Rapid Fire Cornea
Alison Mercer, OD
Walt Whitley, OD, MBA, FAAO

Course Description
This rapid fire course will present both the common and not-so-common cases that are referred to a cornea practice. Clinical pearls will be discussed for each case presentation as well as the importance of communication among comanaging providers.

Learning Objectives
- Discuss the role that ODs play in the comanagement of corneal conditions which can often overlap between providers
- Discuss pre/post-operative considerations for corneal surgery
- Improve the differential diagnosis skills for anterior segment conditions
- Improve utilization of specialty contact lenses in appropriate candidates

I. Cornea Transplant Surgery
  A. Indications for surgery
  B. Preparing the ocular surface – Aggressive surface disease treatment
  C. ABC's of corneal transplant surgery - Penetrating Keratoplasty (PK), Deep Lamellar Endothelial Keratoplasty (DLEK), Descemet's Stripping Endothelial keratoplasty (DSEK), Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK), Descemet's Membrane Endothelial Keratoplasty (DMEK)
    1. DSAEK vs. DMEK
      a. Indications for the procedure
      b. Inclusion / exclusion
      c. Pre/post-operative considerations
      d. Advantages of DSEK vs. PK – sutures, visual recovery, astigmatism/ametropia, epithelial complications, corneal allograft rejection, wound strength, globe stability, post op clinic time
      e. Review complications - Graft failure vs. graft rejection
  D. Case Example

II. Corneal Ulcers vs. Infiltrates
  A. History
  B. Examination
  C. Medical decision making
  D. Culture considerations
  E. Current treatment options
    1. Antibiotic
    2. Is there a role for BCL?
    3. Is there a role for steroids?
    4. Amniotic membranes
  F. Case Example

III. Limbal Stem cell deficiency
  A. Limbal stem cells helps to regulate the renewal of stratified, non keratinized corneal

Epithelium
1. When limbal stem cells are damaged or destroyed LSCE can occur
2. This leads to conjunctivalization of the cornea

B. Signs and Symptoms
1. Neovascularization
2. Persistent epithelial defects
3. Chronic pain
4. Conjunctivilization of cornea
5. Decreased vision

C. Diagnosis based on examination
1. Conjunctivilization of cornea appears as late fluorescein staining
2. Pill shaped stain, different from SPK
3. Whorl like pattern extending from limbus inward to apex of cornea
4. Areas of negative staining from abnormal epithelial elevation

D. Causes
1. Congenital
   a. Aniridia
   b. Ectodermal dysplasia
2. Acquired - typically inflammatory related
   a. Contact lens wear
   b. Toxic topical medications
   c. Severe dry eye
   d. Chemical / thermal injury
   e. Stevens Johnson syndrome
   f. Mucous membrane pemphigoid

E. Treatment
1. Remove the cause if possible
2. Discontinue CL wear
3. Decrease inflammation
   a. Topical steroids
   b. Oral omega-3 fatty acid supplements
   c. Cyclosporine
   d. Lifitegrast
   e. Amniotic membrane
   f. Grafts or topical drops
   g. Surgical limbal stem cell transplantation

F. Case study

IV. The Neuropathic vs. Neurotrphic Cornea

A. Causes
1. Trauma
2. Chemical exposures
3. Previous infection
4. Eye surgery
5. Systemic disease
6. Autoimmune or inflammatory conditions
7. Diabetes
8. Fibromyalgia

9. Other neurological disease
10. Trigeminal neuralgia
11. Migraine

B. Pathophysiology
C. Diagnosis – Pain without Stain
D. Treatment
    1. Treatment to either:
        i. Regenerate nerves
        ii. Reduce inflammation that makes nerves more sensitive
    2. Treatment Options
        i. Serum tears
        ii. Steroids
        iii. Amniotic membrane
        iv. Neurostimulation
        v. Blue filter glasses
        vi. Systemic neuro-modulatory therapies
        vii. Biologics
E. Case Example

V. Scleral Lenses for OSD
A. Indications
B. Fitting guides
C. Contraindications
D. Utilization of diagnostic technologies
E. Where do topical Rx fit in?
F. Case example