

Rosacea and *Demodex* folliculitis Treated with 5% Permethrin and Low Dose Isotretinoin: A Case Report

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ABSTRACT: Demodicosis is a skin disease caused by mites of the genus *Demodex*. Some evidence suggests that these mites may contribute to flare-ups in patients with rosacea. We report a case of a 32-year-old healthy male who developed multiple, irregularly shaped, well-defined erythematous macules, papules, pustules and scaly plaques infested with *Demodex* mites over the zygomatic and centrofacial (glabellar) areas of the face. The patient was treated with permethrin 5% cream twice daily for two months, and low-dose oral isotretinoin at 10 mg/day for two months, resulting in significant clinical improvement. The combination of permethrin 5% cream and low-dose oral isotretinoin may be considered a potential treatment option for *Demodex* folliculitis on a background of rosacea.

Keywords: Demodicosis, Rosacea, Isotretinoin, Permethrin, *Demodex*

INTRODUCTION

Demodicosis is a cutaneous disorder caused by *Demodex* mites [1]. The pathogenesis of demodicosis is not completely understood. Proposed mechanisms include blockage of hair follicles and sebaceous ducts due to reactive epithelial hyperplasia and hyperkeratinization; bacterial transmission by *Demodex*; a foreign-body reaction to the mites or their waste products; delayed hypersensitivity to mite antigens; and an irritant reaction caused by fatty acids released by mite-derived lipase [2]. Increased *Demodex* density has been implicated in papulopustular rosacea, and the distinction between rosacea-like demodicosis and papulopustular rosacea remains an area of ongoing debate [3]. Although ivermectin is generally considered the treatment of choice for human demodicosis, other off-label therapies have also been used [4]. This case report aims to describe a case of *Demodex* folliculitis complicating papulopustular rosacea in a patient with a darker skin phototype, including its clinical and histopathological features and the observed response to topical permethrin and low-dose oral isotretinoin.

CASE PRESENTATION

A 32-year-old Filipino man presented with plaques on the zygomatic and centrofacial (glabellar) areas of the face.

Five years prior to consultation, he developed pruritic macules and papules over the zygomatic areas that gradually increased in size and number. The lesions were aggravated by sun exposure and progressed into multiple, well-defined, erythematous, plaques studded with pustules. He was initially diagnosed as seborrheic dermatitis by a private physician and treated with a topical corticosteroid and antifungal, with minimal improvement. Three years prior to consultation, the lesions recurred and extended to the glabellar area and periorbital rim (**Figure 1**), accompanied by scaling, dryness, and blepharitis. He received no further consultation or treatment until the persistence and progression of the lesions prompted consultation at our institution. Written informed consent was obtained for publication of the clinical details and photographs.

MANAGEMENT AND OUTCOME

The patient had Fitzpatrick skin phototype IV with persistent centrofacial redness, mild phyma, transient facial erythema, inflammatory papules and pustules, mild facial edema, and ocular involvement. Dermoscopy revealed matted telangiectasia, linear curved vessels, and white lines corresponding to *Demodex* tails (**Figure 2A**). Skin punch biopsy demonstrated numerous *Demodex* mites within the follicular infundibula, some surrounded by dense neutrophilic infiltrates

(microabscess). Enlarged sebaceous lobules with focal lysis and moderate perivascular and periadnexal lymphocytic infiltrates were also observed (**Figure 2B**), confirming the diagnosis of rosacea with *Demodex* folliculitis. Baseline laboratory investigations were performed prior to treatment and were within normal limits. The patient was treated with permethrin 5% cream twice daily and oral isotretinoin 10 mg/day (0.17 mg/kg/day) for two months, resulting in clinical

improvement, as documented by Quantificare® photographs obtained at baseline and after 2 months of treatment (**Figure 3A**). No adverse events were reported during the treatment period. The post-treatment images demonstrated reduced facial erythema, with a corresponding reduction in the extent and intensity of erythema on the Quantificare® erythema maps (**Figure 3B**). Isotretinoin was initially planned for a five-month course; however, the patient was lost to follow-up.



Figure 1. Clinical photograph showing multiple, irregularly shaped, well-defined erythematous macules, papules, and scaly plaques involving the forehead (glabella), periorbital rim, and bilateral zygomatic areas.

