



Case Report

# Papulopustular periorbital demodicosis: A diagnosis often overlooked

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## ABSTRACT

Demodicosis is the term given for cutaneous diseases caused by the human ectoparasitic mites *Demodex folliculorum* and *Demodex brevis* which are common commensals of the pilosebaceous units in human beings. We report a 72-year-old female who presented with erythematous papulopustular lesions over both upper and lower eyelids and a few similar lesions on the cheeks of 2 weeks duration with one similar episode in the past. A cyanoacrylate standardized skin surface biopsy showed increased mite density and the patient was successfully treated with acaricides. Demodicosis is often misdiagnosed as contact dermatitis, papulopustular rosacea, or seborrheic dermatitis. A high index of suspicion of demodicosis is needed to arrive at an accurate diagnosis.

**Keywords:** *Demodex*, Demodicosis, Papulopustular, Periorbital

## INTRODUCTION

*Demodex*, initially described as a worm by Jacob Henle, and later identified accurately as an obligatory human ectoparasitic mite, has now been implicated in the pathogenesis of many cutaneous diseases.<sup>[1]</sup> These are collectively called demodicosis.<sup>[2]</sup> Different clinical manifestations of demodicosis have been described in the literature. In this case report, we present a rare manifestation of the same.

## CASE REPORT

A 72-year-old woman presented to the dermatology outpatient department with pruritic, red, raised lesions around both eyes of 2 weeks duration. She had Type 2 diabetes mellitus, hypertension, and bronchial asthma. There was no history of any topical applications (medications or cosmetics) on face. She gave a history of similar lesions a year back, which resolved after 3 months of treatment with oral and topical medications, the details of which were not known.

Examination revealed multiple, firm, discrete, reddish papules with minimal scaling and a few papulopustules on an erythematous background involving the upper and lower eyelids of both eyes. A few similar lesions were noted on the cheeks [Figure 1a]. There were no telangiectasia. Ophthalmology evaluation ruled out ocular involvement. All systems were within normal limits. Our differential diagnoses of sarcoidosis, acne agminata, and granulomatous rosacea were ruled out as the biopsy report showed only dense perivascular

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**Figure 1 (a):** Erythematous papules and pustules on the eyelids of a patient with demodicosis; (b): resolution of lesions after 1 month of anti-Demodex treatment.

and perifollicular infiltrate of lymphocytes and occasional neutrophils with no evidence of granuloma. A differential diagnosis of air-borne contact dermatitis was considered and the patient was given topical steroids for 2 weeks with no improvement. A dermoscopic examination revealed non-specific scales and spiky-whitish, thread-like structures indicating *Demodex* tails [Figure 2].<sup>[3]</sup>

A cyanoacrylate standardized skin surface biopsy (SSSB) was performed, which showed viable *Demodex* mites (with a mite density of more than 5/cm<sup>2</sup>).<sup>[4,5]</sup> Patient was treated with topical and oral (400 mg twice a day for one week) metronidazole and single-dose oral ivermectin (12 mg). A repeat SSSB after 1 week of treatment showed decrease in mite density (2/cm<sup>2</sup>). On follow-up visit after 1 month, the patient showed significant clinical improvement [Figure 1b]. Patient was advised maintenance therapy with 1% topical ivermectin cream for one more month. Clinical, dermoscopic, SSSB findings, and a positive response to anti-*Demodex* therapy pointed toward a diagnosis of demodicosis in our patient.

## DISCUSSION

*Demodex* is a genus of obligatory human ectoparasitic mites belonging to class *Arachnida*, family *Demodicidae* which live in or near pilosebaceous units at a density of  $\leq 5$  mites/cm<sup>2</sup>. The two species which parasitize humans are *Demodex folliculorum* and *Demode brevis*.<sup>[2,4,6]</sup> They have a predilection for high sebum producing areas and are hence, found mainly on the face with maximum numbers on the forehead, cheeks, nose, and nasolabial folds. They are also found on the scalp, external ear, meibomian glands, eyelash follicles, upper chest, nipples, penis, mons veneris, buttocks, and ectopic sebaceous glands in the buccal mucosa.<sup>[1]</sup> Cutaneous diseases caused by these mites are termed demodicosis.<sup>[7]</sup> It manifests when the follicles are heavily infested with the mites or



**Figure 2:** Dermoscopy showing spiky-whitish, thread-like structures (black arrows) indicating *Demodex* tails in a patient with demodicosis (Illuco dermoscope, polarised light,  $\times 10$ )

when the mites penetrate the dermal tissue. The immune system by various unknown mechanisms maintains *Demodex* as commensals. An imbalance in the host immunity together with changes in the microenvironment of skin and increased mite density could possibly play a role in the pathogenesis of demodicosis.<sup>[8,9]</sup>

Human demodicosis has been classified into primary and secondary forms. Primary demodicosis is due to excessive mite density in the absence of pre-existing or concurrent inflammatory dermatoses, whereas secondary demodicosis is associated with an increase in *Demodex* mites in patients with other known dermatoses or systemic diseases. The dermatoses associated with secondary demodicosis include papulopustular rosacea, seborrheic dermatitis, perioral dermatitis, steroid dermatitis, tumors (eyelid basal cell carcinoma, and mycosis fungoides), and melanocytic naevi. Systemic diseases such as chronic renal failure, can also predispose to secondary demodicosis.<sup>[1,7,10,11]</sup> The different clinical manifestations of demodicosis include spinulate demodicosis, papulopustular demodicosis, perioral demodicosis, and blepharitis to mention a few.<sup>[1,7]</sup> Though periorbital demodicosis is often described as a manifestation of demodicosis in literature, it is rarely encountered and reported.<sup>[12]</sup> We ought to consider demodicosis as one of the differential diagnoses in a patient, who presents with periocular, non-specific, papules. A standardized skin surface biopsy and response to treatment with acaricidal agents (ivermectin, metronidazole, permethrin, or benzyl benzoate) can help to diagnose demodicosis.<sup>[13-15]</sup>

## CONCLUSION

A high index of suspicion is needed to arrive at a prompt diagnosis of demodicosis and gratifying results can be obtained by treatment with acaricides.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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## Conflicts of interest

There are no conflicts of interest.

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