



Fibreglass dermatitis in a caravan manufacturer manifesting as prurigo nodularis

Erick Bravo | Claire M. Felmingham  | Rosemary L. Nixon

Occupational Dermatology Research and Education Centre, Skin and Cancer Foundation Inc., Melbourne, Australia

Correspondence

Dr Claire M. Felmingham, Occupational Dermatology Research and Education Centre, Skin and Cancer Foundation Inc., Level 1/80 Drummond Street, Carlton, Melbourne, Victoria 3053, Australia.

Email: clairefelmingham@gmail.com

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Exposure to fibreglass is a well-known cause of irritant contact dermatitis, and fibreglass particles may cause pruritus. A variety of possible skin lesions arising from the mechanical irritation caused

by fibreglass particles have been reported. We describe a case of fibreglass contact dermatitis presenting with prurigo nodularis-like lesions.

CASE REPORT

A 62-year-old man employed as a glass cutter in a caravan-manufacturing facility was referred to our occupational dermatology clinic complaining of an itchy rash, which had started 1 year before (Figures 1). He had worked in this job for 1 year, and developed the rash soon after starting this role. He cut fibreglass with a rotating cutting tool while wearing long sleeves, plastic overalls, and a variety of gloves. In addition to handling the fibreglass, he was exposed to fibreglass dust generated by a coworker cutting fibreglass nearby. There was a small area of exposed skin on his wrists, between his gloves and overalls. The rash started on his ventral wrists, but then extended to his arms, abdomen, and legs. He had no prior history of atopy or other skin conditions.

After consulting several doctors, he was treated for prurigo nodularis, with topical corticosteroids, oral antihistamines, oral antibiotics, and phototherapy. His pruritic nodules persisted despite treatment, but, notably, his skin improved significantly when he had a 1-month holiday from work. Once the work-relatedness had been recognized, he filed a successful workers' compensation claim, and experienced gradual improvement of his skin condition when away from the workplace.

He was patch tested with the Australian baseline series, rubber chemicals, epoxy chemicals, formaldehyde resins, and samples of his own products from home and work. Testing was performed with allergEAZE skin patch test chambers; allergens were obtained from allergEAZE (SmartPractice, Phoenix, Arizona) and Chemotechnique Diagnostics (Vellinge, Sweden), and applied for 2 days. Patch test readings were performed on day (D) 2 and D4 according to ICDRG guidelines. All patch tests gave negative results. Screening blood tests for causes of pruritus gave normal or negative results. A skin biopsy taken by a previous doctor had been initially reported to be consistent with prurigo or lichen simplex. We requested review with examination under polarized light, which showed small particles of birefringent material in the stratum corneum, confirming the diagnosis of fibreglass dermatitis (Figure 2).

DISCUSSION

Fibreglass was first reported in 1942 to cause irritant contact dermatitis.¹ Sharp, fine fragments of fibreglass penetrate the stratum corneum and cause mechanical irritation. Although this has been more often reported in adults, it has also been described in children.² Fibreglass dermatitis has predominantly been described in occupational settings. The material is used extensively in caravan manufacture. Caravan sales are booming in Australia, and a 2018 consumer report found that one in 13 Australian households have a registered recreational vehicle.³

Fibreglass dermatitis may present with a variety of skin lesions, or no skin lesions. Reported clinical presentations include papules, vesicles, excoriations, erythema, lichenification, and desquamation, typically involving the hands, face, forearms, and skin folds.⁴ Rare cases have been described as purpuric, urticarial, granuloma anulare, or erythema multiforme-like.⁵ Sometimes, fibreglass has been spread through laundering of fibreglass-contaminated clothes.⁶

Surprisingly, a prurigo nodularis-like presentation of fibreglass dermatitis has not previously been reported, to our knowledge. Prurigo nodularis-like presentations have been reported in the context of other types of irritant contact dermatitis, such as nappy dermatitis,⁷ and in cases of allergic contact dermatitis caused by gold, chloramphenicol, and *p*-phenylenediamine.^{8–11}

Prurigo nodularis is a variant of chronic prurigo. It begins with a trigger that may be systemic, neurological, psychosomatic, or unknown, which leads to pruritus, increased scratching of the skin, and the eventual formation of pruriginous lesions.¹¹ In this case, the exposure to fibreglass caused intense pruritus, and subsequent activation of the itch-scratch cycle resulted in the formation of non-eczematous nodular lesions. Prurigo nodularis may coexist with conditions such as atopic dermatitis, but is recognized as a separate entity.¹²

Fibreglass dermatitis diagnosis can be confirmed with visualization of fibreglass particles in the skin, via skin biopsy and histological examination under polarized light (such as in our case), adhesive tape

