



Demodex and Itching Ears

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Abstract

While facial skin demodicosis was investigated during the time, ear demodicosis has only few but not to be neglected references. This ear disease should also be included on the list of the differential diagnosis in patients with damaged ears, especially when itching is one of the symptoms.

Keywords: Demodicosis; *Demodex*; Ears; Itching

Abbreviation: VAS: Visual analogue scale

Introduction

Demodicosis is a parasitic skin disease caused by *Demodex folliculorum* and *Demodex brevis*. Usually, *D. folliculorum* is found in the infundibular portion of the hair follicles, while *D. brevis* likes sebaceous ducts, Meibomian glands, and the deeper parts of hair follicles. The mites are translucent and worm-like with a head, four pairs of legs, and a longer body tail [1]. The lengths of adult mites reach 0.3-0.4mm [2]. Their mainly nocturnal movements at a rate of 8-16mm/h [3] could explain why the itching is more annoying during this part of the day. The bright light determines the mites to hide into hair follicles [3], which could be an explanation to the reduced number of *Demodex* forms found when collecting the samples during the day. The meal of these mites includes a cocktail of skin cells, hormones and sebum accumulating in the hair follicles [3].

Clinical Consideration

There are two types of ear demodicosis: Demodectic frost of the ear and Auricular demodicosis [1]. Demodectic frost of the ear was described in an observation to a man in his 50s presenting for routine total body skin examination. He was completely

asymptomatic, having frosted, gritty follicular scaling of his ears, superimposed on an erythematous base. Findings from skin scraping followed by potassium hydroxide preparation of the scale were positive for *Demodex* mites [3]. This demodectic frost of the ear presented fine follicular scaling primarily confined to the helix and lobule, giving the skin a frosted or powdery appearance and sandpaper-like texture. In some patients, there were also reported auricular erythema, pruritus, pain, and discomfort [4].

Auricular demodicosis was described in a case report on an 84-year-old woman, who presented herself for impaired hearing, but was found with chronic pruritic otitis externa, myringitis and a chronic cholesteatoma. Despite failing to establish the cause by microbiological and mycological investigations, histology of the external auditory canal and tympanic membrane revealed a large amount of *Demodex* mites [5].

In another study from Turkey, 50 enrolled patients were found with itching ears and on 54 health-control patients VAS was used to rate the itch, the itch period, and the medication used for itching. For the first group a positive and strongly significant relationship

was observed between the number of *Demodex* spp. and severity of ear itch, with VAS scores of $p=0.0001$ and $r=0.724$ [6]. In another study performed in China on 613 college students, 11.58% were found positive with *D. folliculorum* and *D. brevis*. 67.60% from the positive cases complained constant scratching and itch [7]. As more than 5 mites/cm² are considered pathogenic for the patients with demodectic facial skin illness [8], in the examined studies included in our references we have not found any evidence about the pathogenic threshold number related to ears diseases caused by them.

Discussion

We found only few references in literature regarding to ear demodicosis, showing that it could be masked by others ear illness or mime them, as a possible reason for misdiagnosing the disease. The result may turn into a therapeutic failure and consequently a prolonged evolution of the disease. We highlight that (Figure 1) was taken from a microscopic examination of helix scales sample on a Romanian elderly male patient and was associated with the text to illustrate the observation about demodectic ear frost described. (Figure 2) was taken from a microscopic examination of a cerumen ear sample of another Romanian old man to illustrate the auricular demodicosis, even if the sampling method is different (in the case report the histological sampling method was used).

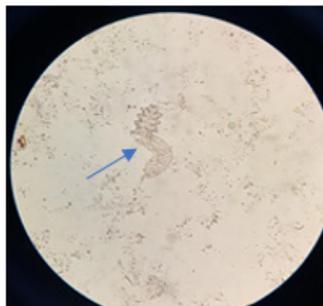


Figure 1: Demodex in helix scales (wet mount preparation with 20% KOH, 10×)

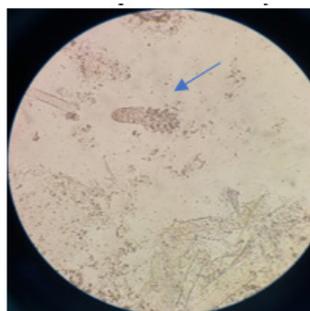


Figure 2: Demodex in cerumen (wet mount preparation with paraffin oil, 10×).

Conclusion

We recommend that parasitological examination should be a routine for any otologic investigation beside bacteriological and

mycological procedures for patients presenting ear illness. We hope that this mini review will encourage the otorhinolaryngologists and dermatologists to pay attention on auricular demodicosis as a differential diagnostic, conducting their own research and publishing new and helpful findings.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Disclosure

We have not found recent (in the last two years) articles related to the ear demodicosis. On the other hand, some of the original articles cited by the authors listed below in their paper works could not be found, as the reason for not quoting the primary source.

References

1. Fatimatuzzahra Al Haddar, Yudha Nurdian (2017) Demodectic Frost of the Ear, the New Presentation of Auricular Demodicosis: a Distinct Clinical Entity.
2. Ruffli T, Mumcuoglu Y (1981) The hair follicle mites *Demodex folliculorum* and *Demodex brevis*: Biology and medical importance. A review. *Dermatologica* 162: 1-11.
3. Parvaiz Anwar Rather, Iffat Hassan (2014) Human *Demodex* Mite: The Versatile Mite of Dermatological Importance. *Indian J Dermatol* 59(1): 60-66.
4. Wallace Matthew M, Guffey Darren J, Wilson Barbara B (2017) Demodectic Frost of the Ear. *JAMA Dermatol* 153(3): 356-357.
5. Klemm E, Haroske G, Wollina U (2009) Otitis externa and myringitis due to demodicidosis. *Acta Dermatovenerol Alp Panonica Adr* 18(2): 73-76.
6. Bilal Nagihan, Kirişçi Özlem, Özkaya Esra (2017) *Demodex* Species Infestation in Patients with Ear Itching and Its Relationship to Itch Severity. *Turkiye Parazitoloj Derg* 41(2): 87-91.
7. Ding Y, Huang X (2005) Investigation of external auditory meatus secretion *Demodex folliculorum* and *Demodex brevis* infection in college students. *Lin Chuang Er Bi Yan Hou Ke Za Zhi* 19(4): 176-177.
8. Aşkın Ü, Seçkin D (2010) Comparison of the two techniques for measurement of the density of *Demodex folliculorum*: standardized skin surface biopsy and direct microscopic examination. *BJD* 162(5): 1124-1126.