Topical and Injectable Corticosteroids

John Hatzenbuehler MD FACSM
Team Physician Course
2015
Objectives

1. Describe the process of choosing a topical cortico-steroid for different disease treatments

2. Discuss the pros/cons and application of injectable corticosteroids in MSK disorders
Diagnoses

- Contact Dermatitis
- Intertrigo
- Eczema
- Seborrhea
- Psoriasis
- Poison ivy
- Chapped feet
Potency Pearls

- Anti-inflammatory properties causing vasoconstriction
- Groups I-VII
- Agents in each group are essentially equivalent strength
- Goal: Appropriate strength, appropriate length of time
- Weaker strength may be “Safer” but ineffective
- Education around “cure” or not
- If no response 1-4 wks, reassess
<table>
<thead>
<tr>
<th>Class</th>
<th>Generic Name</th>
<th>Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 Very High Potency</td>
<td>Betamethasone dipropionate</td>
<td>0.05% G O (diprolene)</td>
</tr>
<tr>
<td></td>
<td>Clopobetasol</td>
<td>0.05% C F G L O</td>
</tr>
<tr>
<td></td>
<td>Diflorasone diacetate</td>
<td>0.05% O</td>
</tr>
<tr>
<td></td>
<td>Halobetasol propionate</td>
<td>0.05% C O</td>
</tr>
<tr>
<td>Class 2 High Potency</td>
<td>Amcinonide</td>
<td>0.1% O</td>
</tr>
<tr>
<td></td>
<td>Betamethasone dipropionate</td>
<td>0.05% C (diprolene)</td>
</tr>
<tr>
<td></td>
<td>Desoximetasone</td>
<td>0.05% O, 0.25% C O</td>
</tr>
<tr>
<td></td>
<td>Flucinonide</td>
<td>0.05% C G O S</td>
</tr>
<tr>
<td></td>
<td>Halcinonide</td>
<td>0.1% C</td>
</tr>
<tr>
<td></td>
<td>Mornetasone furoate</td>
<td>0.1% O</td>
</tr>
<tr>
<td>Class 3 High Potency</td>
<td>Amcinonide</td>
<td>0.1% C L</td>
</tr>
<tr>
<td></td>
<td>Betamethasone dipropionate</td>
<td>0.05% C (non-diprolene)</td>
</tr>
<tr>
<td></td>
<td>Halcinonide</td>
<td>0.1% O S</td>
</tr>
<tr>
<td></td>
<td>Triamcinolone</td>
<td>0.1% O</td>
</tr>
<tr>
<td>Class 4 Mid Potency</td>
<td>Betamethasone valerate</td>
<td>0.12% F</td>
</tr>
<tr>
<td></td>
<td>Flucinolone acetonide</td>
<td>0.025% O</td>
</tr>
<tr>
<td></td>
<td>Flurandrenolide</td>
<td>0.05% O</td>
</tr>
<tr>
<td></td>
<td>Hydrocortisone valerate</td>
<td>0.2% O</td>
</tr>
<tr>
<td></td>
<td>Mornetasone furoate</td>
<td>0.1% C</td>
</tr>
<tr>
<td></td>
<td>Triamcinolone</td>
<td>0.1% C</td>
</tr>
<tr>
<td>Class 5 Mid Potency</td>
<td>Betamethasone dipropionate</td>
<td>0.05% L</td>
</tr>
<tr>
<td></td>
<td>Betamethasone valerate</td>
<td>0.1% C</td>
</tr>
<tr>
<td>Class 6 Low Potency</td>
<td>Betamethasone valerate</td>
<td>0.05% C O</td>
</tr>
<tr>
<td></td>
<td>Desonide</td>
<td>0.1% L</td>
</tr>
<tr>
<td></td>
<td>Flucinolone acetonide</td>
<td>0.05% C L O</td>
</tr>
<tr>
<td>Class 7 Low Potency</td>
<td>Hydrocortisone acetate</td>
<td>0.5% C L O, 1% C O F</td>
</tr>
<tr>
<td></td>
<td>Hydrocortisone hydrochloride</td>
<td>0.25% C L, 0.5% C L O S, 1% C L O S, 2% L, 2.5% C L O S</td>
</tr>
</tbody>
</table>

C = Cream, F = Foam, G = Gel, L = Lotion, O = Ointment, S = Solution
Choosing a topical steroid

Diagnosis
- Psoriasis
- Hand eczema

Determine Potency
- Class I Superpotent (clobetasol)

Warnings
- No face, axilla, groin, under breasts
- Limit to 14 days

Clinical Dermatology, Habif 5th ed.
Choosing a topical steroid

**Diagnosis**
Contact/A topic dermatitis Adults

**Determine Potency**
Class II-II (Betamethasone)

**Warnings**
No face, axilla, groin, under breasts Limit to 21 days

Clinical Dermatology, Habif 5th ed.
Choosing a topical steroid

Diagnosis: Contact/A topic dermatitis in children

Determine Potency: Class IV-V Medium

Warnings: Limit use in children to 7-21 days. Limit intertriginous areas.

