Diet & Systemic Contact Dermatitis (SCD)

• **Systemic Contact Dermatitis (SCD)**
  - Skin reaction occurring in previously sensitized individual after systemic exposure to particular allergen
  - IM, IV, SQ, ingestion, inhalation, transepidermal
  - T cell-mediated type IV hypersensitivity reaction

• **Variable Clinical Presentation**
  - Vesicular hand dermatitis (metals) or palmar erythema
  - Generalized dermatitis
  - Symmetric drug-related intertriginous and flexural exanthema (SDRIFE)
  - Flare of prior dermatitis
  - Erythema multiforme

• **When to Suspect SCD?**
  - Patch test + to potential dietary allergen
  - 8 weeks avoidance of relevant cutaneous exposures
  - If persistent dermatitis, implement a low allergen diet
  - 1-2 months of strict dietary changes then reassess
  - Approximately 50% of patients improved within 4 weeks

• **Nickel (Ni+)**
  - Systemic nickel allergy syndrome (SNAS) identified in 6% of Ni+ allergic patients
  - Dose response studies: 1-10% of patch test + patients will flare with average dietary Ni+ (220-350 μg daily)
  - Foods to Avoid: Legumes (beans/lentils), Chocolate/ Cocoa, Nuts, Soy, Oatmeal/ Granola/ Wheat bran cereals, Canned food, Shellfish, Coffee, Dates / figs
  - Practical Advice
    - Avoid cooking acidic foods in stainless steel
    - Use nonstick, aluminum, ceramic, glass, or cast iron cookware
    - Add Vitamin C supplement (500-1000 mg) with meals
    - Drink bottled/distilled H₂O
    - Run cool tap H₂O before using

• **Cobalt (Co²⁺)**
  - Potential exposures:
    - Inhalation: coal/ metal mining, chemical production industries, smelting/ refining
    - Metal prosthesis failure
    - Hard metal tool exposures
    - Jewelry
    - B12 vitamins
  - Dyshidrotic eczema- high oral ingestions of cobalt should be considered regardless of patch test results
    - 1979: 25% of 202 patch test-negative dyshidrotic eczema patients flared with oral ingestions of metal salts (Co²⁺, Ni+, Cr)
• Greater than 50% patch test-positive patients flared after oral ingestions of metal salts.
  o Foods to Avoid: Nuts (brazil nuts), Chocolate, Liver, Herbal remedies, Flaxseeds, Chickpeas
• Balsam of Peru (BOP)
  o Thick fluid with cinnamon-like odor secreted from the tree *Myroxylon pereirae*
  o Sweetening agent, present in flavorings and spices
  o Presents as localized eczema, often of face/periocular, or at sites of reactivation
  o Avoidance diet helps ~50% patients
  o Foods to Avoid: Spices: vanilla/ cinnamon/ clove/ nutmeg, Tomatoes, Condiments: BBQ/ ketchup/ salsa, Chocolate ,Citrus fruits/peel, Cola, Pickled vegetables, Wine/ beer/ gin
• Propylene Glycol
  o Ubiquitous chemical due to vast applications: solvent, emulsifier, vehicle to enhance penetration, humectant, thickening agent in foods, antimicrobial
  o Foods to Avoid: salad dressing & sauces, cake mixes , drink mixes, creamers, prepackaged breakfast foods & dessert snacks, prepared meals & soups
  o Foodfacts.com is an online nutritional online database to search for allergens in commercial products
• Sorbic Acid
  • Natural organic compound used as a food preservative
  • Classic presentation: perioral contact dermatitis from oral care products
  • Avoid strawberries, prunes, cheeses, packaged foods, fast food, foods with added potassium sorbate as a “freshness protector”
• Keys to Success
  o Consider low Ni$^+$ & Co$^{2+}$ diet without patch testing in patients with dyshidrotic eczema and reports history of rash to costume jewelry.
  o Inquire about fad diets or meal replacements (soy protein in shakes).
  o Be optimistic! Evidence supports Ni$^+$ and BOP avoidance diets may result in 50% improvement.
  o Take time to educate on adherence strategies.

References: