

Diagnostic methods for scabies

Métodos diagnósticos da escabiose

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ABSTRACT

Scabies is a contagious cutaneous infection, caused by burrowing of the mite *Sarcoptes scabiei* var. *hominis* in the epidermis. The clinical suspicion is due to the history, clinical distribution of lesions and its aspect; however, the confirmation is with the detection of the parasite. We present the features of the diagnostic methods for scabies, from its detection through direct microscopy of skin scrapings from a lesion or with the use of an adhesive tape on the lesions, to its detection using the dermatoscope, a tool available in most dermatology clinics, which, even in unexperienced hands, has acceptable sensitivity and specificity.

Keywords: Dermoscopy; Diagnostic imaging; Microscopy; Scabies; Skin and connective tissue diseases; Skin diseases

RESUMO

Escabiose é infecção cutânea contagiosa causada pela penetração do ácaro *Sarcoptes scabiei* var. *hominis* na epiderme. A suspeita diagnóstica é feita pela história, distribuição clínica das lesões e sua aparência, porém sua confirmação se dá com a identificação do parasita. Apresentamos os aspectos dos métodos diagnósticos da escabiose, desde a identificação por microscopia óptica de raspados cutâneos de lesão ou pelo uso de fita adesiva sobre as lesões, à identificação com uso do dermatoscópio, ferramenta presente na maioria dos consultórios dermatológicos e que, mesmo em mãos inexperientes, possui sensibilidade e especificidade aceitáveis.

Palavras-chave: Dermoscopia; Diagnóstico por imagem; Doenças da pele e do tecido conjuntivo; Escabiose; Microscopia

Scabies is a contagious skin infection caused by the penetration of the *Sarcoptes scabiei* var. *hominis* mite – a mandatory human parasite – in the stratum granulosum of the epidermis. It is clinically characterized by erythematous papular vesicular, and usually symmetrical lesions, with predilection for palmo-plantar and interdigital regions, armpits, nipples, periumbilical region, elbows, anterior aspect of the wrists, waist and genital area. It causes intense pruritus, especially at night. The diagnostic suspicion is based on the lesions' history, clinical distribution and appearance.¹ Scabies, however, can present atypical clinical patterns in certain circumstances, such as in patients who are on prolonged use of corticosteroids or immunosuppressed.² The definitive diagnosis is based on the microscopic verification of the presence of mites, or their eggs or fecal fragments. These elements are classically identified by optical microscopy on samples of cutaneous scrapings harvested with a scalpel blade and placed on a glass slide with 10% potassium hydroxide. These elements

Diagnostic imaging

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can even be harvested by placing a piece of adhesive tape on the skin, slowly removing and attaching it to the microscope slides in order to allow visualization¹ (Figures 1 and 2). These two methods of harvesting are also performed for the diagnosis of other parasitisms by mites, such as demodicidosis.²

In 1992, Kreusch suggested the use of dermatoscopes for *in vivo* detection of *Sarcoptes scabiei*, eliminating the need to harvest material for analysis under optical microscope.³ Since then, several authors have described the use of dermatoscopes to determine the features found in this parasite, with either direct or indirect identification of the mite.³⁻⁵

Dermoscopy enables direct visualization of the agent in the epidermis through the analysis of the most recent cutaneous lesions. In these cases, a triangular structure – corresponding to the head – and the two pairs of anterior limbs – corresponding to the anterior portion of the adult mite – can be observed (Figure 3). In addition to the benefit of being a non-invasive instrument – meaning it is well accepted by patients due to the

diminished discomfort it causes – it is widely available in dermatological practices and have a further advantage as compared to the classical optical microscopy based direct methods of identification of the agent (mite): the dermoscopic analysis of the skin lesion makes it possible to indirectly evidence signs of the presence of the agent, specifically through structures resembling tunnels that correspond to the path taken by the mite in the moment of parasitism. Under dermoscopy, the tunneling structures, which are better evidenced when using non-polarized lights, consist of a thin linear section, delimited by whitish scales. Identifying the tunnels also helps in the search for the mite, since it is at the end of this structure that *Sarcoptes scabiei* more frequently located (Figure 4).