Clinical Dermatology, Habif 5th ed.
Choosing a topical steroid

Diagnosis
Facial dermatitis

Determine Potency
Class VI-VII
Low
(Hydrocortisone)
(Desonide)

Warnings
Re-evaluate if more than 28 days
Avoid chronic use

Clinical Dermatology, Habif 5th ed.
Choosing topical steroid Pearls

- Concentration cannot be used to determine strength
  - Ie. 0.05% clobetasol >>>> 1% hydrocortisone

- Be mindful of vehicle
  - Creams
  - Gels
  - Ointments
  - Lotions/solutions

- Beware of combinations – Lotrisone
  - Clotrimazole + betamethasone diopropionate (Class II)
Choosing topical steroid Pearls

- Amount to dispense
- Cost
- Length of use
- Rule of Hand
  - One hand area 0.25gm of ointment or 1% body surface area
  - 4 hand units = 1 gm
  - Approx 282 gm required for total body coverage BID for a week
Adverse Reactions

- Tachyphylaxis
  - Decreased responsiveness with continued use
  - Cycle applications

- Adrenal Suppression

- Skin Atrophy
  - Thin
  - Telangectasias
  - Hypopigmentation
  - Can be reversible
Topical Corticosteroids

Summary

- Common application in sports medicine
- Remember potency charts
- Choose steroid wisely based on potency and timing
- Education is paramount for avoiding side effects
Injectable Corticosteroids
Basics

- Long standing treatment option for MSK issues
  - Range of effects: not helpful -> cure

- Low risk
  - <1% bleeding, infection, atrophy, tendon rupture, hypersensitivity reaction
  - 5% risk of steroid flair
  - Common – vasovagal reaction

- Success depends on several factors
  - Knowing the right diagnosis (WHO)
  - Performing the correct procedure (HOW)
  - Using most appropriate agent (WHAT)
Who

Location
- Within joint space (intra-articular)
- Around joint space (periarticular)
- Within specific soft tissue structures (Bursa, peritendinous)

What is the goal if injection
- Definitively treat condition (DeQuervain’s)
- Provide pain free window for rehab (Subcromial pain)
- Provide episodic pain relief (Osteoarthritis)
How

- Landmark vs ultrasound guidance

- Contraindications
  - Broken skin at injection site
  - Skin infection overlying injection site
  - Intra-articular fracture/osteochondral lesion
  - Prosthetic joint
  - Unstable coagulopathy
What

- No compelling evidence of most effective steroid
- Methylprednisolone and Triamcinolone are most common agents used
  - Methylpred 40-80mg, Triamcinolone 10-40mg
- Local anesthetic choice
  - Quick onset, short duration – lidocaine
  - Delayed onset, long duration – bupivacaine
  - Depends on location (joint vs soft tissue)
  - Diagnostic response?
## How Much

<table>
<thead>
<tr>
<th>Joint</th>
<th>Steroid Dose* (mg)</th>
<th>Anesthetic dose (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder</td>
<td>20-60</td>
<td>5</td>
</tr>
<tr>
<td>Elbow</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Wrist</td>
<td>20-40</td>
<td>3</td>
</tr>
<tr>
<td>Knee</td>
<td>20-80</td>
<td>5</td>
</tr>
<tr>
<td>Ankle</td>
<td>20-40</td>
<td>3-5</td>
</tr>
</tbody>
</table>

*Depomedrol

- “Three a year” recommendation
- Anesthetic based on size of joint to distribute steroid
- Develop your own practice habits to keep consistency
Evidence

- Intra-articular vs soft tissue
- Disease specific
- Guideline recommendations for OA as example
  - IA corticosteroids – (R) OARSI, ACR, EULAR, (I) AAOS
  - IA hyaluronic acid – (R) EULAR, (I) OARSI, (NR-S) AAOS
- What to do in clinical practice?
  - Thoughtful approach to what you’re doing
  - Involve patient in process
Injectable Steroids
Summary

- Understand who, how, what you are injecting
- In general, low risk
- Use local anesthetic to help with diagnostic process
- Evidence depends on the “who”
- Patient education paramount with injections
A good summary article to keep on hand

Thank you