

Non-invasive skin surface biopsy: an easy technique to detect *Demodex folliculorum*

K. Raoufi-Nejad*, N. Salkhordeh, G. Sarrafian, M. Afshar, M. Rajabi

Department of Clinical Pharmacy, Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran.

Background and Aims: *Demodex folliculorum* is a harmless saprophytic mite of normal human pilosebaceous units especially on the facial area. Follicles infestation occurs usually asymptotically; however, suppurative or granulomatous inflammation can exist in demodicidosis which is caused with high mite density. *Demodex* density (Dd) can be detected with several invasive and non-invasive skin biopsy methods. The purpose of this study is to further refine a non-invasive technique and suggest an accurate, reproducible and quantitative method for implicating Dd in certain skin diseases.

Methods: Standard skin surface biopsy (SSSB) and comedo-extraction (CE) plus adhesive tape (AT) techniques were performed to detect *Demodex* mites in 15 patients with different skin diseases associated with *Demodex folliculorum* including seborrheic dermatitis, acne vulgaris and rosacea. Additionally, 36 patients were recruited to validate the existing SSSB technique. Different counting methods to determine the Dd as mentioned by existing publications were compared in order to confirm the accuracy and reproducibility. Final standard operating procedure (SOP) was set focusing on SSSB.

Results: SSSB and CE plus AT results were compared. Our SOP for SSSB was selected as the most reliable method to detect the mites. The current SOP for SSSB was validated using 51 patients. Dd was calculated using a formula demonstrating the most actual number of mites/cm². Detected *Demodex* using SSSB technique was significantly higher than CE plus AT technique on the same patients.

Conclusions: Our proposed SSSB technique can offer an easy, practical and reproducible sampling method which can be used for quantitative assessment of *Demodex* infestation in human facial sebaceous follicles. However, not all skin conditions are associated with *Demodex*. In order to select the appropriate therapy for the right candidates, this accurate and accessible biopsy technique was offered to be the first course of action prior to initiation of scabicial medications.

Keywords: *Demodex folliculorum*; Demodicidosis; Standard skin surface biopsy.