Anterior Segment Disease: From the Front Office to the Back

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Disclosure

- Unfortunately, the speaker has no financial or proprietary interest in any of the products that are mentioned.
- The speaker has received honoraria for consulting, performing research, speaking, and/or writing from: Alcon Laboratories, Bausch + Lomb, CooperVision, Inspire Pharmaceuticals, Teague Training, TelScreen, Transitions, Valiant Pharmaceuticals, Vistakon, Vmax Vision.

Infiltrates – Infectious vs. Inflammatory

- Microbial Keratitis
  - Moderately severe symptoms, (+) corneal staining, (+) A/C reaction, (+) stromal edema, single infiltrate, purulent discharge
- Sterile Corneal infiltrates
  - Minimal to moderate symptoms, minimal corneal staining, minimal to no A/C reaction, little edema if present, multiple infiltrates, (-) purulent discharge

Diagnostic and Treatment Algorithms for Ocular Surface Disease States; Supplement To Review of Optometry; Oct 2009.

Multicenter Case-Controlled Study of the Role of Lens Materials and Care Products on the Development of Corneal Infiltrates

Red Eye
Infiltration of corneal periphery/mid-periphery with inflammatory cells from limbus

No Flush Mechanism
Increased Bacterial Load Proinflammatory status (increase cytokines, IgA, etc)

Build Up Toxins
Flush/Eliminated from Eye

Bacteria Laden Lens
Toxins
Bacteria Laden Lens and by-products

Build-up of Toxins
Irritation of Surface Cornea, Conj, Limbus

CLARE
Compliments of Dave Kading, OD, FAAO
Background

• Relatively recently there seems to have been a rise in corneal infiltrative events with contact lens wearers
• This study attempts to determine whether there is a relationship between contact lenses, solutions and contact lens solution combination in the development of corneal infiltrates

Study Design

• Multicenter case controlled study
• Five academic institutions captured data on patients presenting with symptomatic CIE’s
• Cases presented between July 1st, 2006 to December 31st 2009
• Cases had to have had eye examinations within the previous 2 years
• Three time matched controls were then selected who had eye exams that were +/- 2 weeks of the cases

Results

• The multivariate analysis found the following factors to be significant for the development of CIE’s in contact lens wearers
• Reusable contact lenses
• Extended wear
• Younger age
• Silicone hydrogel lenses

Advancing Wave Like Epitheliopathy
GPC TREATMENT

-Swab area to remove any bound mucous
-Discontinue contact lens wear or change to a daily disposable contact lens
-May begin short term steroid pulse (1 gt qid x 1 week)
-Maintenance of mast cell stabilizer/antihistamine combination 1 gt qd x 1 month
1/3/2013

Viral Conjunctivitis
• 20-70% of infectious conjunctivitis is thought to be of viral etiology
• Viral infections are less common in children under 12 years old and more common in those over 12 years old
• Between 65-90% are thought to be caused by adenovirus

Viral vs. Bacterial
• Bacterial
  – More common in children less than 12 years old - redness, mucoid discharge, purulent discharge, eyelid matting
• Viral
  – More common in those greater than 12 years old - itching, burning, watery discharge, mucoid discharge, foreign body sensation, lymphadenopathy, hemorrhages

Viral Conjunctivitis
• Nonspecific Follicular Conjunctivitis
  – Occurs more often in children, can be associated with a URI, unilateral or bilateral presentation, usually resolves in 14 days
• Pharyngeal Conjunctival Fever
  – More common in children and is usually associated with a pharyngitis and low grade fever
  – More commonly seen as a unilateral presentation
  – Typically 2 week resolution

Viral Conjunctivitis
• Acute Hemorrhagic Conjunctivitis
  – Most common in developing countries
  – Large subconjunctival hemorrhages
  – Preauricular lymphadenopathy, keratitis
• Epidemic Keratoconjunctivitis
  – Highly contagious
  – Most commonly seen in those 20-40 years
  – Keratitis, foreign body sensation, blurred vision
  – Signs and symptoms may last for up to 4 weeks

