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Reflectance confocal microscopy for quantification of *Sarcoptes scabiei* in Norwegian scabies.

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ABSTRACT

Background and Objectives: In vivo reflectance-mode confocal microscopy (RCM) can be used for the diagnosis of scabies. This study quantifies *S. scabiei* and its eggs and droppings in a patient affected by Norwegian Scabies (NS), and describes their distribution within the epidermis and in different body areas.

Methods: Different skin sites were randomly chosen in four sections (head, upper limbs, trunk and inferior limbs) of the body surface area (BSA) to acquire a total of 60 RCM z-stacks. The number of mites and eggs, the presence of droppings, as well as the minimum epidermal depth at which mites, eggs and faeces were detectable, was established for each z-stack. The total number of mites and eggs on the entire BSA was calculated considering the weighted mean for the four sections of the BSA.

Results: A total of 15.8 millions of *S. scabiei* and 7.2 millions of eggs were calculated. Mites, eggs and faeces were homogeneously distributed all over the body surface. Droppings, easily recognized by the RCM, were present in more than an half of the analyzed cutaneous sites and were associated with the presence of parasites (chi-squared test, $P = 0.002$).

Conclusions: Our study illustrates the ability of RCM to identify, locate, and quantify the various forms of *S. scabiei* in human skin. NS is an extremely contagious disease, considering that the number of mites can be around 15.8 millions. Moreover, all areas of the body are parasitized in NS, including the face.