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
• 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 causes.

Emergency vs. Urgency?
• By definition, an ocular/ophthalmic emergency requires immediate medical intervention to avert permanent visual impairment.
• An urgency requires non-immediate intervention.
• Triage: medical priority is given to patients who require the most immediate care.
Recurrent Erosion

Bascom Palmer study on Recurrent Corneal Erosion

- Used oral doxycycline 50 mg BID for two months and topical steroids TID for two weeks.

- The results showed no recurrences in any of the patients for ~22 months.

Chemical Burn

- Oral doxycycline (100 mg po bid) may be used in the acute phase of chemical burns of the cornea
  - Reduces collagenase activity and sterile ulceration
    - This is independent of its antimicrobial properties
    - Probably due to chelation of zinc at active site of the enzyme
  - Inhibits neutrophil (PMN leukocyte) activity

THE ANGRY ORBIT

Anatomy Review
Anatomy Review

CASE

- **History**
  - 18 y/o WM
  - Hx of trauma x 1 year
  - Acute onset
  - Painful swelling of lid
  - 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
  - Blur
  - Febrile, malaise
  - Hx. of orbit trauma, surgery

**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

CT Scan-Orbital Cellulitis

note pansinusitis, proptosis, disc edema

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
Preseptal Cellulitis

“*The Electrician and the Screwdriver*”

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, streptococi, haemophilus influenzae

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

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

What is your plan?
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 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
  - Supresses 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

HZO Keratitis (“Pseudodendrite”)

H. Zoster

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 1 wk</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 V

- 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 after recovering.

H. Zoster V

- Approved in 2006
- Co$t = $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

Ocular Pain Management Options

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

Our 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
• Avoid 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, Proprinal, Ultrapin
  – Generic
• Mechanism
  – Non-steroidal antiinflammatory
  – 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

**Moderate-severe Ocular Pain**
**Ultras – Tramadol HCL (Non-narcotic)**

- 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

**5 schedules of drugs under the DEA**

Schedule 1: no approved or acceptable medical use in the United States
(Heroin, LSD)

Schedule 2: Written Rx with no refills
(High potential for abuse – oxycodone, methadone, morphine)

Schedule 3 and 4: Verbal or written Rx with up to 5 refills for 6 months
(Lower potential for abuse – codeine, hydrocodone, propoxyphene)

Schedule 5: Rx filled as authorized by practitioner
Limited abuse potential – none in this group used for ocular analgesia
(Robitussin)

**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.

**Managing Severe Ocular Pain**

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

**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.

**Questions and Comments?**
Thank you

and

all that Jazz!

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