

Acute systemic contact dermatitis in a patient with nickel hypersensitivity: contamination from an intravenous catheter?

doi: 10.1111/j.1399-6576.2007.01298.x

Sir,

Nickel hypersensitivity or contact allergy to fashion jewellery products is sometimes declared by patients during the pre-operative medical evaluation, but is not considered to be of importance in current anaesthetic practice. We report a case of acute systemic contact dermatitis, probably attributable to nickel release by a catheter, illustrating that this attitude should be modified.

A 31-year-old woman (gravida 2, para 2) presented to the emergency department complaining of vaginal bleeding at 33 weeks of gestation. The pregnancy had been uneventful, except for the diagnosis of total placenta praevia. She had no medical history, but reported metal intolerance to fashion jewellery products; previous patch tests had confirmed nickel allergy. To control intermittent uterine contractions, she was treated with intravenous salbutamol. On day 3, she complained of a generalized pruritus and presented with an erythematous macula on her wrist opposite to the side in which the catheter (Optiva 2[®], Medex Medical Ltd., Haslingden, UK) was inserted. Allergy to salbutamol was suspected, which was replaced by intravenous nicardipine, and desloratadine was given to reduce itching. On day 5, she developed a rash on her abdomen, thighs, arms and buttocks (Fig. 1), which subsequently spread. She developed a vesicular eczema on her right hand. We remembered that two similar cases with the same catheter had been reported recently in patients allergic to nickel (1). The catheter was replaced by a metal-free

catheter. The day after replacement, the itching disappeared and the dermatitis started to regress. On day 8, most of the lesions had disappeared, except for the palmar eczema. On day 9, tocolysis was stopped and the catheter was removed. She was discharged home and was booked for elective Caesarean section 4 weeks later. The Caesarean section was performed under spinal anaesthesia. A metal-free intravenous catheter was used. Anti-biophylaxis was performed with cefazolin. Post-operative pain was controlled with intravenous ketoprofen (100 mg twice daily) and intravenous paracetamol (1 g four times daily). The catheter was withdrawn on day 2, and no skin problems were observed during her stay in the ward. She was discharged on day 6.

Systemic contact dermatitis is an inflammatory skin reaction resulting from a systematically administered allergen, which occurs in an individual who has been sensitized to the allergen previously by skin contact. The pathogenesis has not been defined definitively, but an immune mechanism seems to be most likely, and the condition can be mediated by both type III and IV mechanisms. The most frequent causes are drugs, such as streptomycin, neomycin, bacitracin, aminopenicillins, terbinafine and pseudoephedrine, and nickel.

Nickel allergy is one of the most common causes of contact dermatitis. More than 10% of women and more than 1% of men suffer from nickel allergy. Nickel allergy is a big concern in public health, especially in Scandinavia, where restrictive legislation has been in place since the start of the 1990s. In September 2004, following the first legislation in 2000, a European directive (2004/96/CE) was adopted to prevent nickel sensitization. It concerned products intended to come into direct and prolonged contact with the skin, such as earrings, necklaces, rivet buttons, etc. This directive defines the maximal rate of nickel release from the parts of these products (less than 0.5 µg/cm²/week). To our knowledge, no equivalent directive exists for medical implanted devices, even though nickel is present in most of them.

Nickel dermatitis has been classified into two types: primary (eczematous and occasionally papular eruptions in direct contact with metal) (2); secondary (the lesions are usually symmetrical and the aspects are various). Vesicular hand eczema, flexural dermatitis, macropapular rash and urticarial reactions are observed. The 'baboon syndrome' is more specific and is characterized by a pruritic, confluent, macropapular, light-red eruption localized in the gluteal area and major flexures (3). These cases of systemic dermatitis occur after a period of latency of a few hours or days, and are declared after the introduction of nickel by local skin contact (4) or by an internal route: oral intake (5), inhalation, implantation of metallic medical or orthodontic devices (6–8). Two cases of systemic contact dermatitis as a result of contamination by the same type of intravenous catheter as used in our patient (Optiva 2[®]) have been reported recently. The release of nickel by a small metallic eyelet at the base of the polyurethane catheter was established in an *in vitro* experiment (1). The same *in vivo* findings were made in a group study of 30 patients before the insertion of hip screws: most of the nickel measurements (median value, 4.6 µg/ml) exceeded the values in non-exposed persons, which are reported to be between 0.05 and 1.2 µg/l. No dermatitis was observed, but the allergic status of the patients was unknown. The authors confirmed contamination by the Optiva 2[®] catheter in an *in vitro* experiment; two other different catheters tested negative (9). The clinical relevance is uncertain, as this catheter is widely used and the incidence of these reactions is unknown, but is certainly low compared with the incidence of nickel allergy. Nevertheless, the release of nickel from catheters with metallic parts could be the origin of many unexplained



Fig. 1. Rash probably caused by contamination from an intravenous catheter in a patient with nickel allergy.

minor skin eruptions occurring in the post-operative or post-partum periods.

In the absence of manufacturer's comments, we advocate the avoidance of the use of the Optiva 2[®] catheter in patients with a proven allergy to nickel. This catheter should be replaced with a catheter without metallic parts.

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