

Allergic contact dermatitis and asthma caused by limonene in a labourer handling citrus fruits

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The skin is an effective barrier against noxious environmental agents but may be affected by irritant and/or allergic reactions at the contact site. The development of a reaction of a different type, in a different organ, by the same agent is observed infrequently.

Case Story

A 40-year-old Caucasian man presented with intensely itchy, erythematous, scaly, and fissured plaques localized to the back of both hands and several episodes of bronchial asthma and eyelid oedema, occurring at work (picking and handling citrus fruits, particularly lemons). Spirometry showed a mild, mixed respiratory insufficiency, indicative of asthma. Patch tests (FIRMA, Florence, Italy) with extracts of common plants and woods, pesticides, and other compounds used in his workplace were performed using Hayes test chambers (Hayes Service BV, Alphen, The Netherlands). Readings, made at 2 and 4 days, were positive for DL-limonene 2% (+++), citronellol 2% (++), and dichlorophene 1% (+). For all 3 positive tests, the vehicle was pet. Prick tests with common aeroallergens and orange extract (Alk-Abellø, Hørsholm, Denmark) and lemon (juice and essence) were negative. Radioallergosorbent test was positive for cow's milk (class 2), maize (class 1), and orange/lemon

(class 1). Despite these results, the patient reported that the above foods had never caused any adverse reaction by ingestion, either before or after the onset of the hand eczema, bronchial asthma, and eyelid oedema.

On stopping his normal work, there was complete remission of both dermatitis and asthma in about 45 days. The previous clinical picture reappeared when, about 15 days later, he resumed his work.

Discussion

Limonene is reported in the literature as a cause of cutaneous and respiratory disease, through different mechanisms. Allergic contact dermatitis because of limonene, usually contained in cosmetics, has been reported by several authors (1–3). It has also been shown that limonene is a non-specific airway irritant (4) and that a direct correlation exists between its concentration in indoor environments and bronchial hyper-reactivity in people working in those environments (5).

Although the two aforementioned clinical situations are rather common, to the best of our knowledge, simultaneous occurrence of cutaneous and respiratory disease because of limonene is, surprisingly, not reported in the literature. This is probably the result of a reporting bias: the seasonal nature of the work and the geographical dispersion of workers limiting contacts between patients and physicians. Adequate information and proper use of personal protection devices control occupational risks, but interaction between physicians and seasonal labourers often happens only after the onset of disease.

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