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Occupational allergic contact dermatitis caused by nalmefene

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CASE REPORT

A 32-year-old non-atopic male scientist presented with a 6-month history of patchy eczema, which initially affected the periorbital area, eyebrows and cheeks before spreading to the neck, followed by lip swelling and cracking. He had worked for a pharmaceutical company for over 10 years, creating novel pharmaceutical compounds. He routinely used a fume cupboard and wore gloves, laboratory coat and goggles while working. He reported settling of the eczema when on holidays, with quick recurrence on return to work. Since changing to an office-based role he experienced near complete resolution of symptoms.

Patch tests were performed to an extended European baseline series, labelled fragrance series, face series, additional rubber chemical accelerators and to all suspected causative drug compounds provided by the pharmaceutical company (employer), including nalmefene hydrochloride (CAS 58895-64-0) 0.1% aq. Finn Chambers® (Bio-Diagnostics®, Upton-Upon-Severn, United Kingdom) were used and allergens from Chemotechnique® (Vellinge, Sweden). Readings were performed on days 3 and 5, conforming to European Society of Contact Dermatitis guidelines.¹

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At day 3 there was a positive (++) reaction to nalmefene hydrochloride. This was repeated and at the second reading the only positive reactions were to both test sites for nalmefene hydrochloride 0.1% aq. Appropriate escalating concentrations of other employer-provided suspected agents were negative. Subsequently 20 controls were patch tested to the nalmefene hydrochloride at 0.1% aq., all of which were negative.

DISCUSSION

Nalmefene (CAS 55096-26-9) is a selective opioid receptor ligand that acts as an antagonist at the μ and δ opioid receptors and as a partial agonist at the κ opioid receptor.² It was first approved by the Food and Drug Administration in the United States in 1995 for the reversal of opioid agonist effects, including respiratory depression, in the management of opioid overdose.³ It was subsequently approved by the European Medicines Agency for use in the European Union in 2013.²

Our patient, who was developing an aerosolised form of nalmefene, became sensitised in a 2-month period of repeated laboratory exposure. His pattern of dermatitis was consistent with airborne exposure to nalmefene, in spite of him using the provided workplace protection. Hence, protective hoods covering the head and neck may be more appropriate when working with aerosolised compounds.

There are reports of sensitisation and contact dermatitis following occupational exposure to phenanthrene alkaloid opiates and their derivatives.⁴ Reactions have been reported to formulations of: codeine, codeine dihydrophosphate, ethylmorphine, morphine, diacetylmorphine, naloxone, oxycodone, thebaine, oripavine and norhydroxymorphinone.⁴⁻⁹ To our knowledge this is the first reported case of contact allergy to nalmefene.

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