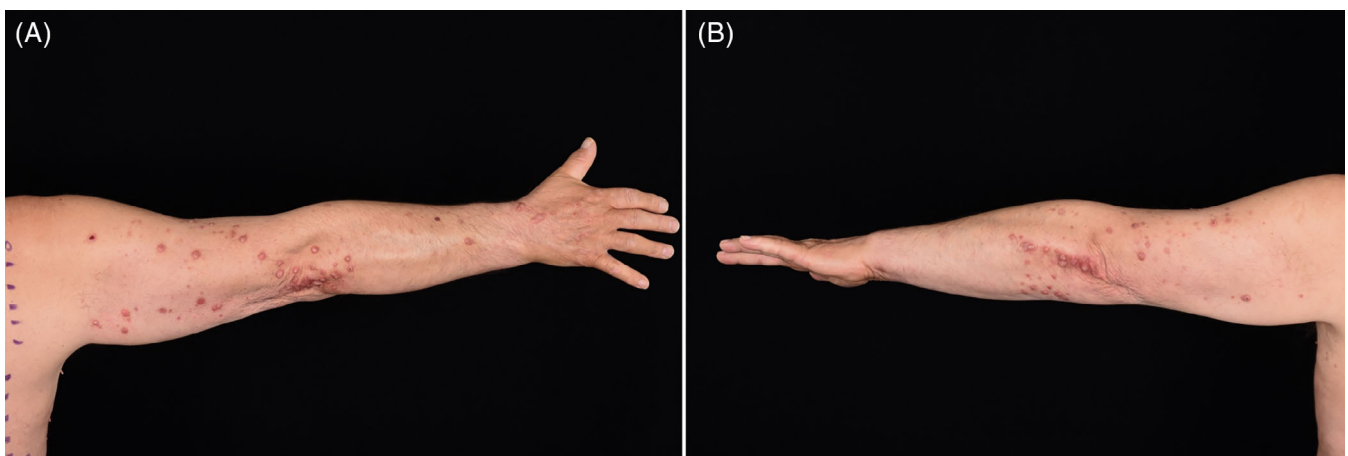


FIGURE 1 Prurigo nodularis-like eruption

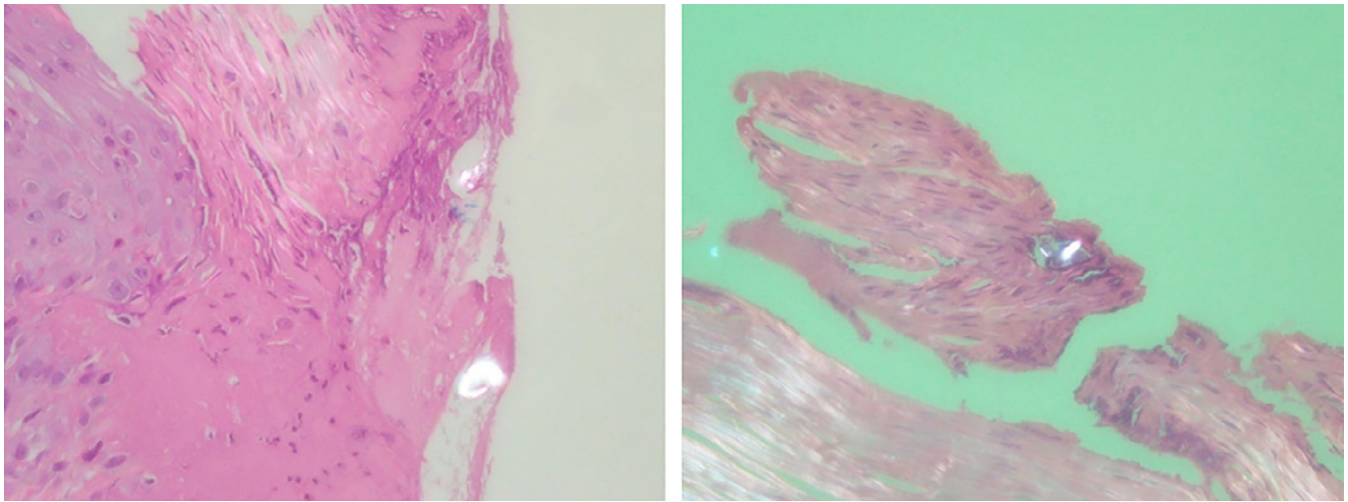


FIGURE 2 Histopathology: small particles of birefringent material seen in the stratum corneum with polarized light microscopy

tests on the affected skin, or the more recent in vivo reflectance confocal microscopy.¹³ In conclusion, fibreglass dermatitis should be suspected in all cases in which there is potential fibreglass exposure, even when the clinical presentation is atypical.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

ORCID

Claire M. Felmingham  <https://orcid.org/0000-0002-3443-8065>

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