Novel lymphoproliferative reaction to demodex infestation

Ciara Grayson MD [1], Zane Berry BS[2], Ben J Friedman MD[1], Natalie H. Matthews MD MPhil[1,3]

1. Department of Dermatology, Henry Ford Health, Detroit, MI 2. Michigan State University College of Human Medicine, East Lansing, MI 3. Department of Medicine, Michigan State University College of Human Medicine, East Lansing, MI

History

- A 43-year-old healthy man presented with a several month eruption of asymptomatic lesions on lips
- No new or changes in medication
- No topical products other than Burts Bees (used for yrs)
- No recent illness

Physical Examination

- Monomorphic smooth erythematous 3-4mm papules distributed over the vermillion border of upper and lower lips along the distribution of Fordyce spots
- No surface change, symmetric

Clinical Photos

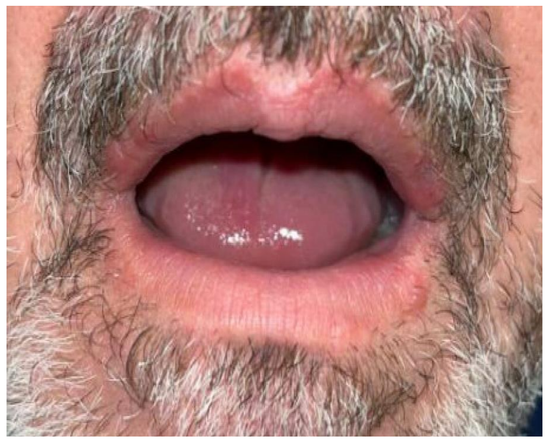

Figure 1. Monomorphic smooth pink papules along vermillion border of upper and lower lips

Figure 2a. Left upper and lower lips with smooth pink papules **b.** dermoscopic image of papule – bland pink/orange papule with uniform telangiectasia

Histopathology

- Dense and diffuse dermal infiltrate of small to medium size lymphocytes with staining was noted on H&E.
- Demodex mites were seen within the follicles.
- T-cell beta receptor gene rearrangement study revealed a dominant clonal population of T-cells.

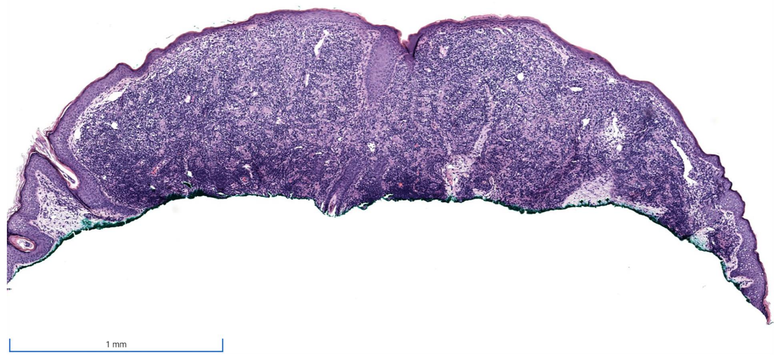

Figure 3. Punch biopsy (H&E) showing dense and diffuse dermal infiltrate of lymphocytes small to medium in size extending to the biopsy base. Demodex mites are seen within the follicles.