87809
• Infectious agent antigen detection by immunoassay with direct optical observation; adenovirus
**Point of Care Testing**

- RPS Adeno Detector

**How to Use AdenoPlus: Four-step Process**

1. Use a “dab and drag” motion in 6-8 locations on the palpebral conjunctiva (lower eyelid) to collect a tear sample.
2. Snap the sample collector into the test cassette and press firmly where indicated.
3. Dip the test cassette into the provided buffer vial for 20 seconds. Replace the cap.
4. Read the results: 2 lines (1 red, 1 blue) = positive, 1 line (blue) = negative

**AdenoPlus Clinical Trials**

A prospective, multicenter, masked, sequential, clinical trial was performed at a combination of private ophthalmology practices and academic centers.

The study enrolled 128 patients presenting with a clinical diagnosis of acute viral conjunctivitis.

Thirty-one patients were confirmed positive for Adenovirus by viral cell culture.

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<thead>
<tr>
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<th>Cell Culture</th>
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<tr>
<td></td>
<td>+</td>
</tr>
<tr>
<td>AdenoPlus</td>
<td>28</td>
</tr>
<tr>
<td>–</td>
<td>3</td>
</tr>
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</table>

Sensitivity: 90% (28/31), 95% CI (74.2-98.0)
Specificity: 96% (93/97), 95% CI (89.8-98.9)
Negative Predictive Value: 97% (93/96), 95% CI (91.1-99.3)
Positive Predictive Value: 88% (28/32), 95% CI (71.0-96.5)
Viral Conjunctivitis

- Treatment:
  - Artificial tears
  - Cool compresses
  - Topical Antihistamines
  - Topical povidone iodine
  - Gancyclovir gel
  - Steroids – when there is significant light sensitivity or reduced visual acuity

Off-Label Adenoviral Treatments

Ganciclovir .15% Gel vs Preservative Free Tears (N=18)

<table>
<thead>
<tr>
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<th>Ganciclovir .15% gel (N=9)</th>
<th>Preservative free tears (N=9)</th>
</tr>
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<tbody>
<tr>
<td>Recovery time</td>
<td>7.7 (7-12) days</td>
<td>18.5 (7-30) days</td>
</tr>
<tr>
<td>SEIs</td>
<td>2 patients</td>
<td>7 patients</td>
</tr>
</tbody>
</table>

Evaluation and Management (E&M)

- New Patient
  - 99201, 99202, 99203, 99204, 99205
- Established Patient
  - 99211, 99212, 99213, 99214, 99215

E&M Coding

Evaluation & Management visit depends on three things:
1) History
2) Examination
3) Medical Decision Making

History

- Chief Complaint (CC)
- History of Present illness (HPI)
- Review of Systems (ROS)
- Past, Family and/or Social History (PFSH)
### History

#### Chief Complaint (CC)

“A concise statement describing the symptom, problem, condition, diagnosis, physician recommended return or other factor that is the reason for the encounter.”

### History

#### History of present illness (HPI)

1. Location
2. Quality
3. Severity
4. Duration
5. Timing
6. Context
7. Modifying Factors
8. Associated Signs and Symptoms

### HPI

- Brief – one to three elements of the HPI
- Extended – four or more elements of the HPI or the status of at least three chronic conditions

### ROS

- Problem Pertinent – inquires about the system directly related to the problem(s) identified in the HPI; positive responses and pertinent negatives
- Extended – two to nine systems should be documented
- Complete – at least ten organ systems must be reviewed

### History

#### Review of Systems (ROS)

1. Constitutional (e.g. Fever, weight loss)
2. Eyes
3. Ears, Nose, Mouth, Throat
4. Cardiovascular
5. Respiratory
6. Gastrointestinal
7. Genitourinary
8. Musculoskeletal
9. Integumentary (skin)
10. Neurological
11. Psychiatric
12. Endocrine
13. Hematologic/Lymphatic
14. Allergic/Immunologic

