

Twelve New Treatments in Eye Care That You Need to Know About (2 hours)

Mile Brujic, OD, FAAO
mile.brujic75@gmail.com

Summary

With the advancements in eye care, it is critical that the clinician understands these advancements and also how to incorporate them into clinical practice. This course will discuss ten new treatments in eye care that are important to understand and how to incorporate them into clinical practice

Learning Objectives

- 1) Understand advances in contact lenses
- 2) Discuss new glaucoma medications
- 3) Understand new multifocal lens designs and how they are improving outcomes
- 4) Discuss advances in dry eye treatments
- 5) Understand OCT advancements in blood vessel assessments
- 6) Discuss new treatment for thyroid eye disease

Outline

- 1) Tangible HydraPEG
 - a. Understand current contact lens surfaces
 - b. Discuss plasma treatment
 - c. Tangible HydraPEG
 - i. Rigid gas permeable material
 1. Applied at the lab at time of manufacturing
 2. Hydrophilic coating
 3. Increases moisture on surface
 4. Reduces deposits
 5. Approved solutions
 - a. Boston Simplus
 - b. Tangible Clean
 - c. Unique pH
 - d. Clear Care
 - e. Clear Care Plus
 6. Cannot use:
 - a. Abrasive cleaners
 - b. Water to rinse the lenses
 7. Tangible boost – will be new conditioning solution that rebuilds the Tangible HydraPEG coating
 - ii. Soft lenses
 1. Available on hybrid lenses

- a. Duette
 - 2. Available on single vision soft lens
 - a. Simplifeye
 - b. Unity Biosync
- 2) New glaucoma medications
 - a. Latanoprost 0.005%
 - i. Xelpros
 - 1. BAK free preservative
 - b. Nitric oxide donating agents
 - i. Vyzulta
 - 1. Latanoprostene bunod 0.024%
 - 2. Adds to the effects of latanoprost
 - c. Netarsudil 0.02%
 - i. Rhopressa
 - 1. Rho-kinase inhibitor
 - d. Netarsudil 0.02%/latanoprost 0.005%
 - i. Rocklatan
 - 1. Rho-kinase inhibitor
- 3) Multifocal Toric Contact Lenses
 - a. Soft multifocal toric contact lenses available
 - i. Near center designs
 - ii. Distance center designs
 - b. New to our armamentarium
 - i. Near center-distance periphery design
 - ii. Samfilcon A
 - iii. Silicone Hydrogel
 - iv. 46% water
 - v. Available as a fit set in office for immediate fitting
 - vi. Available in -0.75, -1.25 and -1.75D of astigmatism
- 4) Offset Multifocal Optics
 - a. Angle Kappa
 - i. Patients do not typically look through center of pupil
 - ii. Usually through a portion of the pupil that is nasal to geometric center of pupil
 - iii. Can be measured at the plane of the cornea with a topographer
 - iv. Pupils in patients with larger angle lambda is also more nasally offset
 - b. Challenge for multifocals with some patients because optics are located in the center of the lens
 - c. Designs are now being developed to address these issues
 - i. SpecialEyes
 - 1. Soft multifocal contact lens
 - 2. Can be either distance or near center design
 - ii. Zenlens
 - 1. Scleral lens

- 5) Other important contact lens advancements
 - a. Transitions in contact lenses
 - i. Created in the senofilcon A material
 - ii. Two week disposable modality
 - b. New contact lens delivery mechanisms
 - i. myeyeris.com
 - ii. advanced doctor locator
 - iii. Hioxifilcon A daily disposable lenses
 - c. New technology to maintain homeostasis
 - i. Infuse lens – silicone hydrogel daily disposable lens
 - ii. Erythritol and glycerine added to lens for tear homeostasis purposes
 - d. Myopia management
 - i. Misight – daily disposable
 - ii. First FDA approved lens for myopia management
 - e. Balanced electrolyte scleral filling solution
 - i. Nutrifil
 - ii. Contains: Na, P, Mg, Ca, K
 - f. New gas permeable materials
 - i. Optimum infinite (Tisifilcon A)
 - ii. 180 Dk
- 6) Meibomian Gland Heating and Evacuation
 - a. Lipiflow
 - i. Treatment is 12 minute in office procedure
 - ii. Heats the glands from the posterior surface of the lid while simultaneously applying pressure on the anterior surface of the lid
 - b. iLux
 - i. Hand held device
 - ii. Heats the glands from the posterior surface of the lid while applying pressure to the anterior surface of the lid
 - iii. Visualization of the meibum is noted during the procedure
 - c. TearCare
 - i. Smart lids are placed on outside of lids for 15 minutes
 - ii. Applies heat to the glands from the front surface of the lids
 - iii. Glands are then expressed from lid margin utilizing clearance assistant (specialized forceps)
- 7) Controlling ocular surface inflammation
 - a. Lifitegrast 5%
 - i. Commercially available as xiidra
 - ii. Lymphocyte function associated antigen-1 antagonist
 - b. Reactive Aldehyde species
 - i. Future of controlling inflammation
 - ii. Modulates levels of aldehyde which are a byproduct of inflammation and also amplifies inflammation
 - iii. Modulating the levels of aldehyde reduces inflammation

