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

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DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY

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S056 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, hypocomplementemic vasculitis, myotonia congenita, tuberculosis, or patients with an impaired immune system

Pregnancy

- Historically 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
Formulation

- Often administered in saturated solution (SSKI)
- 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
  - Recommend starting at 150 mg TID to mitigate adverse effects
Medication Interactions

- Risk of hyperkalemia and potassium toxicity
- Risk of hypothyroidism

Potassium Iodide Prescribing Information 2015, Sterling et al, BJD 2000
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

- **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