

Short Communication

Occupational contact dermatitis from methyl-ter-pyridine in a chemistry laboratory technician

CHRISTOPHE J. LE COZ¹, PATRICK CAUSSADE² AND ANNE BOTTLAENDER¹

¹Consultation de Dermato-Allergie, Clinique Dermatologique, Hôpitaux Universitaires de Strasbourg, 1 Place de l'Hôpital, F 67091 Strasbourg, France, ²Cabinet de Dermatologie, 19, rue de l'Observatoire, F-67000 Strasbourg, France

Key words: methyl-ter-pyridine; pyridine; laboratory workers; occupational; allergic contact dermatitis; long-lasting patch test reactions; lack of cross-sensitivity. © Munksgaard, 1998.

Case Report

A 49-year-old laboratory technician, with a past history of allergic conjunctivitis, was referred with an itchy squamous facial erythema. The lesions had started 2 months ago, and had been associated with some palmar eczema for 1 week. The patient worked in a chemistry laboratory and reported the use of various chemicals, but had never experienced lesions of the dorsum of the hands, despite working without gloves. Examination showed a seborrhoeic-like dermatitis on his face and his scalp.

Patch testing was performed with the European standard series (Trolab[®], Hermal, Germany) and the patient's cosmetics. It showed a strongly positive, but past-relevant, reaction to nickel sulfate at D2 and D3, and doubtful reactions to both balsam of Peru and fragrance mix at D3. In spite of avoidance of perfumed cosmetics, the lesions remained. However, they completely healed during the summer holidays. When starting work again on the synthesis and purification of methyl-ter-pyridine (4-methyl-2,6-ter-pyridine, MTP) (Fig. 1), the patient developed an itchy oedema of the right hand, and of the right side of the face, after 1 day, which necessitated systemic corticosteroid therapy. He consulted us again

and we observed residual scaling of the right side of the face.

We then patch tested him with MTP diluted in acetone and obtained very strongly positive reactions with closed tests in Finn Chambers, and strongly positive reactions with MTP on open testing (Table 1). The patch tests remained positive for more than 20 days after the 1st reading. The patient agreed to be tested subsequently with several pyridine-related molecules (1): pyridine base 0.1% and 0.01% acet., pyridoxine 10% and 1% pet., isoniazid (4-pyridine carboxylic acid hydrazide) 10% and 1% pet., and sulfapyridine 10% (contained in Pommade Lelong[®], Laboratoires Smithkline Beecham, Nanterre, France). All patch tests were negative at D2 and D3.

Patch tests were performed in 15 successive volunteer patients, unrelated to chemistry, with MTP 0.1% acet. There was a ?+ reaction at D2, limited to the patch test area, in 9 cases, which cleared and was considered irritant (IR) at D3 or D4. An "edge effect" with superficial epidermal necrosis was noted in 1 of these 9 cases. Open tests were then performed in 5 patients with MTP 0.01% acet. with a ?+ reaction at D2 in 1 case.

Discussion

MTP (2,2': 6',2''- (4'-methyl)-ter-pyridine) (Fig. 1) is a pyridine derivative probably used in only a few laboratories. MTP was synthesized by the patient from ter-pyridine (2,2': 6',2''-ter-pyridine, CAS number [1148-

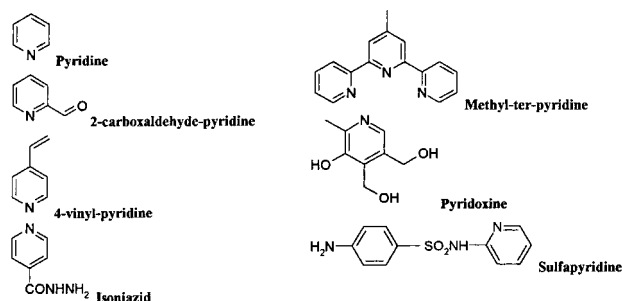


Fig. 1. Chemical structure of methyl-ter-pyridine, pyridine and some derivatives.

Table 1. Results of testing with MTP in the patient

	D2	D3
Patch tests		
methyl-ter-pyridine 0.1% acet.	++	+++
methyl-ter-pyridine 0.01% acet.	+++	++
Open tests		
methyl-ter-pyridine 0.1% acet.	++	++
methyl-ter-pyridine 0.01% acet.	++	+
acetone	—	—

79-4]), to form a ruthenium complex. This case is, to our knowledge, the 1st report of (occupational) contact dermatitis from MTP.

Pyridine (CAS number [110-86-1]) and its derivatives are widely used in chemistry (2). Pyridine (Fig. 1) is a solvent for organic compounds and anhydrous metallic salts (2). It has previously been described as a non-immunological urticariogenic substance (3) and is a probable contact allergen (4). Pyridine derivatives are particularly used in polymer chemistry. They have occasionally been reported as causes of occupational contact dermatitis (2, 5) or contact urticaria (6, 7) in laboratory workers. However, we did not observe any immediate contact reaction in our patient. Contact dermatitis was also seen in patients using topical analgesic sprays which likely contained small quantities of free amine 3-(aminomethyl)-pyridine (8). Some pyridine derivatives like vinyl-4-pyridine seem to be potent allergens, and may induce active sensitization in subjects tested as controls resulting in delayed positive patch tests (2).

Cross-reactivity between pyridine and its derivatives (2-vinyl-pyridine, 4-ethyl-pyridine, e.g) is possible (2) but not systematic (5). In our patient, there was no reactivity to pyridine, nor to other derivatives, and hypersensitivity seemed specific to MTP. This additional case of sensitization to a reactive chemical emphasises the necessity for effective protection in chemistry laboratories.

References

1. Windholz M, Budavari S, Blumetti R, Otterbein E Eds. *The Merck Index*, 11th edition, Rahway, N J, USA: Merck & Co., Inc. 1989.
2. Sasseville D, Balbul A, Kwong P, Yu K. Contact sensitization to pyridine derivatives. *Contact Dermatitis* 1996; 35: 101–102.
3. Hannuksela A, Lahti A, Hannuksela M. Nonimmunologic immediate contact reactions to three isomers of pyridine carboxaldehyde. In: Frosch P J, Dooms-Goossens A, Lachapelle J M, Rycroft R J G, Sheper R J (eds). *Current topics in contact dermatitis*. Berlin, Heidelberg, New York: Springer 1994: 448–452.
4. Knecht-Junk C, Geursen-Reitsma L, Van Joost T. Allergic contact dermatitis from pyridine in Karl Fischer reagent. *Contact Dermatitis* 1993; 28: 252.
5. Fousseureau J, Lantz J P, Grosshans E. Allergic eczema from vinyl 4-pyridine. *Contact Dermatitis Newsletter* 1972; 11: 261.
6. Rudzki E, Rebandel P, Rogozinski T. Contact urticaria from rat tail, guinea pig, streptomycin and vinyl pyridine. *Contact Dermatitis* 1981; 7: 186–188.
7. Archer C B, Cronin E. Contact urticaria induced by pyridine carboxaldehyde. *Contact Dermatitis* 1986; 15: 308–309.
8. Schmidt R J, Fernandez de Corrés L. Allergic contact dermatitis from proprietary topical analgesic sprays containing 3-(aminomethyl)-pyridyl salicylate. *Dermatologica* 1987; 174: 272–279.