There are several studies describing the experience of dermoscopic diagnoses of scabies. Dupuy *et al.*⁴ demonstrated that dermoscopy has 91% diagnostic sensitivity, as compared to 90% of skin scrapings. Likewise, dermoscopy has 86% specificity while that of skin scrapings is 100%. Another study demon-

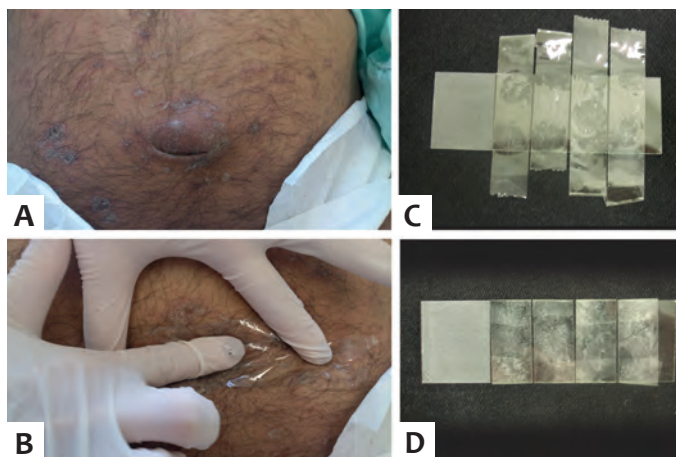


FIGURE 1: A - Patient with clinical picture suggestive of scabies. B - Material harvested using adhesive tape on suspicious lesion. C and D - Adhesive tapes are arranged on the microscope's slide for scanning for *Sarcoptes scabiei* through optical microscopy

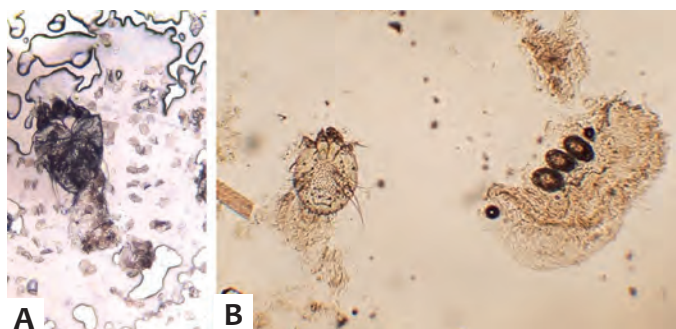


FIGURE 2: Identification of the *Sarcoptes scabiei* mite through optical microscopy with x200 magnification of samples harvested using the adhesive tape method (A) and the skin scraping method. (B) Notice also the presence of three eggs of the mite on the right hand side of the image, amidst keratin agglomerate

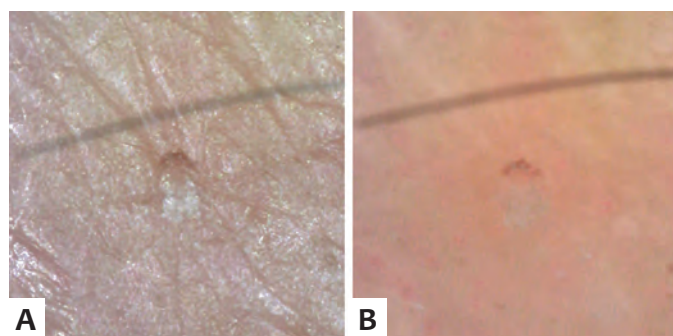


FIGURE 3: Dermoscopy of the scabies under x200 magnification with direct identification of the parasite. Visualization of the structure resembling the shape of a delta representing the mite's anterior portion. A - Non-polarized light B - Polarized light

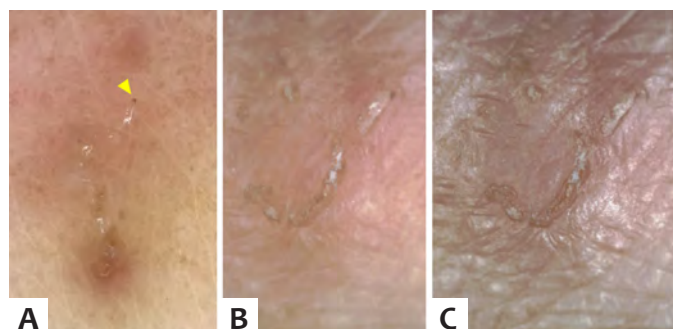


FIGURE 4: Dermoscopy of scabies, magnified x50 (A) and x100 (B and C). The indirect identification of the parasite is based on the meandering tunnels in A, B and C. In A, the yellow arrow indicates the identification of the mite at the end of the tunnel. A and B - Polarized light. C - Non-polarized light

strated that skin scraping combined to dermoscopy provides more accurate and rapid diagnosis of scabies than using the first method isolatedly.⁵ Another noteworthy aspect in the use of the dermoscope is the absence of any risk to the patient's integrity – unlike the classic harvesting performed with a scalpel blade, which can inflict cuts and abrasions on the patient's skin and

result in wounds in sensitive body regions, with risk of complications and unsightly scars.

The present study illustrates the importance of identifying the diagnostic aspects of scabies, facilitating the therapeutic decision in a highly contagious disease, whose delay in treatment can result in epidemic outbreaks and economic burden. ●

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