

CONTACT POINT

An unusual case of a systemic delayed hypersensitivity reaction to sodium metabisulfite

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CASE REPORT

A 48-year-old woman developed swelling and erythema around the site of a recently excised mole, which was noticed following removal of the overlying Cosmopor E dressing 24 hours after surgery. This was initially thought to be secondary to the dressing, containing a butylated rubber adhesive. However, our patient photographed her rash, and the distribution of the erythema did not correspond exactly to the dressing site, but instead was consistent with infiltration of the local anaesthetic, which was 1% Xylocaine containing lidocaine hydrochloride, sodium metabisulfite, methylparaben and sodium with adrenaline (Figure 1). Three days later, she developed a generalized eczematous rash on her trunk and limbs, clinically consistent with a systemic delayed hypersensitivity reaction (Figure 2). She was systemically well, and symptoms resolved within 7–14 days of cetirizine treatment.

She worked as a hairdresser and nail technician, and reported a previous history of hand dermatitis exacerbated by working with acrylic nails. She was patch tested with an extended British Society of Contact Allergy baseline series, and cosmetic, rubber, hairdressing, plasticizers and glue series, supplied by Trolab (SmartPractice, Barsbüttel, Germany) and Chemotechnique (Vellinge, Sweden). Additional items included Cosmopor E and Soft-pore dressings, Micropore, Transpore, Tisept, Polyfax and Fucidin ointments, and Ethilon suture, all tested "as is". The patch test exposure time was 2 days. Readings on day (D) 2 and D4 showed positive reactions to sodium metabisulfite 1% pet. (++) (Figure S1) and to ethylene glycol dimethacrylate 2% pet. (?+/++), 2-hydroxyethyl methacrylate 1% pet. (+/++), 2-hydroxypropyl methacrylate 2% pet. (+/++), triethyleneglycol diacrylate 0.1% (-/+), and fragrance mix I 8% pet. (?+/++). Further patch testing was undertaken with the additional excipients in the local anaesthetic. These included lidocaine 15% pet., lidocaine 1% aq., caine mix IV 10% pet. (including lidocaine 5%), adrenaline 1:1000 aq.,

and methylparaben 3% pet. A D4 reading was positive for adrenaline 1:1000 (++) (Figure S2). This contains sodium metabisulfite. Unfortunately, it was not possible to test adrenaline without sodium metabisulfite, as such a preparation is not currently available in the United Kingdom. However, this positive reaction was probably attributable to sodium metabisulfite only, and not adrenaline.

DISCUSSION

Sodium metabisulfite is commonly used as an antioxidant and as a preservative in food, cosmetics, and medications, including local anaesthetic solutions. Localized allergic contact reactions to topical preparations containing sodium metabisulfite, such as Trimovate and Nizoral cream, are well recognized.¹ There are also reports of localized delayed hypersensitivity reactions following skin and dental



FIGURE 1 Localized erythema and swelling 24 hours after 1% Xylocaine with adrenaline was injected (patient's own photograph)



FIGURE 2 Generalized eczematous rash 3 days after injection of 1% Xylocaine with adrenaline (patient's own photograph)

anaesthetic injections.^{2,3} Reports of delayed hypersensitivity to adrenaline are extremely rare, and it is usually concluded that reactions are attributable to sodium metabisulfite.^{1,2}

Unlike the well-documented type I hypersensitivity reactions, there are very few reports of systemic delayed hypersensitivity reactions to sodium metabisulfite.⁴ One reported case followed dietary intake of sulfites, and another followed parenteral administration of a high-calorie infusion containing sulfite additives in a patient with myasthenia gravis.⁵ Our patient rarely eats food containing sulfites, and reports no reactions on ingesting these.

It is not uncommon to find a positive allergic contact reaction to sodium metabisulfite, and, although the relevance has historically been hard to find, it is now felt to be increasingly relevant.¹ Because of our patient's occupation, she could have been sensitized to sodium metabisulfite by exposure to hair colouring and other hairdressing products containing this, as well as a previous dental anaesthetic. The positive reaction emphasizes her need to use appropriate personal protective equipment to avoid sodium metabisulfite in hair products. The allergic contact reactions to acrylates and fragrance mix I were probably related to her hand dermatitis and occupational exposure.

Type I hypersensitivity to sodium metabisulfite is well documented, and localized delayed hypersensitivity reactions are not

uncommon, especially with reactions to medicaments and cosmetics containing it. However, to our knowledge, this is the first reported case of an eczematous delayed hypersensitivity reaction following a subcutaneous injection containing sodium metabisulfite.

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REFERENCES

1. Garcia-Gavin J, Parente J, Goossens A. Allergic contact dermatitis caused by sodium metabisulfite: a challenging allergen. A case series and literature review. *Contact Dermatitis*. 2012;67:260-269.
2. Riemersma WA, Schuttelaar MLA, Coenraads PJ. Type IV hypersensitivity to sodium metabisulfite in local anaesthetic. *Contact Dermatitis*. 2004;51:148.
3. Doms-Goossens A, de Alam AG, Degreef H, Kochuyt A. Local anaesthetic intolerance due to metabisulfite. *Contact Dermatitis*. 1989;20:124-126.
4. Vishal M, Walker SL, Beck MH. Sodium metabisulfite allergy is common but is it relevant? *Contact Dermatitis*. 2007;57:173-176.
5. Cussans A, McFadden J, Ostlere L. Systemic sodium metabisulfite allergy. *Contact Dermatitis*. 2015;73:316-317.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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Figure S1: Day 4 reading, positive to sodium metabisulfite 1% +++.



Figure S2: Further patch testing done showing positive reading on day 4 for adrenaline 1:1000 ++.