

Super-High Magnification Entodermoscopy: The New Era of Dermoscopy in the Field of Skin Parasitoses

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Introduction

Super-high magnification dermoscopy (SHMD) is dermoscopy at 400x magnification. Its use in the study of skin parasitoses is still limited to scabies and demodicosis [1,2]. We report four cases of skin parasitoses studied with SHMD, including infestations by *Pthirus pubis* and *Pediculus capitis*.

Case Presentation

Three patients presented 2-weeks history of persistent itch. The patients were respectively a 50-year-old man, an 8-year-old child and a 40-year-old man. In the first patient, the itch was diffuse on all body and clinical examination revealed only isolated reddish-gray spots on the trunk. The child suffered from scalp itching and his mother said that other children in his school suffered from similar condition. The last patient presented itchy skin bumps, mainly located on

inguinal folds and proximal lower limbs, some of which are centered by linear escoriations. Dermoscopy at 20x magnification and SHMD with the videodermoscope Fotofinder Medicam 1000 (Fotofinder System, Bad Birnbach) allowed us to recognize infestation by *Pthirus pubis* in the first patient, by *Pediculus capitis* in the second and by *Sarcoptes scabiei* in the third (Figure 1 and Figure 2, A and B). In addition to traditional dermoscopy, SHMD allowed us to study all body parts of lice and to recognize scabies mites in nodular scabies lesions where no traditional dermoscopic signs were visible. We report also a case of a 65-year-old female with a two year history of facial erythema. Clinical examination showed erythema and telangiectasia of the left cheek, on which follicular spicules are barely noticeable to the naked eye. Super-high magnification dermoscopy revealed several elongated white structures emerging from dilated hair follicles, suggesting the presence of *Demodex* mites (Figure 2, B and C).

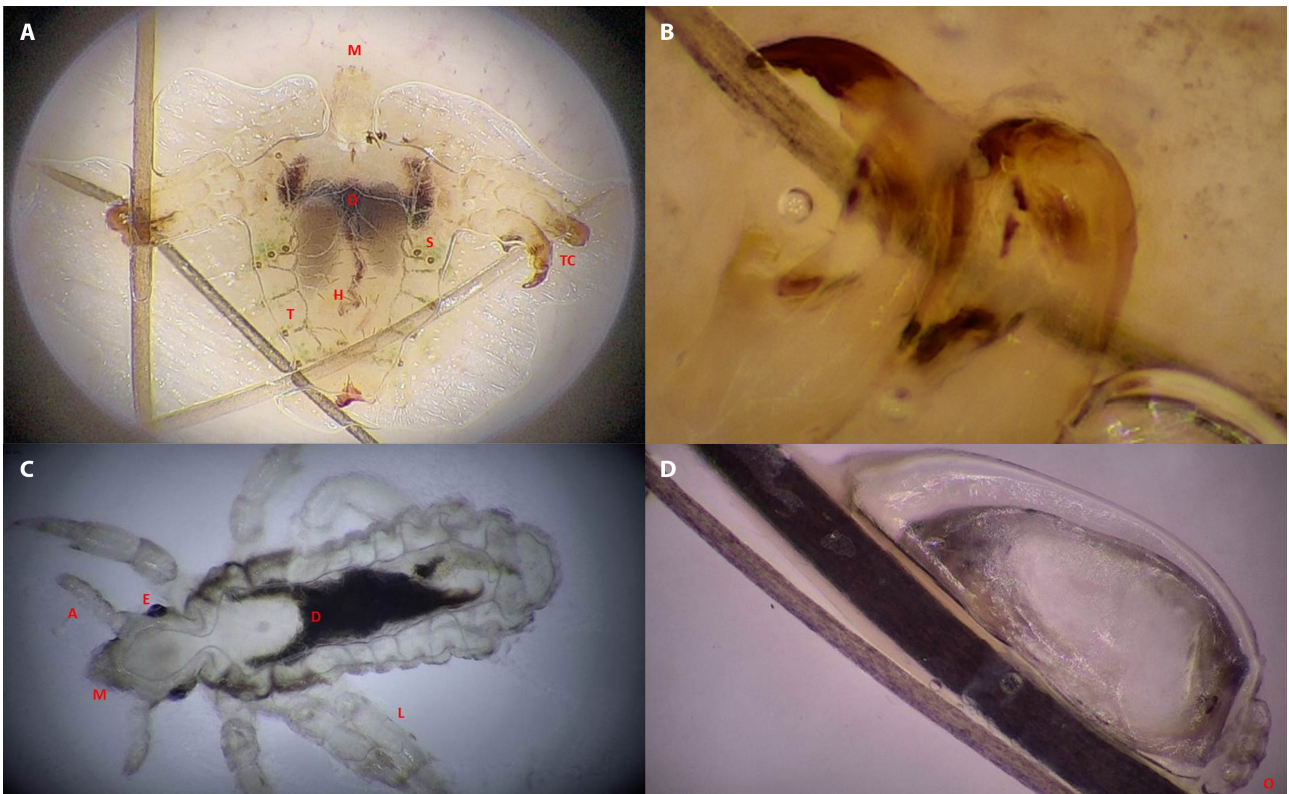


Figure 1. (A) *Pthirus pubis* observed by SHMD (videodermoscope Fotofinder Medicam 1000, Fotofinder System, Bad Birnbach); the red letters indicate the components of louse body: M, mouthparts with antennae; D, the digestive system; S, spiracles; TC, terminal claws; H, hair on the dorsal surface; T, air tubes; (B) Close-up of terminal claws attached to patient body's hair; (C) A second stage nymph of *Pediculus capitis* observed by SHMD; the red letters indicate the components of louse body: A, antennae; M, mouthparts; E, eyes; D, digestive tract, L, legs; (D): vital nit presenting the dome-shaped operculum (O).

