Ocular and Periocular Pain: Causes and Coping Strategies

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Course Goal

• To provide current and accurate information about diagnosis and management of ocular and periocular pain.
• Case examples
• Topical discussion

Pain Defined

• Pain is a feeling triggered in the nervous system.
• It may be sharp or dull. Pain may come and go, or it may be constant.
• Pain may result from various ophthalmic and other causes.

Pain is...

An "unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."

Source: International Association for the Study of Pain
Nociception (from the Latin word for "hurt"), is the process by which a painful stimulus is relayed from the site of stimulation to the central nervous system.

Analgesics

work either peripherally (NSAIDS and aspirin) at the end receptors or centrally (opioids and acetaminophen) in the nervous system.

Emergency vs Urgency?

- By definition, an ocular/ophthalmic emergency requires immediate medical intervention to avert permanent visual impairment or worse.
- An urgency requires non-immediate intervention.
- Triage: medical priority is given to patients who require the most immediate care.

Emergency or Urgency?

Uveitis
Large corneal abrasion

Recurrent Erosion

**Ultrad** – Tramadol HCL (DEA #)

- CNS agent – reduces the perception of pain
  - Equal in effectiveness to Tylenol 3
  - Weak opioid receptor binding
  - Can be taken w/o regard to meals
  - Minimal side effects (constipation, dizziness and nausea)
- One 50 mg tablet QID or PRN
  - not to exceed 400 mg/day

**Contraindications for Narcotic Analgesics**

- Known hypersensitivities
- COPD
- Liver and kidney problems
- Pregnancy
- History of pain medication abuse

Chemical Burn

**CASE OF THE ANGRY ORBIT**
CASE HISTORY

- 18 y/o WM
- Hx of trauma x 1 year
- Now presents with:
  - Acute onset
  - Painful swelling of OS lids/orbit
  - Associated headache
  - Blurred vision OS

ORBITAL CELLULITIS

- Background
  - Acute infection
  - Extension from adjacent sinus
  - Bacteria: staph, strep, H-flu, gram neg rods
- Subjective
  - Painful, swollen lids w/HA, deeper pain
  - Blur
  - Febrile, malaise
  - Hx. of previous orbital trauma, surgery
Orbital Cellulitis

- Objective findings
  - Proptosis
  - Ophthalmoplegia
  - Lid edema and erythema
  - Pain on eye movement
  - Fever
  - Decreased vision
  - May have high IOP

Chandler's Classification

- Stage 1
  - Inflammatory edema
- Stage 2
  - Orbital cellulitis
- Stage 3
  - Subperiosteal abscess
- Stage 4
  - Orbital abscess
- Stage 5
  - Cavernous sinus thrombosis
    - Life-threatening

Orbital Cellulitis

- Inflammation of the orbital soft tissue posterior to the orbital septum
- Etiology
  - Extension from sinus, trauma
- Work-up
  - Ophthalmic exam, Physical exam
  - CT/MR shows material in ethmoid sinus
  - CBC, Blood cultures, Chemistry
  - Culture wound

CT shows L ethmoid sinusitis w/no orbital involvement

Orbital Cellulitis Presentation:

- Eyelid edema (absence of a lid crease)
- Painful!
- Conjunctival chemosis
- Proptosis / Globe displacement
- Restricted motility
  - May have associated pain (60%)
- Visual Acuity decrease
- Possible disc edema, APD
Disc Edema in Another Patient With Orbital Cellulitis

Oral antibiotics

Orbital Cellulitis

Preseptal Cellulitis

Oral antibiotics

Admit, IV antibiotics

Dacryocystis with Preseptal Cellulitis

Preseptal Cellulitis Treatment: Cephalexin

- Brand names
  - Keflex, Biocef, Keftab, Zartan
  - Generic
- Mechanism
  - Inhibits bacteria cell wall synthesis
  - Bactericidal against gram + and gram -
- Uses
  - Hordeola
  - Preseptal cellulitis
  - S. Aureus, streptococci, haemophilus influenzae

THE ANGRY ANTERIOR SEGMENT

CASE

“The Electrician and the Screwdriver”
HISTORY

- Late Friday afternoon, end of day, resident calls from emergency clinic:
  - 30 year old WM
  - CC: Pain, decreased VA OD X 4 hrs
  - Screwdriver injury, self-treated w/irrigation
    - Went back to work!