### History

#### Past, Family and Social History (PFSH)

1. Patient’s Past history – the patient’s past experiences with illnesses, operations, injuries and treatments
2. Family History
3. Social/Occupational History – past and current activities
**PFSH**

- Pertinent – at least one specific item from any of the three history areas must be documented
- Complete – at least one specific item from two of the three history areas for an established patient; at least one specific item from three history areas for a new patient

**Determining Level of History**

- Problem Focused – Brief HPI, (N/A) ROS and (N/A) PFSH
- Expanded Problem Focused – Brief HPI, Problem Pertinent ROS and (N/A) PFSH
- Detailed – Extended HPI, Extended ROS and Pertinent PFSH
- Comprehensive – Extended HPI, Complete ROS and Complete PFSH

**History Summary**

1) **History of present illness (HPI)**
   1) Location, 2) Quality, 3) Severity, 4) Duration, 5) Timing, 6) Context, 7) Modifying factors, 8) Associated signs and symptoms

2) **Review of Systems (ROS)**

3) **Past, Family and Social History (PFSH)**
   1) Patient’s Past History, 2) Family History, 3) Social/Occupational History

**Examination**

9) Lenses
10) Intraocular pressure (excluded – patients with trauma or infectious disease and children)
11) Optic Disc
12) Posterior segment (retina and vessels)
13) Orientation to time, place and person
14) Mood and effect (ie. depressed, agitated)

**Examination Level**

- Problem Focused – 1 to 5 elements
- Expanded Problem Focused – 6 to 8 elements
- Detailed – at least 9 elements
- Comprehensive – all elements performed
Medical Decision Making

- Based on 3 factors:
  1) Number of diagnoses or management options
  2) Management options to be reviewed
  3) Amount and/or complexity morbidity or mortality

Medical Decision Making

- Straightforward (II), Low Complexity (III), Moderate (IV), High Complexity (V)
  - Number of Diagnosis
  - Amount and/or complexity of data to be reviewed
  - Risk of complications and/or morbidity or mortality

Medical Decision Making

- Straightforward – No. of Dx and Tx options (1), amount and complexity of data (1), Risk of complications and/or morbidity (minimal – 1 self limited)
- Low Complexity - No. of Dx and Tx options (2-3), amount and complexity of data (2-3), Risk of complications and/or morbidity (acute illness or injury, usually OTC)

Medical Decision Making

- Moderate complexity - No. of Dx and Tx options (4-5), amount and complexity of data (4-5), Risk of complications and/or morbidity (chronic illness-complicated or 2 chronic illness – uncomplicated; Rx medication needed)
- High complexity - No. of Dx and Tx options (6), amount and complexity of data (6), Risk of complications and/or morbidity (1 or more chronic illness with complications, condition threatening life)

CPT Frequency

99213 - most frequently billed of all office visits
99212 and 99214 - next most common
99211 and 99215 - least common

E&M Coding

History

1) History of present illness (HPI)
   - Location, 2) Quality, 3) Severity, 4) Duration, 5) Timing, 6) Context, 7) Modifying Factors, 8) Associated Signs and Symptoms
2) Review of Systems (ROS)
3) Past, Family and Social History (PFSH)
   - Patient’s Past history, 2) Family History, 3) Social/Occupational History
E&M Coding

Examination

1) HPI
2) ROS
3) PFSH
4) Exam

Medical Decision Making

- Low Complexity - No. of Dx and Tx options (2-3), amount and complexity of data (2-3), Risk of complications and/or morbidity (acute illness or injury, usually OTC)

Medical Decision Making

92004/92014

- Comprehensive ophthalmological services describes a general evaluation of the complete visual system. The comprehensive services constitute a single service entity but need not be performed at one session
92004/92014

- The service includes history, general medical observation, external and ophthalmoscopic examination, gross visual fields and basic sensorimotor examination. It often includes, as indicated: biomicroscopy, examination with cycloplegia or mydriasis and tonometry. It always includes initiation of diagnostic and treatment programs.

