated lesions over the forehead, near the eyes, nose, and around the mouth associated with a burning sensation for 3 months. The patient appeared normal three months ago, but within two months, she began to develop tiny, elevated red lesions around her nose, followed by similar lesions around her mouth, forehead, and eyes. The patient appeared normal three months ago, but within two months, she began to develop tiny, elevated red lesions around her nose, followed by similar lesions around her mouth, forehead, and eyes. The patient denied the usage of any medication before the onset of lesions. She had a burning sensation on exposure to the sunlight. Clinical examination revealed multiple, well-defined, erythematous papules, few are discrete, and few are confluent over the nose, periocular, perinasal, and perioral regions (Figure 1). No signs of ocular involvement. Diascopy revealed a black tint.

DOI : 10.20473/bikk.V37.1.2025.63-67

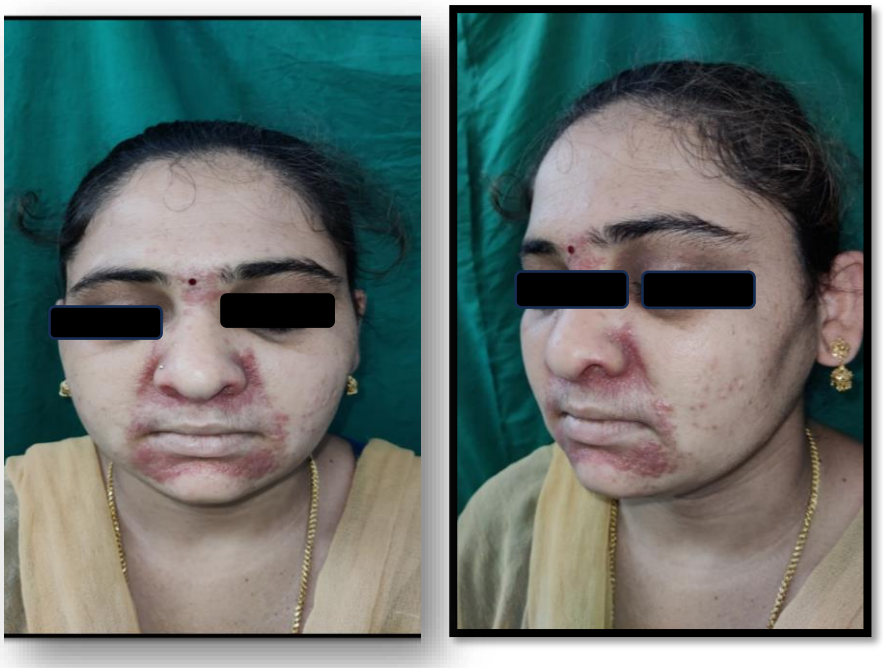

Figure 1. Erythematous papules were noted over the nose, periocular, perinasal, and periora l regions.

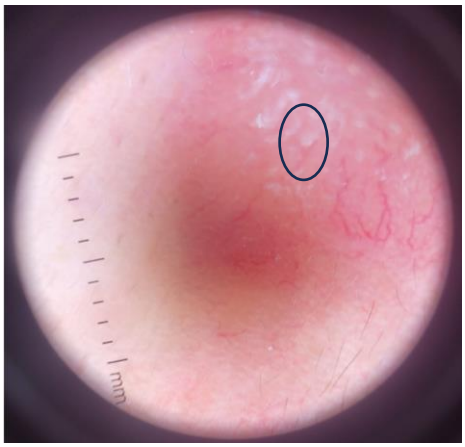

Figure 2. Dermoscopy examination reveals linear and branching vessels interspaced with creamy, whitish linear structures (circle) on a yellowish-orange background.

In this case, based on the clinical presentation, we have identified the following four differential diagnoses of granulomatous rosacea, which are acne agminate, micropapular sarcoidosis, and periorificial dermatitis. Dermoscopy unmasked polygonal vessels interspaced with creamy whitish linear structures on a yellowish orange background (Figure 2). The white linear structure corresponds to Demodex tails, while the yellow-orange structureless area indicates dermal granuloma.

Histopathological examination heamatoxylin and eosin staining revealed normal epidermis and dermis exhibiting non-caseating, conglomerated perifollicular Langhans type of multinucleated histiocytic giant cells in the papillary and deeper dermis (Figure 3). Granulomas consist of Langhans giant cells, epithelioid histiocytes, and lymphocytic cells. The Ziehl Neelsen stain for acid-fast bacteria was negative. Antinuclear antibody was also negative. The patient eventually received a diagnosis of granulomatous rosacea and underwent treatment for two months with oral doxycycline 100 mg OD, topical metronidazole in the morning, and 10% azelaic acid cream at night.