EXAM FINDINGS

- VA
  - OD 20/200  PH 20/100
- EOMs: Full but painful in all POG
- PUPILS
  - OD Irreg., 1+ D, 3+ C
  - OS Round, regular, 3+ D, + Lancet or “Owl” sign
  - APD Negative by reverse

BIOMICROSCOPY

- OD
  - 2+ nasal conj. injection, SCH
  - Full-thickness corneal defect
  - 3+ cell, shallow, flat A/C
  - Air bubbles in A/C
  - Grade I nasal, temp. angles, possible PAS

ADDITIONAL TESTING

- WOUND LEAK
  - Ddx. between P/T vs F/T laceration
- Seidel’s Sign
  - Sterile saline, sterile NaFl, cobalt blue
  - If +, F/T
  - SLE showed F/T corneal laceration.
  - This is a perforating corneal injury and a penetrating ocular injury.
Differential Diagnosis

a. Diffuse Episcleritis
b. Bacterial Conjunctivitis
c. Diffuse Anterior Scleritis

Persistent History

• Are you certain that you’ve never had previous episode or medical problem?
• Patient then reported a history of long-standing Rheumatoid Arthritis
• Observation of hand joints

What is your plan?

Ocular Management Quiz

a. Prenisolone acetate 1% susp 1gt q2h x 1 week
b. Nepafenac .1% susp 1 gt q2h x 1 week
c. Prednisone 60mg po q day x 2 weeks
d. Methotrexate 2.5mg per week
Ocular Management Quiz

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Actual Plan

• Prednisone 60mg po q day x 2 weeks
• Followed by 5 wk taper
• PCP/Rheumatology referral for complete physical
  – CBC (including differential + platelets)
  – ANA, CRP
  – Rheumatoid arthritis diagnostic panel

Serology Results

• CRP 2.41 H < .8 mg/dL
• RF 39 H < 14 IU/mL
• Cyclic Citrullinated Peptide Antibody (Anti-CCP)
  – Highly specific for RA w/+ RF
  – Predictive of progressive joint destruction
  – > 59 is strong +; MP was out of range (>60)

Alternative (to Steroid) Pharmacotherapies

• Systemic NSAIDs
• Indications: scleritis, uveitis
• Indomethacin 25mg qid until significant improvement, then tid until complete resolution.
  – Less side effects than steroids
• Ibuprofen 400-600mg qid
Prednisone

- **Brand names**
  - Orasone, Meltasone, Medrol
  - Generic
- **Mechanism**
  - Suppresses leukocyte migration, capillary permeability
  - Reduces activity and volume of lymphatic system
- **Common Ophthalmic Uses**
  - Scleritis, Severe Uveitis, Orbital Inflammatory Pseudotumor

Prednisone

- **Side effects**
  - Reduced immunity, adrenal insufficiency
  - Secondary diabetes
  - Cushing’s disease
  - Slow wound healing
  - Weight gain
  - Mood swings
  - Cataract, IOP rise
- **Contraindications**
  - Serious infections, fungal infections
  - Brittle diabetics

Prednisone

- **Pregnancy / nursing**
  - Category C
  - It is not known whether Prednisone is harmful to an unborn baby.
  - Caution to those lactating
- **Children**
  - Generally OK, check with Peds
- **Miscellaneous information**
  - Take with food, taper as needed
  - Medrol dose packs for short term, low dose Tx.

HZO Keratitis (“Pseudodendrite”)
WHAT ARE YOU GOING TO DO?

Go-to med for all Herpetic Eye Dx:

WHAT’S NEW?

- **Generic Valtrex, Famvir**
  To Treat Shingles (VZV), Give Double the Dose Used for HSV

<table>
<thead>
<tr>
<th>Antiviral Drug</th>
<th>Dosing for H. Zoster</th>
<th>Dosing for HSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acyclovir</td>
<td>800mg 5x q.d. x 1wk</td>
<td>400mg 5x q.d. x 1wk</td>
</tr>
<tr>
<td>Valacyclovir</td>
<td>1,000mg t.i.d. x 1 wk</td>
<td>500mg t.i.d. x 1 wk</td>
</tr>
<tr>
<td>Famciclovir</td>
<td>500mg t.i.d. x 1 wk</td>
<td>250mg t.i.d. x 1 wk</td>
</tr>
</tbody>
</table>

Source: Review of Optometry 2010 Clinical Guide to Ophthalmic Drugs, Melton and Thomas

Herpetic Eye Disease Treatment

- Valtrex, Famvir are better absorbed and thus more bioavailable than Acyclovir.
  - Therefore they require lower amounts and less frequent dosing.
- Headache is a common side effect of all oral antivirals.

ACYCLOVIR for HZO

- **DOsing**
  - 800 MG 5X PER DAY FOR 7-10 DAYS
- **MUST** be initiated within 48 hours of onset of rash to be effective and prevent post-herpetic neuralgia

H. Zoster Vaccine

- A live, attenuated virus vaccine that reduces risk of getting HZV in people 50 and older.
- Reduces by 50% the risk of reactivation of varicella zoster virus, the same one that causes chicken pox and remains dormant in the body.

