

Nickel-induced systemic allergic dermatitis from a sacral neurostimulator

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Sacral nerve stimulation (SNS) is used in patients suffering from severe faecal incontinence. The procedure requires implantation of a neurostimulator in the upper buttock and a permanent electrode at level S3 of the sacrum. We report a case of systemic allergic contact dermatitis caused by the nickel-based electrode.

Case Report

A 50-year-old woman presented in November 2007 with a localized eczematous condition on the upper right buttock. She had a history of atopic dermatitis, intolerance to metal fashion jewellery products, and faecal incontinence, treated by SNS since 2004. The rash consisted of itchy vesiculopapules associated with an oedematous erythema; histology showed spongiosis, exocytosis, and lymphocyte infiltration in the upper dermis. Topical corticosteroids were prescribed, but 2 weeks later, the eruption had extended to affect the right lower limb (Fig. 1), abdomen, back, upper limbs, and folds. A systemic allergic dermatitis caused by the neurostimulator was suspected because (i) the history suggestive of

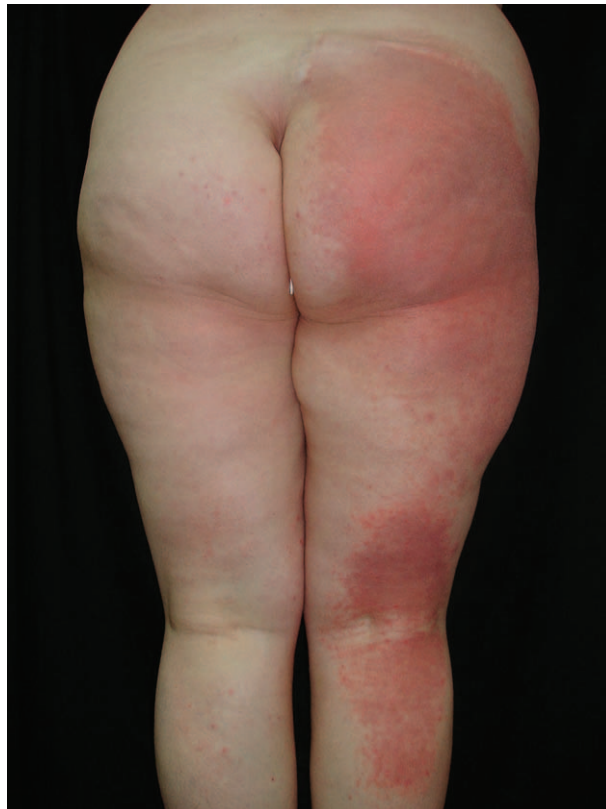


Fig. 1. Eczematous eruption on the upper right buttock and extending down the leg.

nickel contact allergy, (ii) the presence of stainless steel (a nickel-cobalt based alloy) in the electrode, (iii) the initial localization of the rash on the implant side, and (iv) the lack of improvement after corticosteroid treatment. In December 2007, the implanted material was removed, and the dermatitis completely healed in 2 weeks with no relapse.

This adverse incident was notified by competent authorities, and an analysis of the device showed damage to the electrode end. The outer insulation of silicon rubber was torn, and the conductor wires containing stainless steel were exposed. Furthermore, the patient recalled a trauma, consisting of a fall, during which her right buttock had struck a tramway rail, a few days before the first clinical signs. Patch testing with a series of metal allergens (Chemotechnique, Malmö, Sweden) gave a positive (++) reaction to nickel sulfate (2.5% in pet.), confirming the allergic contact dermatitis to nickel.

Discussion

Reported adverse events associated with SNS are usually relatively minor, such as re-operation (15.5%) following the displacement of the device or the electrode (4.43%) or pain (6.27%) (1). This is the first observation of apparent nickel-elicited systemic allergic dermatitis, induced by a sacral neurostimulator. In normal use, the conductor wires of SNS do not come into contact with tissues, except when the electrode's insulation is damaged. Nickel, representing 33–37% of stainless steel, led to a systemic allergic reaction in a nickel-sensitive individual. In our case, external trauma was responsible for the damage of the electrode's insulation and the *in vivo* release of nickel ions.

Nickel can elicit systemic allergic dermatitis by an internal systemic pathway such as oral intake, transfusion, inhalation, orthopaedic implants, or dental braces (2, 3). SNS devices can also be responsible and must be suspected if there is an eczematous eruption (i) developing on the implant site after an external impact and (ii) resistant to topical steroids.

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