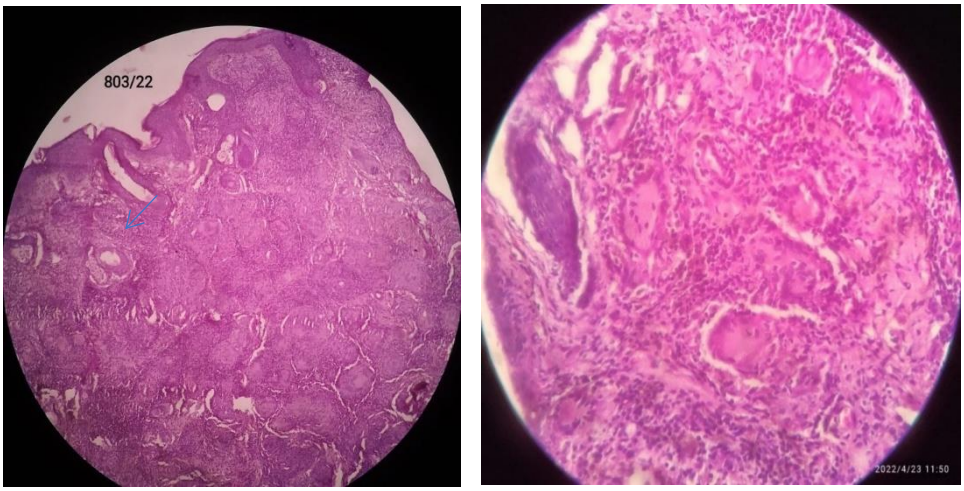

Figure 3. Histopathology examination from periocular region a) Skin biopsy shows normal epidermis and dermis, displaying non-caseating, conglomerated perifollicular Langhans type of multinucleate histiocytic giant cells in the papillary and reticular dermis. b) Granulomas consist of Langhans giant cells, epitheloid his tiocytes, and lymphocytic cells. (magnification 10X).

The presence of erythematous papules sparing the upper lips, histopathological evidence of noncaseating Granuloma, and the absence of systemic symptoms led to the final diagnosis of granulomatous rosacea. Dermoscopic findings validated a definitive diagnosis of granulomatous rosacea.

DISCUSSION

Rosacea is a persistent facial inflammatory dermatosis.[5] It occurs predominantly in middle-aged females.[6] The pathogenesis of rosacea includes the interplay of genetic factors, alterations in innate immunity, microbes, UV radiation, and neurogenic dysregulation.[6] Rosacea exhibits a myriad of expressions, often making its diagnosis difficult.[7] Granulomatous rosacea is an uncommon variant of rosacea.[8] Clinically, it presents with firm, non-tender red to brown monomorphic papules and nodules on cheeks, periorbital, and periocular region.[9] Non-caseating granulomas in the superficial and mid dermis represent the pathognomonic histological feature of granulomatous rosacea.[10] Granulomatous rosacea is a mimicker of numerous other conditions.[11] In this case, based on the clinical presentation, we have considered the following four differential diagnoses which are granulomatous rosacea, acne agminate, micropapular sarcoidosis, and periorificial dermatitis.

Clinical observations substantiated by histopathological and dermoscopic evidence led us to the final diagnosis of granulomatous rosacea.

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Despite the lack of definitive treatment for granulomatous rosacea, oral antibiotics such as tetracycline, doxycycline, systemic corticosteroids, and topicals like azelaic acid, benzoyl peroxide, calcineurin inhibitors, and brimonidine gel. Retinoids and TNF alpha inhibitors are used in recalcitrant granulomatous rosacea.[16] JAK inhibitors, such as abrocitinib, offer novel and promising opportunities for treating granulomatous rosacea.[4]

Granulomatous rosacea is an emulator of numerous other conditions. It can cause facial disfigurement, often leading to debilitating psychological implications. The rarity of granulomatous rosacea in this part of the country stirred us to report this case.

The following table depicts the comparison between these four entities.

Table 1. Differences between granulomatous rosacea, acne agminate, micropapular sarcoidosis, and periorificial dermatitis[12-15]

Clinical entity	Clinical features	Histopathology	Systemic manifestation
Granulomatous rosacea	Non-tender papules and nodules on the periorbital and periocular regions, associated with burning sensation. The upper eyelid and upper lip are spared.[12]	Non-caseating granuloma	Absent
Periorificial dermatitis	A patchy erythema with papules and pustules. Spares the vermilion border of lips.[13]Asymptomatic.	Mild spongiotic dermatitis. Granulomas rarely found.	Absent
Micropapular sarcoidosis	Multiple closely set skin coloured grouped papules.[14]	Non-caseating granuloma.	Present
Acne agminata	Multiple skin coloured to yellowish-brown papules and pustules that heal to leave behind pock-like scars.[15] Prominent eyelid and lip involvement.	Caseating granuloma.	Absent

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