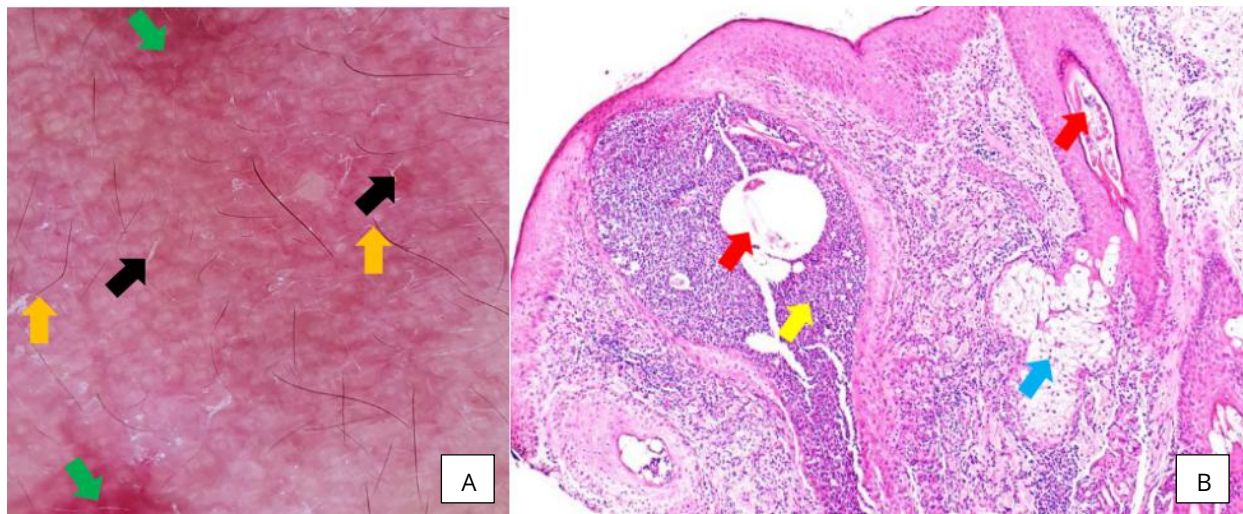


Figure 2. Diagnostic findings. **(A)** Dermoscopy showing a network of blood vessels. Specific features include dilated blood vessels (green arrows), white dots corresponding to dilated follicular infundibula (orange arrows), and white lines (*Demodex* tails) (black arrows); **(B)** Histopathological findings showing numerous *Demodex* mites within the follicular infundibula (red arrows), associated with dense neutrophilic infiltrates (yellow arrow), enlarged sebaceous lobules with focal lysis (blue arrow), and moderate perivascular and periadnexal lymphocytic infiltrates (H&E, ×400).

DISCUSSION

Demodicosis, or demodicidosis, is a cutaneous disorder caused by *Demodex* mites, which are common commensals of the pilosebaceous unit. Demodicosis has traditionally been classified into pityriasis folliculorum, rosacea-like demodicosis, and demodicosis gravis. Among these, rosacea-like demodicosis shares clinical features with papulopustular rosacea, and current evidence suggests that the two may represent phenotypes within the same disease spectrum rather than distinct disorders [3]. Although the relationship

between *Demodex* and rosacea remains controversial [1], increasing evidence supports its role in the pathogenesis and exacerbation of papulopustular rosacea. In the present case, the characteristic clinical features of rosacea, together with dermoscopic findings suggestive of *Demodex* infestation and histopathological demonstration of numerous intrafollicular mites with perifollicular inflammation, supported the diagnosis of rosacea complicated by *Demodex* folliculitis.

Demodicosis may be diagnosed by examining scales using 40% potassium hydroxide (KOH) or by standard skin surface biopsy (SSSB), which samples the