- c. Cyclosporine
 - i. Immunomodulatory
 - ii. Clinically available as two concentrations
 - 1. 0.05% Restasis
 - 2. 0.09% Cequa
 - a. Delivered in a new intelligent drug delivery mechanism
 - b. Increases penetration into tissues
- 8) (63-70 min) Hypochlorous acid for eye care
- a. Strong anti-microbial activity
 - b. Kills most microbes within 15 seconds of contact
 - c. Several formulations available
 - i. Avenova (0.01%)
 - ii. Hyclear (0.01%)
 - iii. HypoChlor (0.02%)
 - iv. Theratears Sterilid Antimicrobial Eyelid Cleanser (0.01%)
 - v. Bruder Hygienic Eyelid Solution (0.02%)
 - vi. Heyedrate Lid and Lash Cleanser (0.015%)
- 9) Optical Coherence Tomography (OCT) Angiography
- a. What is angiography with OCT
 - b. How does it work
 - i. Multiple images of same tissue
 - ii. Images are compared by software
 - iii. Any part of image that is different is moving blood
 - iv. Allows visualization of the blood vessels
 - c. Glaucoma care
 - i. Allows vessel density measurements
 - ii. Allows comparison over time as an additional measurement
 - d. Retinal care
 - i. Macular degeneration
 - 1. Allows visualization of neovascularization within the retinal
 - ii. Diabetic care
 - 1. Vessel density
 - 2. Foveal avascular zone (increases in diabetic patients)
- 10) Pharmaceuticals for Presbyopia
- a. Miotics
 - i. Pilocarpine, aceclidine, CSF-1, carbachol
 - b. Lens softening
 - i. Lipoic acid choline ester
- 11) New Thyroid Eye Disease Treatment
- a. Normal thyroid function
 - i. Thyroid stimulating hormone (TSH) is produced by the pituitary gland
 - ii. TSH triggers thyroid to produce T3 and T4
 - iii. Iodine is utilized to create T3 and T4

- iv. Normally, T4 acts on the pituitary gland in a negative feedback loop to control the level of TSH secreted from the gland
 - b. Abnormal thyroid function
 - i. Hyperthyroidism
 - 1. Excessive T3/T4 being produced
 - 2. Can be the result of autoimmune condition
 - 3. Grave's disease
 - ii. Hypothyroidism
 - 1. Reduced levels of T3/T4 being produced
 - c. Characteristics of thyroid eye disease (TED)
 - i. Immune cells attack orbital tissue
 - ii. Most of the time associated with hyperthyroid, but can be seen with hypothyroid and euthyroid
 - iii. Two phases
 - 1. Active
 - a. Inflammatory phase
 - b. Can last about three years
 - 2. Inactive
 - a. Characterized by fibrosis and lasting sequelae of condition
 - iv. Orbital fibroblasts – specialized cells in the orbit
 - 1. Receptors on cell when activated cause downstream ramifications of TED
 - a. IGF-1R
 - b. TSHR
 - v. Clinical manifestations of TED
 - 1. Eyelid retraction
 - 2. Eye protrusion / exophthalmos
 - 3. Eyelid and conjunctival hyperemia
 - 4. Inflamed extraocular muscles
 - 5. Compression of optic nerve at orbital apex
 - 6. Increase in orbital tissue and fat
 - 7. Gaze evoked orbital pain and diplopia
 - d. Treatment options for thyroid eye disease
 - i. Traditional
 - 1. Corticosteroids
 - 2. Orbital decompression
 - ii. New treatment
 - 1. Teprotumumab (Tepezza)
 - a. 8 infusions every 3 weeks
 - b. Improved proptosis, diplopia
 - c. Improved orbital swelling
- 12) Non-surgical lid lifting
- a. Oxymetazoline hydrochloride ophthalmic solution 0.1%
 - b. Commercially available as Upneeq

c. FDA approved as qd dosing regimen for acquired blepharoptosis