92004/92014

- Initiation of diagnostic and treatment program includes the prescription of medication, lenses and arranging for special ophthalmological diagnostic or treatment services, consultations, laboratory procedures and radiological services.

92002/92012

- Intermediate ophthalmological services describes an evaluation of a new or existing condition complicated with a new diagnostic or management problem not necessarily relating to the primary diagnosis, including history, general medical observation, external ocular and adnexal examination and other diagnostic procedures as indicated; may include the use of mydriasis for ophthalmoscopy.

New or Established?

- A new patient is one who has not received any professional services from the physician or another physician of the same specialty who belongs to the same group practice within the past three years.
Punctal Occlusion

68761
E1 – Upper left
E2 – Lower left
E3 – Upper right
E4 – Lower right
ICD

375.15 Tear film insufficiency
370.20 Superficial keratitis
370.33 Keratoconjunctivitis Sicca

-25 - Significant, Separately Identifiable Evaluation and Management Service by the Same Physician on the Same Day of the Procedure or Other Service
-51 - Multiple Procedures: When multiple procedures, other than E/M services, Physical Medicine and Rehabilitation services or provision of supplies, are performed at the same session by the same provider

Punctal Occlusion

68761 – E2 - 375.15
68761 – E4 -51- 375.15
99213 – **Office Visit**
65222 – **Corneal FB Rem**
92285 – **Anterior Seg Phot**
92070 – **Therapeutic CL’s**
92070

• Fitting of contact lens for treatment of disease, including supply of lens
• Bilateral procedure

92071

• Fitting of contact lens for treatment of ocular surface disease

99070

• Supplies and materials (except spectacles), provided by the physician over and above those usually included with the office visit or other services rendered
Fitting of contact lens for management of keratoconus, initial fitting

Herpetic Keratitis Disease

- Herpetic keratitis infection is one of the leading cause of corneal transplants in the U.S.
- Herpes Simplex Virus (HSV-type 1 and HSV-type 2) and Herpes Zoster cause herpetic keratitis.
- A 2002 report estimated that 400,000 Americans had experienced ocular HSV infection
  - Estimated 20,000 primary infections per year in the U.S.
  - Estimated 28,000 relapses in the U.S. per year

Ganciclovir ophthalmic gel 0.15% Development

- Developed for treatment of acute superficial herpetic keratitis
- First approved in France under the tradename Virgan in 1995
Instill 1 drop Viroptic Ophthalmic Solution, 1% onto the cornea of the affected eye every 2 hours while awake for a maximum daily dosage of 9 drops until the cornea ulcer has completely re-epithelialized. Following re-epithelialization, treatment for an additional 7 days of 1 drop every 4 hours while awake for minimum daily dosage of 5 drops is recommended.

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<thead>
<tr>
<th>Dosage Frequency</th>
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<tr>
<td>Zirgan</td>
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<tr>
<td>Viroptic</td>
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### Dosage Frequency
- Instill 1 drop in the affected eye 8 times per day until corneal ulcer heals and then 1 drop 3 times per day for 7 days.

### Dosage Forms
<table>
<thead>
<tr>
<th>Zirgan</th>
<th>Trifluridine</th>
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<tr>
<td>5 gram tube</td>
<td>7.5 mL dropper bottle</td>
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### Storage
- Zirgan: Store at 15°C-25°C (59°F-77°F)
- Trifluridine: Store under refrigeration 2° to 8°C (36° to 46° F)

### Warnings/Precautions
- Patients should not wear contact lenses if they have signs or symptoms of herpetic keratitis or during the course of therapy with Zirgan.
- Recommended dosage of administration should not be exceeded. Continuous administration of trifluridine for periods exceeding 21 days should be avoided because of potential ocular toxicity.
HSV Prophylaxis

- Acyclovir 400mg bid
- Valacyclovir 500mg qd
- History of severe stromal keratitis
- Those who experience more than one episode epithelial keratitis per year
- Those receiving corneal transplant for vision loss related to herpetic scarring
- 1 week prior to cataract or glaucoma surgery and 1 to 6 months postoperatively

Thank You!
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