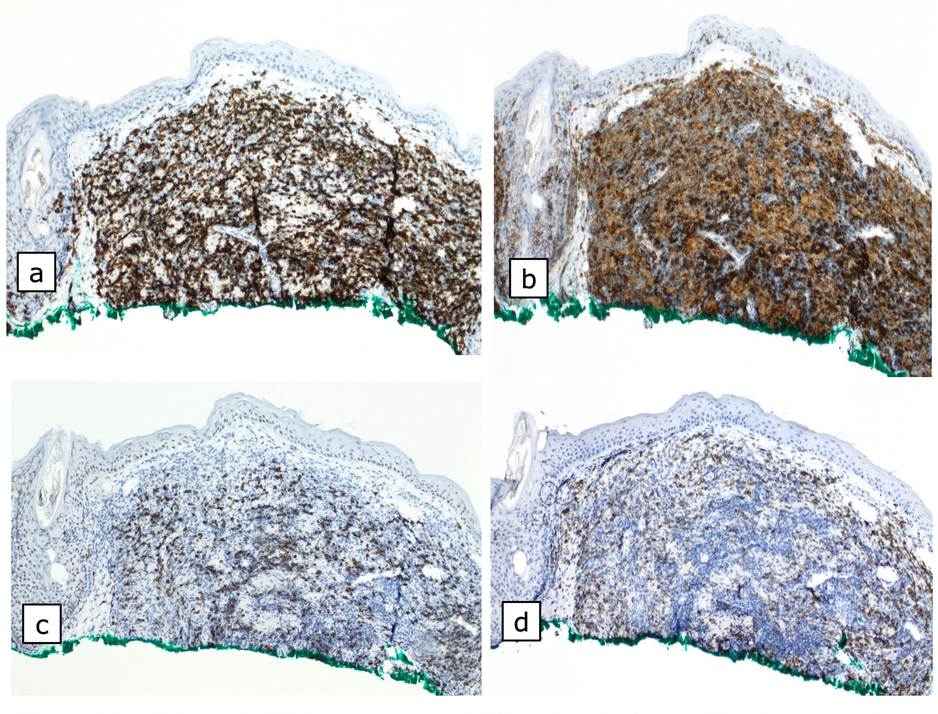

Figure 4. Punch biopsy (H&E) showing dense and diffuse dermal infiltrate of lymphocytes small to medium in size extending to the biopsy base with a) CD3 staining b) CD4 staining c) CD20 staining and d) PD1 staining.

Course and Therapy

- We favored the diagnosis of a pseudo-lymphomatoid demodicosis
- The patient was treated with intralesional kenalog, which led to improvement of the lesions
- Remaining lesions resolved with topical ivermectin cream twice daily

Discussion

- *Demodex* are ectoparasitic mites that have a predilection for sebum & often found in areas rich in sebaceous glands.[1]
- Demodicosis is characterized as a cutaneous infection with a high density of *Demodex.* This results in a variety of clinical manifestations such as pityriasis folliculorum, rosacea, seborrheic dermatitis, and blepharitis.[2-5]
- While the pathogenesis of demodicosis and its role in certain skin diseases is not fully understood, immune dysregulation is thought to play a role.[6]
- The various ways in which demodex mites can alter the local host immune response has been documented in various dermatoses such as follicular mucinosis mimicking folliculotropic mycosis fungoides, acne, and perioral dermatitis.[7-9]
- Treatment options for demodicosis include topical or oral ivermectin, topical or oral metronidazole, permethrin, and tea tree oil.[10]
- Our case highlights a novel reaction pattern to Demodex infiltrating Fordyce spots, which should be considered in the differential diagnosis of erythematous papules in sebaceous rich areas.
- Psuedo-lymphomatoid demodicosis should be considered in the differential diagnosis of erythematous papules in sebaceous rich anatomic locations.

References

1. Rufli T, Mumcuoglu Y. The hair follicle mites Demodex folliculorum and Demodex brevis: biology and medical importance. A review. *Dermatologica*. 1981;162(1):1-11. doi:10.1159/000250228

2. Ayres S, Jr., Ayres S, 3rd. Demodectic eruptions (demodicidosis) in the human. 30 years' experience with 2 commonly unrecognized entities: pityriasis folliculorum (Demodex) and acne rosacea (Demodex type). *Arch Dermatol*. May 1961;83:816-27. doi:10.1001/archderm.1961.01580110104016

3. Bonnar E, Eustace P, Powell FC. The Demodex mite population in rosacea. *J Am Acad Dermatol*. Mar 1993;28(3):443-8. doi:10.1016/0190-9622(93)70065-2

4. Karincaoglu Y, Tepe B, Kalayci B, Atambay M, Seyhan M. Is Demodex folliculorum an aetiological factor in seborrhoeic dermatitis? *Clin Exp Dermatol*. Dec 2009;34(8):e516-20. doi:10.1111/j.1365-2230.2009.03343.x

5. Zhao YE, Wu LP, Hu L, Xu JR. Association of blepharitis with Demodex: a meta-analysis. *Ophthalmic Epidemiol*. Apr 2012;19(2):95-102. doi:10.3109/09286586.2011.642052

6. Akilov OE, Mumcuoglu KY. Immune response in demodicosis. *J Eur Acad Dermatol Venereol*. Jul 2004;18(4):440-4. doi:10.1111/j.1468-3083.2004.00964.x

7. Trager MH, Queen D, Chen D, Hodak E, Geskin LJ. Demodex-induced follicular mucinosis of the head and neck mimicking folliculotropic mycosis fungoides. *JAAD Case Rep*. Apr 2020;6(4):266-272. doi:10.1016/j.jdcr.2020.01.014

8. Paichitrojjana A. Demodicosis Imitating Acne Vulgaris: A Case Report. *Clin Cosmet Investig Dermatol*. 2022;15:497-501. doi:10.2147/ccid.S358000

9. Alniemi DT, Chen DL. Perioral Demodex folliculitis masquerading as perioral dermatitis in the peripartum period. *JAAD Case Rep*. Jul 2019;5(7):639-641.

10. Chudzicka-Strugała I, Gołębiewska I, Brudecki G, Elamin W, Zwoździak B. Demodicosis in Different Age Groups and Alternative Treatment Options-A Review. J Clin Med. 2023 Feb 19;12(4):1649. doi: 10.3390/jcm12041649. PMID: 36836184; PMCID: PMC9961532.