Short Communication

Allergic contact dermatitis from sodium pyrithione in metalworking fluid

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Case Report

A 31-year-old man, with a history of occupational hand dermatitis due to metalworking fluid 1 year ago, was referred because his hand dermatitis had relapsed for 2 months. He presented with itchy nummular dermatitis of the dorsum of his fingers, spreading to his neck and face, with work-related chronology. Patch testing was performed with the revised international standard series (1), our additional series, our metalworking fluid series (Trolab®, Chemotechnique® and personal allergens), the patient's own protective gloves and his used metalworking fluid, this last diluted 50% o.o. and as is in a semi-open test. Readings at D2 and D4 were +/+ to iodopropynyl butyl carbamate 1% pet., and +/+ to sodium omadine 0.5% pet. Both tests were confirmed a few days later with ++ reactions at D2.

The material safety data sheet of the actual fluid indicated the presence of sodium pyrithione, at a concentration lower than 1% in the concentrate (as provided by the manufacturer for dilution before use), and we therefore considered this test relevant. The patient denied any dermatitis after using shampoos, though did not use anti-dandruff shampoos. Iodopropynyl butyl carbamate, though not contained in the current fluid, could have been of past relevance to the patient’s previous dermatitis from cutting fluids.

Discussion

Pyrithione, also named 1-oxo-2-pyridinethiol, 2-pyridinethiol-1-oxide, 2-mercaptopypyridine 1-oxide or (2-pyridythio)N-oxide, is CAS 1121-30-8. Its sodium salt, sodium pyrithione (Fig. 1), is CAS 3811-73-2 and is trademarked Natrium-Pyrion® or Fonderma®. Sodium omadine is a 40% aqueous solution of sodium pyrithione, used in both water-based metalworking fluids and anti-dandruff shampoos for its antibacterial and anti-yeast properties (2–4).

Only 1 similar case has previously been reported (5), though several authors have systematically tested metal-workers with metalworking fluid series including sodium omadine (6–8), generally 1% aq. (0.4% sodium pyrithione). This biocide is also included in our metalworking fluid series, as sodium omadine 0.5% (0.2% sodium pyrithione) pet., but we have never previously observed any positive reactions. Due to dilution, patch testing with the metalworking fluid itself was false-negative.

Pyrithione is a more frequent cosmetic sensitizer. Zinc pyrithione, CAS 13463-41-7, is largely used in anti-dandruff preparations (9–14). Since the hapten is the pyrithione moiety, either zinc or sodium pyrithione can be used for patch testing, pet. being a more practical diluent than aq.

References


Fig. 1. Molecular structure of sodium pyrithione. For the zinc salt, 2 pyrithiones are combined with Zn++.