

Detection of *Demodex* species in acne vulgaris patients using different diagnostic methods.

Thesis

Submitted for Partial fulfillment of Master Degree in Medical Parasitology

BY

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2019**

Summary

Demodex is a permanent ectoparasite, living on pilo-sebaceous units and mainly on the faces. Two species are specific for humans (*Demodex folliculorum* and *Demodex brevis*). Some authors consider *Demodex* mites as, simply passengers that can be typically found in normal adult skin or coincidentally in diseased skin. So their probable roles in the pathogenesis of some human skin diseases are still arguable. However, a growing number of case reports and epidemiological studies showed that, *Demodex* has an aetiopathogenic role in acne vulgaris.

The main goal of the present study was in one hand to identify *Demodex* species among acne vulgaris patients, using different diagnostic methods. On the other hand, to assess the link between the presence of such parasitic infection and acne vulgaris.

Objectives:

- 1- Clarify the association between *Demodex* species and acne vulgaris.
- 2- Evaluation of variable diagnostic methods to detect *Demodex* mites in patients suffering from acne vulgaris.
- 3- Specific parasitological analysis to determine the intensity of infection in each species.
- 4- Study the risk factors and the possible connection between such parasitic infection and the clinical manifestations in different cases.

This study included three categories of cases, 30 subjects/each. The first 2 groups were related to patients suffered from mild (group1) and moderate to severe acne (group2). The third group was healthy cases who did not experience any dermatological problems as a control group.

Detailed data sheets were fulfilled and samples were collected from each involved case, and then microscopically investigated.

Cases included in the study were subjected to the following:

- 1- Dermatological examination and lesions categorization according to the global acne grading system (GAGS).
- 2- Answering the data collection sheet.
- 3- Obtaining samples from the skin by three dermatological technical tools:
 - a. Deep skin scrapping method.
 - b. Hair epilation method.
 - c. Scotch adhesive tape method.
- 4- Provided by the results.
- 5- Dermatological management and followed-up according to the current institutional protocol.

Collected samples were subjected to the following:

- 1- Smearing on a microscopic slide according to the applied procedure.
- 2- Parasitological examination.
- 3- Morphometric analysis for the discovered parasitic stages.
- 4- Detection of intensity of infestation in positive cases.

All positive cases were detected by deep skin scrapping method and one positive case was discovered by epilation of hair, while no positive case detected by scotch adhesive tape methods

According to deep scrapping method, occurrence of *Demodex* mites in patient with moderate to severe acne, mild acne and control was (40% 0.0% & 6.7% respectively) which was statistically significant,

($p=0.002$). All detected mites in moderate to severe acne cases were *D. folliculorum* and *D. brevis* was observed in 2 subjects related to the control group.

Clear morphological and morphometric features of the adult *Demodex* mites were seen under microscope. The energetic life style within an active mites' community was evident in the 12 positive acne cases. On the contrary, adult *Demodex brevis* mites were detected solely without any other stages, indicating lethargic life style and defective productivity.

The density of *Demodex folliculorum* mites in all the 12 positive cases was >5 mites per cm^2 . While, the number of *Demodex brevis* mites in the 2 control group was very few (<5 mites per cm^2).

The motility of all investigated *Demodex folliculorum* mites were evidenced, while the examined *Demodex brevis* mites related to the 2 control subjects did not demonstrate any motility.

In positive cases, males comprised statistically higher number than females. Itching and hair loss were found to be statistically significant in positive cases for *Demodex* infection.

Recurrence of clinical manifestation was reported in all positive cases for demodicosis despite the use of previous treatment. This may indicate the unpleasant impact of demodicosis on the extent of cure of acne cases following medicinal trials.

Regarding risk factors that found to be statistically significant in positive cases for *Demodex* infection includes: repeated exposure to sun, stressful life style, having oily skin and defective use of facial cleansers. Consequently, these results indicate the importance of careful and deep cleaning of the face that possibly reflected a vital factor in avoidance of *Demodex* infection.

Our result found an association between acne vulgaris and *Demodex* infestation and concluded that when regular treatments for acne vulgaris are ineffective, examination of *Demodex* mites and necessary acaricidal therapies should be considered.

Further studies on larger scale are recommended to explore the definite nature of the relationship of *Demodex* species and acne vulgaris.