Skin stripping technique: A diagnostic clue for fiberglass dermatitis

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CLINICAL CHALLENGE

Fiberglass is a man-made vitreous fiber that is widely used in the construction industry. Fiberglass dermatitis (FGD) is an occupational irritant contact dermatitis resulting from mechanical irritation due to penetration into the skin of these fragmented fibers through the stratum corneum. Clinically, it usually presents as a nonspecific eczematous eruption and excoriations secondary to prominent scratching. Diagnosis is frequently hard to make.

SOLUTION

Fiberglass exposure must be suspected, and subsequently a detailed anamnesis must be performed to diagnose FGD. Diagnosis is based on demonstration of fiberglass fragments on the skin.[1] Histopathologic examination would show birefringent particles in the cornified layer.[2] However, a noninvasive diagnostic clue to elucidate the etiology of the eczematous eruption consists of performing a skin stripping and identifying the fiberglass fragments with polarized light microscopy (Fig 1). Skin stripping should be done on lesional skin by

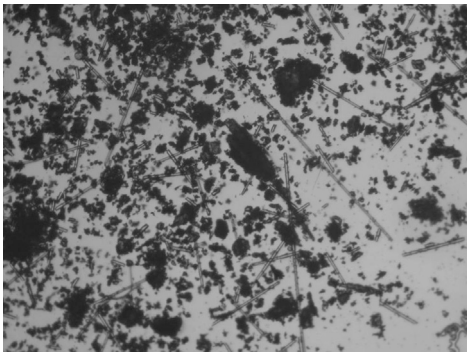

Fig 1. Microscopy observation should reveal fiberglass fragments along with keratinocyte desquamation.

applying a transparent tape and performing a slight rubbing to obtain scaly debris that is at once removed (Fig 2, *A*). Then, the tape adhesive must be placed on a microscope slide (Fig 2, *B*). Finally, microscopic observation of glass fiber allows a certain diagnosis of FGD (Fig 1). It can be accurately identified only by using polarized light microscopy to avoid misdiagnosis as a result of confusion with natural substances: glass fiber has a refractive index of about 1.550, and the fragments are typically uniform in diameter (about 10 μm).

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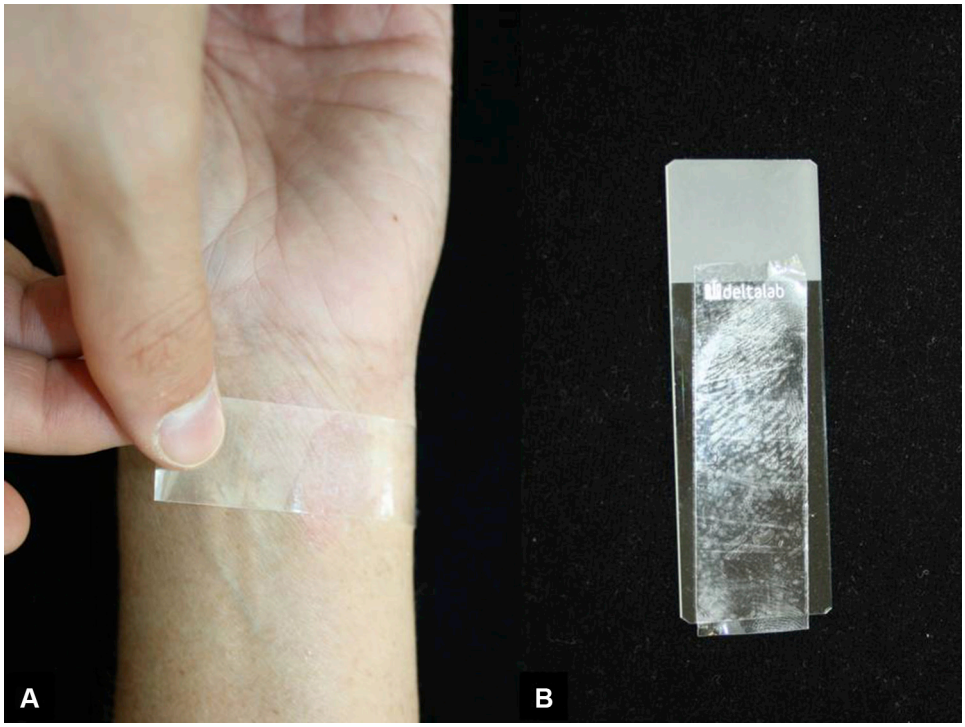

Fig 2. A piece of adhesive tape is placed on the affected skin (skin stripping) (**A**) and then on a microscope slide (**B**).

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