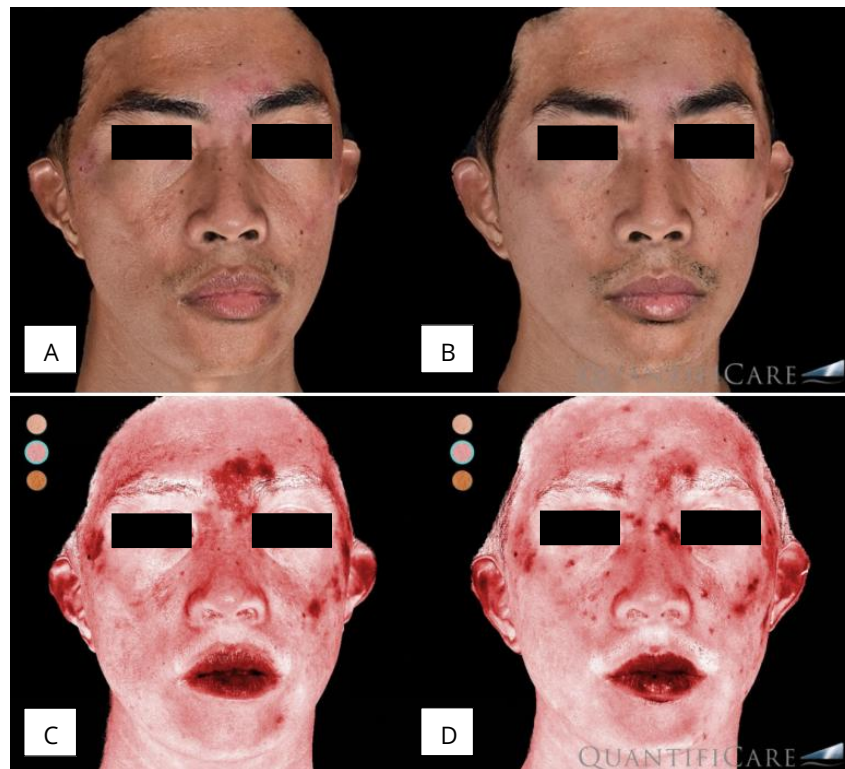


Figure 3. Quantificare® 3D photographic images obtained at baseline (A) clinical photographs; (C) erythema maps; and after two months of treatment (B) clinical photographs; (D) erythema maps. Photographs demonstrate clinical improvement, with reduced facial erythema and a corresponding reduction in the extent and intensity of erythema following treatment with topical permethrin 5% cream and low-dose oral isotretinoin.

superficial stratum corneum and follicular contents using cyanoacrylate glue [2]. Although the presence of ≥ 5 mites in a single low-power field on KOH examination or >5 mites/cm² on SSSB is considered significant, *Demodex* mites may also be found in healthy skin. Therefore, diagnosis should rely on increased mite density or extrafollicular localisation together with compatible clinical findings.

In the present case, KOH and SSSB were not performed due to limited availability. Dermoscopy and skin biopsy were chosen to further characterise the lesions and provide histopathological confirmation of the suspected diagnosis. Dermoscopy serves as a useful, non-invasive adjunct, with characteristic findings including white “*Demodex* tails” protruding from follicular openings and reticular or linear telangiectatic vessels [5]. Histopathological findings may vary but generally demonstrate *Demodex* mites within pilosebaceous units accompanied by perifollicular inflammatory infiltrates, with neutrophilic or granulomatous inflammation in more severe forms [2]. In our patient, the characteristic dermoscopic findings, together with skin biopsy demonstrating numerous intrafollicular *Demodex* mites associated with neutrophilic folliculitis and perifollicular inflammatory infiltrates, supported the diagnosis of *Demodex* folliculitis on a background of rosacea.

Treatment of demodicosis is supported by limited evidence [1]. Ivermectin, a purely acaricidal agent, is considered the treatment of choice for human

demodicosis and may be administered as a single oral dose of 0.2 mg/kg or topically as a 1% cream, with reported therapeutic effects [1,6]. Other off-label therapies, including topical permethrin and low-dose oral isotretinoin, have also been used for demodicosis and for the treatment of papules and pustules associated with rosacea and *Demodex* infestation [4]. In a randomised, double-blind, placebo-controlled study, permethrin 5% cream applied twice daily for two months was comparable to metronidazole 0.75% gel in improving erythema and papules and showed greater efficacy against *Demodex folliculorum* [7]. Permethrin 5% cream has also been reported to reduce *Demodex* mite burden and improve blepharitis [8]. Meanwhile, low-dose isotretinoin (10–20 mg administered one to five times weekly) has been reported to be effective and well tolerated in patients with mild-to-moderate papulopustular rosacea [9].

Greater benefit may be achieved when permethrin 5% cream is combined with other systemic and/or topical therapies [7]. In this case, clinical improvement was documented after two months of treatment with permethrin 5% cream and low-dose oral isotretinoin. A similar combination was reported by Paichitrojjana et al. in a patient with ivermectin-refractory demodicosis, who was treated with permethrin 1% cream and low-dose oral isotretinoin, with marked clinical improvement after eight weeks [10].

Our case adds to the limited literature describing this combination treatment in a Filipino

patient with Fitzpatrick skin phototype IV. The clinical improvement observed after two months suggests that combined topical permethrin and low-dose oral isotretinoin may represent a potential treatment option for *Demodex* folliculitis associated with rosacea in patients with darker Asian skin. Further studies are needed to determine the efficacy and safety of this approach in this population.

CONCLUSION

This case illustrates the clinical overlap between papulopustular rosacea and rosacea-like demodicosis, which may represent two phenotypes within the same disease spectrum. Dermoscopy may aid in the clinical diagnosis of *Demodex* folliculitis, while skin biopsy provides histopathological confirmation, particularly in cases complicating papulopustular rosacea. Treatment with topical 5% permethrin and low-dose oral isotretinoin was associated with clinical improvement during the treatment period, suggesting that this combination may represent a potential treatment option for selected patients with rosacea associated with *Demodex* infestation.

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None

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest.

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