Systemic Medications for the Dermatology Toolbox: Potassium Iodide – Handout for Key Points

Taraneh Paravar, MD
Assistant Professor
Department of Dermatology, UC San Diego
March 3, 2017
DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY

Taraneh Paravar, MD
F026 Systemic Medications for the Dermatology Toolbox

DISCLOSURES
I do not have any relevant relationships with industry.
I have no conflicts of interest.
Objectives

- Discuss the mechanism of action of potassium iodide
- Apply recommendations concerning appropriate laboratory evaluations and monitoring of patients on potassium iodide
- Review appropriate dosing
Potassium Iodide
Potassium Iodide (KI)

- Iodine was first discovered in seaweed in early 1800s
- Soon after was used to treat thyroid disorders and eventually other diseases: syphilis, eczema, and psoriasis
- Use outside of dermatology
  - Blocking of absorption of radioactive iodine by thyroid in cases of nuclear accidents (www.FDA.gov)
  - Used off-label in thyroidectomy preparation, thyrotoxic crisis, thyroid gland protection during radiopharmaceutical use
  - Expectorant

Dermatologic Uses

- Reported dermatologic uses for potassium iodide (none FDA approved)
  - Panniculitis
    - Erythema nodosum
    - Nodular vasculitis
    - Subacute nodular migratory panniculitis
  - Neutrophilic dermatoses
    - Pyoderma gangrenosum
    - Sweet’s syndrome
  - Infections
    - Sporotrichosis (fixed cutaneous and lymphocutaneous)
  - Miscellaneous
    - Behcet’s syndrome
    - Erythema multiforme
    - Wegener’s granulomatosis

Adapted from Sterling et al, JAAD 2000.
Mechanism of Action

- Mechanism of action (MOA)
  - Exact MOA in dermatologic disease is not known, but most effective in neutrophil predominant diseases
Caution

- Contraindications
  - Absolute
    - Iodine sensitivity
  - Use with caution in
    - Hypothyroidism or any thyroid disease, cardiac disease, renal insufficiency, Addison’s disease, hyperkalemia, hypocomplementememic vasculitis, myotonia congenita, tuberculosis, or patients with an impaired immune system

- Pregnancy Category
  - Category D
Adverse Effects

- **Common**
  - GI
  - Skin rash, salivary gland swelling/tenderness
- **Iodism/chronic iodine poisoning (with prolonged use)**
- **Hypersensitivity**
- **Cutaneous: acneiform, dermatitic, vasculitic**
  - May aggravate dermatitis herpetiformis, vasculitis, PAN, pustular psoriasis, BP
  - Acneiform eruptions
  - Iododerma
- **Potassium toxicity**
- **Miscellaneous**
  - Pulmonary edema, heart failure, death
  - Prolonged fever

Adverse Effects

- **Effect on thyroid metabolism**
  - Iodine is essential for the production of the thyroid hormones T3 and T4
  - Excess iodine leads to Wolff-Chaikoff effect (WCE): inhibition of hormone synthesis induced by large quantities of iodine
  - Autoregulation allows escape from WCE and the maintenance of a euthyroid state

Formulation

- Often administered in saturated solution (SSKI)
  - Made by adding KI to hot purified water, using sodium thiosulfate as a preservative
- 1000 mg/mL
- Supplied in 30 ml and 237 mL bottles
- Calibrated dropper marked to deliver 0.3 ml (300 mg) and 0.6 ml (600 mg)

Sterling et al, JAAD 2000, Hassan et al, Indian J Dermatol Venereol Leprol 2012
Dosing

- **Inflammatory dermatoses**
  - 300 mg (about 6 drops of SSKI) TID followed by weekly increases if needed
    - Can try daily increases of a drop every time the medicine is taken until the target dose is reached
  - Can start at 150 mg TID to mitigate adverse effects

Sterling et al, JAAD 2000
Medication Interactions

- Risk of hyperkalemia and potassium toxicity
- Risk of hypothyroidism
Monitoring Guidelines

- **Baseline**
  - History: personal or family history of thyroid disease, medication history including those that could affect thyroid function or cause increases in potassium level
  - For concern about underlying thyroid disease, recommend TSH, T4, antithyroglobulin, and antimicrosomal antibodies
    - otherwise not indicated, but I check baseline TSH for comparison

- **Follow-up**
  - At one month, check TSH to assess for iodide-induced hypothyroidism
  - Consider checking TSH yearly

Sterling et al, JAAD 2000
Monitoring Guidelines

- **Management of Adverse Reactions**
  - **To minimize GI effects**
    - Avoid rapid dose increases, take the medicine after meals, with the intake of juice or milk
  - **For iodism**
    - D/c KI and give abundant fluids to eliminate iodide
  - **Effects on thyroid**
    - Mild
      - Adjust KI dose
    - If iodide-induced hypothyroidism is detected
      - d/c KI
References

- Potassium Iodide Upsher-Smith Laboratories Prescribing Information 2015
References

References

