Pharmacology Update

Sherrol A. Reynolds O.D., FAAO
sreynold@nova.edu
Associate Professor
Nova Southeastern University
College of Optometry

GOAL:

The goal of this course is to provide the latest information about key systemic and topical medications that are used to treat common eye conditions.

LEARNING OBJECTIVES

After completion of this course, the participant will be able to:

1. Apply the principles of pharmacotherapy of systemic and topical medications required to manage the most common ocular diseases requiring oral therapy.
2. Discuss indications, mechanism of action, contraindications, adverse effects, and dosage of common systemic therapeutic agents used to treat ocular diseases.
3. Properly diagnose and manage common ocular conditions (e.g., infections, glaucoma, inflammation, and retinal disease) treated with drug therapy.

COURSE ABSTRACT

Optometrists on the forefront of treating and managing ocular condition with systemic and/or topical therapeutic agents, enabling our ability to be true primary health care providers. This course includes an overview of common medications used in treating ocular diseases, using clinical cases that illustrate indications, mechanisms of action, contraindications, adverse effects, and dosage of these therapeutic agents.

Pharmacology Update

Sherrol A. Reynolds O.D., FAAO
Associate Professor
Nova Southeastern University
College of Optometry

Course Outline

I. Introduction

- ABCs of Prescribing
  - A= Allergies
  - B = Body weight
  - C = Current Medications
  - D = Diseases Prescribing Considerations
- Case Examples using these essential drugs

II. "Systemic Seven": top systemic Drugs used in Optometry

- Selected oral therapeutic agents that are required to manage the most common ocular diseases requiring oral therapy

  * Anti-Infectives (Cephalosporins- Broad spectrum (gram + and gram -); Augmentin, Doxycycline- "triple duty" drug
    - Anti-seborrheic
      - MGD/ Rosacea
    - Anti-infective
    - Anti-inflammatory/anti-collagenase
      - Severe ocular surface inflammatory disease
    - Antimicrobial resistance is both a global and local problem
      - In the US, about 2.8 million people in the US
      - 33,000 people die as a result
      - The World Health Organization (WHO) has identified AMR as 'one of the biggest threats to global health'.
      - About 700,000 die people each year worldwide

  * Antivirals (Acyclovir, Valacyclovir, Famciclovir)

Antiviral Drug	HSV	HZO
Acyclovir	400 mg 5x/day for 1 week	800 mg 5x/day for 1 week
Valacyclovir	500 mg TID for 1 week	1000 mg TID for 1 week
Famciclovir	250 mg TID for 1 week	500 mg TID for 1 week

    - Herpetic Eye Disease Study I & II

  *Anti-inflammatories (NSAIDS), Corticosteroids, Opioids
    - Tylenol 3 (30 mg codeine with 300 mg acetaminophen)
      - category III scheduled drug
      - 1-2 tabs q4h is usual adult dosage
    - Used for more severe pain management

- Hydrops, post-surgical pain, severe trauma, severe corneal abrasions/erosions

III. Open Angle Glaucoma Treatment Options

- Drop treatment
- Newer OAG treatments
  - 0.024% (Vyzulta, Bausch + Lomb)
    - Nitric oxide (Prostaglandin analogue)
    - Mechanism of action both increases uveoscleral outflow and relaxes the trabecular meshwork to improve conventional outflow.
    - Like other prostaglandins, it is dosed once a day.
- Rho-kinase inhibitor (Netarsudil 0.02%-Rhopressa, Aerie Pharmaceuticals)
  - Lowers IOP by enhancing outflow through the trabecular meshwork and by reducing episcleral venous pressure
  - Dosed once daily in the evening
  - A fixed combination of netarsudil 0.02% and latanoprost 0.005% (Rocklatan, Aerie Pharmaceuticals)

IV. Dry Eyes/ Ocular Surface

- Thyroid Eye Disease
- Tepezza (teprotumumab-trbw)
  - An insulin-like growth Factor-1 receptor inhibitor (IGF-1R)
  - Injection
    - 500mg/single dose
    - 10mg/kg IV/ 20 mg/kg q3 weeks or 7 additional infusions
- Tyrvaya (varenicline)
  - The first and only nasal spray approved by the FDA for the treatment of dry eye disease
  - Nasal spray delivering 0.03mg (0.05ml) of varenicline

V. Dry AMD/ nAMD

- Injections
  - Brolucizumab (Beovu)
  - Vabysmo
    - Bispecific- Angiopoietin 2 & Anti-VEGF
  - Susvimo
    - Port delivery system
      - Ranibizumab I
  - AREDS 2 latest Updates
  - The 10-year Follow-up study replicated the findings of the randomized clinical trial at 5 years.

VI. Q and A

References:

1. The true cost of antimicrobial resistance. BMJ. 2013; 346
2. Latanoprostene bunod 0.024% versus timolol maleate 0.5% in subjects with open-angle glaucoma or ocular hypertension: the APOLLO study. Ophthalmology. 2016;123(5):965-97
3. Comparison of latanoprostene bunod 0.024% and timolol maleate 0.5% in open-angle glaucoma or ocular hypertension: the LUNAR study. Am J Ophthalmol. 2016; 168:250-259.
4. Comparison of latanoprostene bunod 0.024% and timolol maleate 0.5% in open-angle glaucoma or ocular hypertension: the LUNAR study. Am J Ophthalmol. 2016; 168:250-259.