

Airborne occupational contact dermatitis from ethylene oxide

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Key words: airborne; occupational; irritant contact dermatitis; ethylene oxide; health care personnel; hospital workers; nurses. © Munksgaard, 1998.

Case Reports

4 patients were referred from the hospital where they worked, all women and 25, 30, 38 and 52 years old, respectively. The latter 2 were nurses and the former 2 assistants, among whose duties was to sterilize reusable hospital linen in a canister containing ethylene oxide. The content of ethylene oxide in the canister was constant and was measured by a meter, but the time of exposure depended on the type of material to be sterilized. Once the material had been sterilized, the canister was left opened to ventilate for a long enough time for no residue to remain. Later, the sterilized material was taken out and wrapped, classified and distributed, a process carried out variously by the 4 patients.

20 days before their presentation, the 4 of them had developed generalized itching and lesions provoked by scratching, mainly on the trunk and upper extremities. The 2 younger patients showed evidence of eczema and other residua of palpebral oedema. All 4 patients initially improved after stopping work and being treated with oral antihistamines and topical liquid talc. Of the 4 patients, 3 of them, the 25-, the 30- and the 52-year-old, had a personal and/or family background of atopy, and 2, the 25- and the 52-year-old, were intolerant of cosmetic jewellery.

The medical service of the hospital confirmed our initial suspicion of ambient ethylene oxide. Due to a technical fault, there had been an escape of this gas during the process of sterilization, while the 4 patients, unconscious of this fact, were working in the room. The 2 older patients rapidly became free from itching with treatment, but this persisted in the other 2, particularly the youngest, and especially on the upper back and forearms.

GEIDC standard patch tests were negative in the 30-year-old patient and the other 3 showed positivity to nickel, the 25-year-old also being positive to cobalt and the 52-year-old to thimerosal, balsam of Peru, colophony and fragrance mix. Consulting the literature in this respect, we decided not to carry out any tests with ethylene oxide in the patients, even though we had some previous experience in this area (12, 13).

Comment

The effectiveness of ethylene oxide as a sterilizing agent makes it frequently used in hospitals (1). There have been various reports concerning adverse effects on exposure to this gas, many occupational in hospital workers (1–6) and others regularly exposed to sterilized

material at work (7–13). Adverse reactions include: delayed hypersensitivity (5, 11); rhinitis, asthmatic bronchitis and asthma (2, 8); burnt hands (3, 4); systemic alterations (1, 8); and, above all, irritant contact dermatitis from contact with recently sterilized but unventilated material (5, 6, 8–10, 12, 13).

To our knowledge, these are the 1st 4 cases of airborne irritant contact dermatitis to be reported in which there have been subjective systemic symptoms of itching in all 4 cases, and objective lesions of eczema in 2 of them, due to the gas being, for a known period, in the air. In some publications previously referred to, by both us (12, 13) and other authors (9, 10), patch tests have been carried out using various techniques. At the present time, 4 months after the onset of the 4 cases, and 2 months after the 4 patients were transferred away from the sterilization area, all except 1 of them, the youngest, are free from lesions. The 25-year-old assistant still has itching, which is controlled by an oral antihistamine and topical emollients.

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