Title: A Review of Common Ocular Diseases Affecting Children

Description: This course reviews the diagnosis and management of common eye diseases in pediatric patients presenting with white, quiet eyes. The following conditions will be reviewed: deprivation amblyopia, strabismus, retinopathy of prematurity, optic nerve hypoplasia, cortical visual impairment, cataracts, nystagmus, glaucoma, and retinoblastoma.

Course objectives:

1. The clinician will know how to diagnose common pediatric ocular diseases
2. The clinician will know how to manage common pediatric ocular diseases
3. The clinician will know the indications for, and optimal timing of, surgical co-management of common pediatric ocular diseases

Outline:

I. Leading causes of blindness in children
   a. Retinopathy of prematurity
   b. Optic nerve hypoplasia
   c. Cortical visual impairment

II. Amblyopia
   a. Diagnosis
      i. Severity: moderate 20/40-20/100, severe 20/125-20/400
      ii. Eye screening versus Eye exam
         i. US Preventive Services Task Force
            a. Recommends screening for amblyopia or its risk factors between the ages of 3 to 5 years
               i. VA, strabismus, stereoacuity
            ii. Pediatrician
               i. Red reflex, corneal light reflex, hx?
               ii. No F&F, No CT, VA age 3yr+
   b. Stimulus deprivation
i. Albinism
   i. Predominantly WTR, increasing from infancy to preschool
   ii. Recommend repeat cycloplegic refractions

ii. Ptosis
   i. Congenital
      a. Amblyopia from obstruction of visual axis and anisometropic astigmatism
      b. FAT (family album tomography) scan for onset
   ii. Third nerve palsy (pupil involvement, EOM restrictions)

iii. Cataracts
   i. Congenital
      a. Bilateral often inherited (autosomal dominant) and may be associated with a systemic disease
         i. Referral for genetic, infectious, metabolic testing
      b. Unilateral caused by local dysgenesis (not inherited or associated with systemic diseases)
   ii. Non-surgical management
      a. Unilateral vs. bilateral
      b. Amblyopia
      c. Pupillary dilation
   iii. Surgical management
      a. More than 3mm central
      b. Unilateral cataracts surgical extraction by 2 months of age for best results
      c. Most common complication is secondary glaucoma
         i. Prior to 2 months of age or small eyes
      d. Intraocular lenses
         i. Preferred for children more than 1-2 years of age
   iv. Post-surgical management
      a. Contact lenses
      b. Spectacles
      c. Deprivational amblyopia
      d. Secondary glaucoma

III. Strabismus
   a. Esotropia
      i. Congenital
         i. May result from muscle abnormalities, birth trauma, congenital infections, or developmental disorders such as Down syndrome or cerebral palsy
      ii. CEOS (Congenital Esotropia Observational Study)
         a. 43% at birth have large angle, constant ET
         b. 23% noted ET after the first month of life
iii. Associated motor abnormalities: IOOA, DVD, latent nystagmus

ii. Pseudo-esotropia
   i. Large epicanthal folds usually diminish by 3 years of age as the bridge of the nose enlarges

iii. Partially Accommodative
   i. Prescribe full hyperopic correction, reevaluate after 4-6 weeks of Rx wear. If >10^ residual angle, surgery is recommended
   ii. Find there is 26% undercorrection rate for standard surgery

iv. Acquired
   i. Usually develops due to a serious underlying condition such as tumor, orbital trauma, demyelinating disease, or CNS infection

v. Management
   i. Spectacles
      a. Hyperopia correction, bifocals
      b. Children who are strabismic fail to show normal emmetropization
   ii. Patching
      a. Of preferred eye before surgery for amblyopia
      b. Incidence of amblyopia is proportional to the duration of ET
   iii. Surgical
      a. Early surgery if angle >40^, constant ET on two exams, <+3.00D, around age 6 months
      b. Before 2 years for best stereopsis outcome
      c. Prognosis: outcome at best is peripheral fusion and
   iv. Office-based therapy
      a. Improve motor and sensory fusion

b. Exotropia
   i. Classification
      i. Congenital vs. acquired
      ii. Constant vs. intermittent
      iii. DE/ CI / Basic
   ii. Management: Intermittent
      i. Part-time patching not recommended for 1-3 yo
      ii. Observation or patching for 3-10 yo
      iii. Health-related quality of life questionnaire
      a. Surgical correction
         i. Poor outcomes and overcorrection
b. Nonsurgical correction
   i. Lenses, prisms, therapy

IV. Nystagmus
   a. Infantile types
      i. Congenital nystagmus
         a. Sensory nystagmus associated with anomalies of afferent visual pathways
         b. Motor nystagmus without abnormalities of afferent visual pathways
         c. Absence of oscillopsia
         d. FUNBLOCS
      ii. Latent nystagmus
         a. Benign jerk nystagmus under monocular conditions
      iii. Spasmus nutans
         a. Triad of high frequency small amplitude oscillations, head nodding, and head tilt
         b. Onset infancy (4-18 months) resolve by 3 years of age
   b. Management
      i. Correct refractive error
      ii. Prism to minimize head turn (null point)-apex towards direction of preferred gaze
      iii. Strabismus surgery results variable

V. Pediatric Glaucoma
   a. Types
      i. Congenital
      ii. Infantile
      iii. Developmental
   b. Symptoms and signs
   c. Management
      i. Surgery
      ii. Medications Control
      iii. Visual function (RE, amblyopia)

VI. Retinoblastoma
   a. Most common intraocular tumor of childhood
   b. Genetics
      i. <10% family history
      ii. 90% sporadic
   c. Age diagnosed
      i. InfantSEE® program
      ii. Leukocoria (60%), strabismus (20%)
d. Confirmatory testing
   i. Tumor is confirmed on ultrasonography showing a calcified dome-shaped mass
   ii. MRI images orbit and brain evaluating for invasion of optic nerve and pinealoblastoma
      a. Fluorescein angiography shows vascularity
      b. OCT shows subretinal fluid

e. Management
   i. Laser photocoagulation, cryotherapy, thermotherapy, plaque radiotherapy; enucleation; chemo
   ii. Increased risk of death from one or more non-retinoblastoma malignancies