

ORIGINAL ARTICLE

Nickel earlobe dermatitis and clinical non-relevance of the oral exposure

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Abstract

Objective Nickel is the most common cause of allergic contact dermatitis (ACD). Because nickel restriction is commonly imposed on many patients with the only earlobe ACD to nickel hypersensitivity, the aim of this study was to identify the role of occasional and extended oral nickel exposure in these patients.

Design This is a case-control study

Subjects Thirty-four outpatients, previously diagnosed as monosensitized to nickel, suffering from earlobe dermatitis were enrolled; 11 of them showed active dermatitis. The control group consisted of six healthy (non-nickel-sensitive) subjects.

Interventions High oral nickel challenge (20 mg) and protracted oral challenge (1 mg once a day). Observation period: 6 weeks.

Results Clinical earlobe lesions were not affected by a high oral nickel intake nor by a protracted oral challenge.

Conclusions Dietary nickel restriction seems to be useless in patients with earlobe ACD due to nickel hypersensitivity.

Introduction

Nickel is the most frequent contact sensitizer in the population at large,¹ and it is often responsible for allergic contact dermatitis (ACD) that occurs more frequently in females than in males (20–25% vs. 4–7%).²

The increasing incidence of ACD, especially to nickel, does not seem to be related to the use of consumer products such as personal care items and detergent/cleaning products regularly used in domestic work but to other more significant sources of daily contact such as earrings, jewellery and metal objects.³ Currently, 18% of body ornaments release nickel as shown by the dimethylglyoxime test.⁴

It is known that nickel can also be responsible, although rarely, for systemic reactions, respiratory symptoms (rhinitis, asthma) and/or gastrointestinal symptoms. For

many years, nickel earlobe dermatitis has frequently been observed in otolaryngological practice.⁵ Furthermore, a strong correlation has been reported between nickel sensitivity and a history of pierced ears, earlobe rash and jewellery rash in the general population.⁶

The ancient art of body piercing has recently become popular again as part of the fashion process, and the ear is the most frequent body part to be pierced in order to wear jewellery. The trend of earlobe dermatitis has grown over the last decade and the incidence of ACD as its complication has increased.⁷

The hypersensitivity induction is probably due to both genetic factors and persistent skin contact with the metal (immune sensibilization and immune response). A study by Suzuki H. using scanning electron microscopy and X-ray microanalysis found that small fragments of nickel and gold remain in the skin lesions of pierced earlobes for a

long time, even after the studs have been removed, and might cause prolonged irritation and various cutaneous reactions.⁸ In recent years, particular attention has been paid to the influence of dietary nickel on the clinical course of nickel-induced dermatitis.⁹ However, the pathogenetic role of nickel in the diet (200–600 µg daily) is under debate, and a dietary requirement of 50 µg per day has been proposed.¹⁰ Modern analytical studies have estimated that the average human daily intake of nickel is approximately 200 µg.¹¹ Furthermore, previous studies reported that 5 to 10 mg of nickel sulphate was employed for oral challenge, and only few *sensitized* patients showed a disease flare-up. Because nickel dietary restrictions are commonly imposed on many patients with earlobe dermatitis due to nickel hypersensitivity, the aim of this study was to identify the role of occasional and extended oral nickel exposure in these patients.

Methods

Thirty-four outpatients (29 females and 5 males), mean age of 28.8 years, suffering from earlobe dermatitis and previously diagnosed as monosensitized to nickel were enrolled (sensitive group). All patients had a history of hypersensitivity to metallic jewellery, and 11 of them showed active dermatitis. All patients had been advised to avoid nickel contact and to follow a reduced nickel diet by the centres that gave the diagnosis of earlobe ACD to nickel.

The control group consisted of six healthy (non-nickel-sensitive) subjects.

Both groups were orally challenged with 20 mg of nickel sulphate, and they were monitored for 1 h after the challenge test. All subjects were also instructed to ask for clinical observation in case of dermatitis reactivation or systemic reactions for the following 72 h after the ingestion.

After an interval of 2 weeks, all subjects have been reevaluated for exacerbation of their nickel ACD, and all of them were given 1 mg of nickel sulphate (five times the normal amount of nickel orally assumed, the greatest dose that can be ingested in normal daily diet) once a day for the following 3 weeks. Follow-up was continued for a further week.

Results

None of the subjects showed a flare-up reaction as a result of the 20 mg oral challenge. The patients with active dermatitis (11 of 34) did not have a worsening of the earlobe lesion.

No local or systemic reaction was observed during or after the protracted challenge with 1 mg of nickel sulphate once a day.

Discussion

These results would seem to back up the uncertainty that still exists concerning the role of nickel in ACD.

The common decision to restrict nickel intake in patients suffering from earlobe dermatitis is probably due to the fact that it has been reported that all patients challenged with 3.0 mg nickel had flare-up reactions in the patch test skin sites.¹² Moreover, another study showed that, in some patients with concomitant contact allergy, intolerance to ingested nickel salts might be the real cause of the onset and perpetuation of widespread, chronic, allergic-type dermatopathies.¹³ However, as far as we know in literature, there is no description of a worsening of earlobe dermatitis due to nickel intake, and our study confirms this, in that clinical earlobe lesions were not affected by a high oral nickel intake nor by a protracted oral challenge.

In conclusion, even if it is commonly imposed, it would seem that nickel alimentary restriction is useless in these patients with earlobe dermatitis due to nickel exposure, whereas we agree that skin contact with nickel containing products should be avoided in such patients.

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