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Occupational airborne contact dermatitis caused by sevoflurane

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doi:10.1111/cod.12361

Key words: allergic contact dermatitis; repeated open application test; sevoflurane; CAS no. 28523-86-6; use test.

Cases of airborne allergic contact dermatitis can be of occupational origin, and are associated with agents such as drugs, plants, wood, plastic, rubber, glue, preservatives, and other chemicals and metals (1). Common sites of airborne contact dermatitis include the face, neck, upper part of the chest, hands, and forearms (2). We present an uncommon case of allergic airborne contact dermatitis caused by exposure to the volatile anaesthetic sevoflurane (CAS no. 28523-86-6).

Case History

A 59-year-old female with no previous history of respiratory, allergic or atopic disease was referred with dermatitis localized to the face and neck region (Fig. 1). Dermatitis and an itchy and burning sensation began about 2 months after she had commenced a new job as a recovery room nurse in a private ear, nose and throat clinic, where a major part of her job included taking care of patients in the recovery room following operations under general anaesthesia with the anaesthetic sevoflurane. Her working day normally included 4–5 hr of uninterrupted close observation of, and direct contact with, patients in the recovery room. She occasionally entered the operating theatre to assist with preparation and cleaning between operations. Her dermatitis and symptoms improved during her days off work, but exacerbation of symptoms, particularly after long working days in the recovery room, was observed. In addition to skin symptoms, she experienced mild symptoms of breathlessness, rhinitis, and difficulty in concentrating. All symptoms disappeared after she left the job in the recovery room.



Fig. 1. Dermatitis affecting the head and neck region while the patient was working in the ear, nose and throat clinic.

Patch testing was performed with an extended European baseline series and an extended rubber chemical series. Finn Chambers® (8 mm; Epitest Ltd, Oy, Finland) on Scanpor® tape (Norgesplaster A/S, Alpharma, As, Norway) were used. The patch tests were applied to the upper back and occluded for 2 days. Readings were performed on D2, D3, and D7, according to ICDRG recommendations. Patch testing showed doubtful reactions to fragrance mix I and linalool. These were found not to be of any clinical relevance, as the patient and her husband did not use any fragranced products. Prick tests with natural rubber latex proteins and standard aeroallergens gave negative results. Peak flow tests and lung function tests gave normal results. When evaluating

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Conflict of interests: The authors declare no conflict of interests.



Fig. 2. Dermatitis in the flexor surface of the elbow on D10 of the repeated open application test.

possible sevoflurane hypersensitivity, we chose not to perform patch tests, as previous reports have shown that it is too volatile, increasing the risk of a false-negative result (3). The patient declined a challenge test by exposure to sevoflurane in an exposure chamber. A repeated open application test (ROAT) was performed, with the patient being instructed to apply sevoflurane twice daily on the flexor surface of the elbow. A syringe was utilized to draw up 0.5 ml of liquid sevoflurane, which was applied onto the skin of the arm and distributed on a surface of

$3 \times 3 \text{ cm}^2$. This procedure was performed outdoors, with assistance from the patient's husband. The ROAT resulted in a flare of dermatitis on the face and neck on D2, and dermatitis on the elbow on D10 (Fig. 2). Three healthy individuals, 2 of whom were anaesthetic personnel with extensive previous exposure to sevoflurane, were tested with the same procedure for 10 days, with negative test results.

Discussion

This case report suggests that occupational exposure to the volatile anaesthetic sevoflurane may cause allergic contact dermatitis. Allergic-type adverse reactions to volatile anaesthetics are thought to be rare, and only 2 cases of allergic contact dermatitis caused by sevoflurane (4, 5) and 2 cases caused by isoflurane (3, 6) have been reported so far. Furthermore, 3 cases of occupational asthma caused by sevoflurane and isoflurane (7) have been reported.

Performing patch tests with volatile agents/liquids may be challenging, so ROATs can be useful for identifying a possible contact allergy. Furthermore, this case also illustrates the importance of a detailed clinical history when possible occupational contact dermatitis is investigated, in order to identify rare and unexpected allergic agents such as sevoflurane.

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