ZOSTAVAX is not indicated for the treatment of zoster or postherpetic neuralgia.
H. Zoster Vaccine

- Approved in 2006
- Cost = $200
- Covered by Medicare Part D, not Part B
- In 2008, CDC indicated that people w/Hx of HZV can be vaccinated.

Managing Ocular Pain

There are three main types of analgesics:

- Over the Counter
- Non-narcotic prescription
- Narcotic prescription

**Over the Counter:**
- NSAIDS
- Acetaminophen (Tylenol)

- Aspirin: Anti-inflammatory, Analgesic, Anti-pyretic, Increase bleeding time
- Ibuprofen

Ocular Pain Management Options

- Topical NSAIDs, Steroids, Cycloplegics
- ASPIRIN (ASA)
- MOTRIN (Ibuprofen)
- TYLENOL (Acetaminophen)
- MOTRIN + TYLENOL are synergistic
- TYLENOL #3
- VICODIN

My Go-to Mild-Mod Pain Meds

- MOTRIN, ADVIL (Ibuprofen)
- ASPIRIN (Acetylsalicylic acid)
- TYLENOL (Acetaminophen)

Tylenol (acetaminophen)
- Is the leader in OTC pain control
- Remember it has no anti-inflammatory properties
- Use at 325 mg every 4 hours

Aspirin (acetylsalicylic acid)
- Do not give to children and teenagers = Reye’s syndrome
- May cause GI bleeding
- May induce asthma
- Acidic in patients with nasal polyps – increased incidence of allergy
- Do not give if patient is on Coumadin, Heparin
- Renal insufficiency and Congestive Heart Failure – contact PCP
IBUPROFEN

- Brand names
  - Advil, Motrin, Midol, Neoprofen, Propinal, Ultrapin
  - Generic
- Mechanism
  - Non-steroidal anti-inflammatory
  - Antipyretic, analgesic
  - Inhibits prostaglandin synthesis by decreasing the activity of cyclooxygenase
- Uses
  - Scleritis, uveitis, trauma

Ibuprofen (Motrin, Advil, Nuprin)

- Comes in 200 mg brown tablets
- Use at 400 mg QID
- No NSAID to a diabetic patient

Ibuprofen at 400 mg QID = to Tylenol 3 ****

IBUPROFEN

- Side effects
  - Dizziness, rash, heartburn, tinnitus
  - Epigastric pain, nausea
- Contraindications
  - Pregnancy (3rd trimester)
  - GI disease
  - Pain associated with coronary artery bypass
  - Bleeding disorders

IBUPROFEN

- Pregnancy / nursing
  - Category C
    - Benefit must outweigh risk
    - Animal studies show teratogenic effects on fetus
    - Risk to fetus in 3rd trimester
    - Caution to those lactating
- Children
  - 4-10 mg / kg every 6-8 hours
**IBUPROFEN**

- Miscellaneous information
  - Take with food
  - Avoid alcohol due to gastric irritation / bleeding
  - Overuse may cause rebound
  - 400 mg qid is comparable to acetaminophin / codeine
    - Tylenol #3
  - May interfere with aspirin’s anti-platelet effect
    - Take 30-120 minutes after or 8 hours before aspirin

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**Moderate-severe Ocular Pain**

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**5 schedules of drugs under DEA**

1. Schedule 1: no approved or acceptable medical use in the United States (Heroin, LSD)
2. Schedule 2: Written Rx with no refills (High potential for abuse – oxycodone, methadone, morphine)
3. Schedule 3: Verbal or written Rx with up to 5 refills for 6 months (Lower potential for abuse – tramadol, codeine, hydrocodone, propoxyphene)
4. Schedule 5: Rx filled as authorized by practitioner (Limited abuse potential – none in this group used for ocular analgesia – Robitussin)

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**TYLENOL #3 Narcotic Analgesic**

- Acetaminophen 300 mg
- Codeine Phosphate 30 mg
- Doses may be repeated up to every 4 hours
- Binds to opiate receptors in the CNS, causing inhibition of ascending pain pathways.
- Alters the perception of and response to pain.

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**Managing Severe Ocular Pain**

- Lortab, Vicodin
- Acetaminophen
  - acetyl para aminophenol 500mg
- + hydrocodone 2.5mg

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**Conclusions**

- Pain in and around the eye may occur secondary to a variety of causes.
- The clinician must work diligently to identify the cause of pain.
- Treatment centers around topical and systemic pharmaceutical agents.
- Prescribe wisely.