

Systemic Nickel Allergy Syndrome

Jessica Perkins, DO, PGY-III

Nova Southeastern University, Largo Medical Center
Largo, FL

Introduction

Nickel hypersensitivity is the leading cause of contact dermatitis and has recently been recognized as a potentially common culprit in systemic contact dermatitis. Dietary nickel has also been found to be a considerable cause in chronic allergic dermatitis. Some authors also recognize systemic nickel allergy syndrome(SNAS) if associated with extra-cutaneous symptoms ranging from gastrointestinal to respiratory or even neurologic findings. Furthermore, there are case reports of hypersensitivity to exogenous nickel used in implants, prosthesis and other surgical ware .

Case Presentation

We present a case of systemic contact dermatitis in a 58 year old male. The patient presented to the hospital with diffuse eczematous dermatitis ongoing for almost 2 years with recent worsening. Pt had undergone patch testing in the past revealing an allergy to Nickel. Medical history was significant for cardiovascular disease requiring stents, Chron’s disease and follicular thyroid carcinoma. Pt states the rash started after cardiac stent placement. On physical exam, the patient had diffuse erythematous plaques with overlying scale and excoriations covering majority of the extremities and trunk. The dermatitis was refractory to topical steroids, oral steroids and light therapy.



Histology and Lab Results

Outpatient biopsy showed spongiotic dermatitis and negative DIF. Previous patch testing revealed a positive nickel allergy. Lab evaluation revealed an IgE level greater than 10 times normal range. ESR mildly elevated at 30.



Discussion

Nickel is a major allergen associated with contact and systemic allergic dermatitis. Case reports have noted reaction to intraoral metals, pelvic coils and other implanted nickel (4, 6). Several studies have also demonstrated diet containing nickel to be a culprit in systemic allergic contact dermatitis (1, 3). More recently, a syndrome entitled, systemic nickel allergy syndrome, has been described. This Syndrome is defined by systemic reactions to nickel, most commonly skin and gastrointestinal. Patients with this entity have positive patch testing reactions to nickel. Skin manifestations include a diffuse eczematous dermatitis consistent with allergic contact dermatitis (2, 7, 8, 10). Gastrointestinal symptoms can include diarrhea, nausea, vomiting, recurrent aphthosis, abdominal pain, bloating, and constipation (7, 8). Diagnosis can be made by positive patch test reaction as well as exacerbation by nickel oral challenge and/or improvement on nickel restricted diet. Lab findings that have been found in patients with systemic contact dermatitis may include eosinophilia or elevated IgE levels(5). Foods with nigh nickel content include chocolate, soy, oatmeal, nuts and legumes. In addition, patient should avoid drinks and vitamin supplements with nickel as well as canned food (9).

Foods to AVOID	
Vegetables	Asparagus, Broccoli, Artichokes, Carrots, Cabbage, Cauliflower, Onions, Fennel, Mushrooms, Lettuce, Tomatoes, Celery, Brussel Sprouts, Spinach
Fruit	Apricots, Avocado, Cherries, Figs, Kiwi, Pears, Pineapples, Watermelon, Grapes, Plums, Berries
Herbs and Dressings	Bay leaves, Basil, Marjoram, Parsley, Ketchup, Seed oil, Mustard
Cereals	Wholemeal products, Buckwheat Oat, Barley, Malt, Rye
Legumes	Lentils, Peas, Beans, Green Beans
Seafood	Cod, Shellfish, Salmon, Octopus, Squid
Chocolate	All
Nuts	All
Drinks	Tea



Conclusion

Given the findings and history, we suggest the skin and gastrointestinal findings could be consistent with SNAS. SNAS may represent an underdiagnosed entity with implications in our chronic systemic contact dermatitis patients. The diet could represent an exacerbating factor in these patients once sensitized to nickel. Foods to avoid are listed in the chart above(7). Consideration should be given to SNAS in patients with systemic allergic contact dermatitis, GI findings and positive patch testing to Nickel. A diet trial may help with diagnosis and aid in resolution of these systemic symptoms for the patient.

References

Antico A, Soana R. Nickel sensitization and dietary nickel are a substantial cause of symptoms provocation in patients with chronic allergic-like dermatitis syndromes. Allergy Rhinol (providence) 2015 Jan. 6(1): 56-63.

Braga M, Quecchia C, Paerotta C et al. Systemic nickel allergy syndrome: nosologic framework and usefulness of diet regimen for diagnosis. Int J Immunopathol Parmacol. 2013 Jul-Sep: 26(3):707-16.

Fabbro SK, Ziwas MJ. Systemic contact dermatitis to foods: nickel, BOP, and more. Curr Allergy Asthma Rep. 2014 Oct.14(10): 463.

Fahmi J, Cloviczki P, Friese JL et al. Hypersensitivity to nickel in a patient treated with coil embolization for pelvic congestion syndrome.

Jung K, Lee S et al. Clinical features of Systemic Contact Dermatitis Due to the Ingestion of Lacquer in the province of Chungcheongnam-do. Ann Dermatol. 2012 Aug; 24(3): 319-323.

Pigatto PD, Brambilla L, Ferrucci S et al. Systemic allergic contact dermatitis associated with allergy to intraoral metals. Dermatology Online J. 2014 Oct. 15:20(10).

Ricciardi L, Arena A, Arena E, Zambito M et al. Systemic nickel allergy syndrome: epidemiological data from four italian allergy units. Int J Immunopathol Parmacol 2014. Jan-Mar. 27(1):131-6.

Schofer H, et al. Sensitization to nickel sulfate in patients with ileitis trminalis (Chron disease). Derm Beruf Umwelt. 1988 Sept-Oct.

Sharma A. Low Nickel Diet in Dermatology. Indian J Dermatology. 2013 May-Jun; 58(3): 240.

Tammaro A, Romano I, De Margo G et al. Effects of TIO NICKEL in patients with ACD and SNAS: experience on 700 patients in Italy. J Eur Acad Dermatol Venerol 2016 Aug 12 doi. 10.

Contact

Jessica Perkins, DO, PGY-III
Jc327009@ohio.edu
Nova Southeastern University/Largo Medical Center, Largo, FL