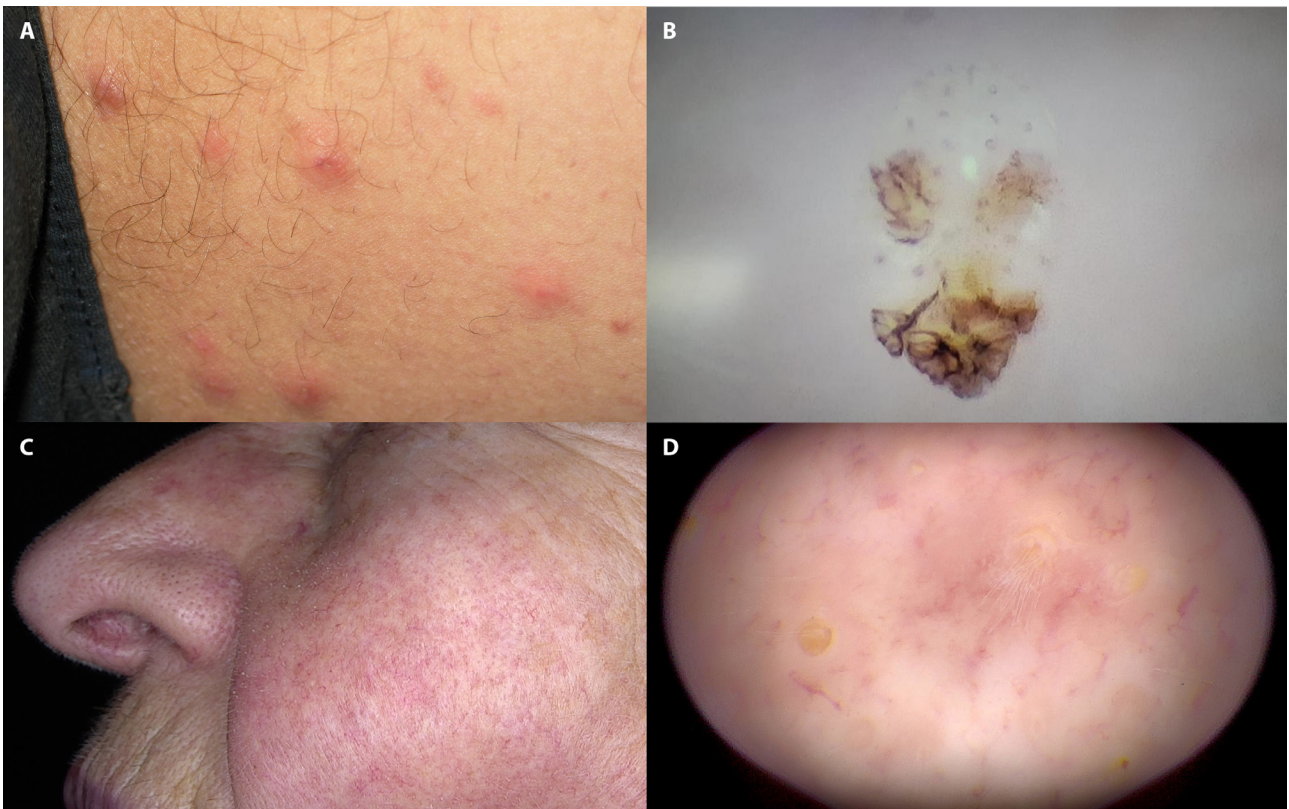


Figure 2. (A) Excoriated nodules of nodular scabies visible on inner thigh of the patient; (B) Dorsal view of *Sarcoptes scabiei* mite with mouthparts and anterior legs, spines on abdomen and posterior legs visible through transparent body; (C) Barely noticeable follicular spicules with erythema and telangiectasia on the left cheek of the patient; (D) *Demodex folliculorum* tails emerging from dilated follicle as elongated white structures (videodermoscope Fotofinder Medicam 1000, Fotofinder System, Bad Birnbach).

Conclusions

For over 20 years, dermoscopy has proven its usefulness in the diagnosis of parasitoses and in the distinction between various species of lice, based on body features, which has been improved by the use of SHMD [3,4]. Moreover, SHMD allows us the study of parasite vitality by dynamic observations of peristaltic activity based on blood movements inside the digestive tract of adult lice and by the visualization of the operculum on the end of the eggs, which is absent in empty nits [5]. Moreover, the study of operculum shape may distinguish the different lice species: *Pthirus pubis* presents a conoidal operculum, while *Pediculus capitis* a dome-shaped operculum [4], as in our patient.

SMDH has been already used to assess the vitality of scabies mites and the effectiveness of treatments. It is useful in cases where traditional dermoscopy fails to distinguish fragments of mites from viable mites [1,6]. Moreover, as in our patient, SHMD may be useful in cases of scabies difficult to diagnoses as nodular scabies, in which the burrows are not clinically evident, so the dermoscopic “delta wing jet with contrail” sign is not clearly detected.

As already demonstrated by Cinotti et al, SHMD may avoid skin biopsies on the face where traditional dermoscopy fails to detect *Demodex*. Moreover, SHMD may allow a measurement of the degree of parasitosis based on the amount of mites found.

We report a study of lice infestation by SHMD, in addition to our experience in other skin parasitoses. SHMD allows to view more details than traditional 20x dermoscopy

and can be useful for several purposes in skin infestation study, such as the detection of parasites or determination of parasite vitality and efficacy of therapy [1,6]. SHMD can be considered a kind of in vivo microscopy and implementing its use in clinical practice could help us to better understand our skin.

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