

It's Not Rare When It's in Your Chair

2 hours

Julie A. Tyler, OD, FAAO, FNAP

Description:

When rare conditions present, optometrists may be uncomfortable with management of individuals "in the chair". The course discusses clinical case presentations that are not typically encountered in most practices, including central areolar choroidal dystrophy, iridocorneal endothelial syndromes, congenital aphakia, and differentials with central serous chorioretinopathy.

Learning Objectives:

- Identify clinical findings of Central Areolar Choroidal Dystrophy (CACD) and discuss the anticipated course and management options for patients with this condition.
- Recognize findings associated with central serous chorioretinopathy and differential diagnosis.
- Understand risk factors and clinical characteristics of metastatic tumors to the eye, especially choroidal presentations.
- Discuss various clinical qualities and descriptive identifiers for the iridocorneal endothelial (ICE) syndromes.
- Recognize complications of ICE syndromes and recommended follow-up considerations for individuals with ICE syndromes.
- Discuss complications associated with congenital aphakia and potential secondary associations including glaucoma.

Outline:

- I. INTRODUCTION: A series of rare cases are presented as well as various differentials and considerations for management and referral. Greater details of cases included in presentation, topics noted within outline
- II. Case 1:
 - a. A. 60 YO Caucasian female referred to the Eye Care Institute for a second opinion and iris imaging
 - i. Change in iris six (6) months prior
 - ii. Previous OD noted "pupillary anomaly" and referred to neuro ophth
 - b. HISTORY:

- i. Past ocular history: Hx of HSV-related "red eye"
 - ii. Medical history: Hypertension and Thyroid disease
 - c. Exam findings
 - i. Pupils: unequal
 - 1. OD: distorted (dragged nasal), reactive
 - 2. OS: round, reactive
 - ii. Pertinent Slit Lamp Notes:
 - 1. Cornea: OD: (+) nasal "oil droplet" appearance with endothelial touch over area of elevation of iris with (+) peripheral crocodile shagreen
 - 2. Anterior Chamber: OD: unequal – deeper temporal
 - iii. IMAGES
 - d. Diagnosis and Plan
- III. ICE syndromes – Discussion
 - a. Iridocorneal endothelial (ICE) syndromes: Rare group of ocular conditions:
 - i. Generally unilateral
 - ii. Characterized by proliferation of corneal endothelial cells
 - iii. *Endothelial cells* □ migrate □ variety of ocular complications
 - b. Historically classified □
 - i. Chandler syndrome (CS)
 - ii. Progressive Iris Atrophy(PIA)
 - iii. Cogan-Reese syndrome ("iris nevus")
 - c. Chandlers Syndrome:
 - i. Unilateral blurred vision with corneal edema
 - ii. Associated with "hammered silver" appearance of endothelium
 - iii. Potential for epithelial bullae
 - iv. Intraocular pressure is often normal
 - d. Progressive Iris Atrophy (PIA)
 - i. Typically presents with more significant corectopia and stromal thinning
 - ii. Peripheral anterior synechia (PAS) with "pupil drag"
 - iii. As iris stretches, full thickness iris holes may develop
 - e. Cogan-Reese Syndrome
 - i. Characterized by *pigmented iris nodules*
 - ii. Cornea may be clear initially □ mild corneal edema may develop
 - iii. Secondary glaucoma is more common with CRS than with CS or PIA
 - f. ICE syndromes typically diagnosed in adult women
 - g. ICE syndrome and HSV
 - h. Monitoring:
 - i. CEE including careful biomicroscopy, intraocular pressure and gonioscopy
 - ii. Follow closely:
 - 1. Dx with ICE "only": every 3-12 months

2. Dx with conversion to glaucoma: every 1-3 mos
- i. ICE Complications and Management
 - i. Primary complaints: Photophobia, decreased VA and monocular diplopia
 - ii. Secondary *complications*:
 1. Potential for significant corneal edema due to endothelial changes
 2. Secondary glaucoma associated with angle anomalies and IOP
 - iii. Management of ICE syndrome may be difficult
 1. Topical IOP lowering meds combined with surgical intervention may be required, but less effective
 2. Glaucoma drainage implant surgery/ filtering shunt consideration
- IV. ATYPICAL ANTERIOR SEGMENT images
- V. Case 2: 48 year old White Male: PART ONE
 - a. BACKGROUND: Seen previous year for corneal abrasion and normal CEE
 - i. Corneal abrasion healed without complication
 - ii. Normal CEE results despite complaint of visual aura □ “Kaleidoscope” vision
 - b. RTC in ~10 months with significant systemic changes □ Emergency End of Day MONDAY consultation (after 4:30)
 - i. CC: Blurred and distorted vision in past week after hospitalization & treatment with steroids for significant lung infection/inflammation
 - ii. HISTORIES - MEDICAL
 1. Negative for COVID
 2. Dx of Renal Cell Carcinoma with metastasis
 3. Wheelchair bound following multiple neck surgeries due to metastatic invasion of bone near spine and neck
 4. Significant weight loss
 5. Undergoing cancer treatment at university center
 - iii. INITIAL EXAM RESULTS
 - c. DIFFERENTIAL AND DISCUSSION: Central Serous Chorioretinopathy versus others
- VI. Central Serous Retinopathy (CSR)
 - a. Identified as a PACHYChoroid Condition
 - b. Signs and Symptoms: Nearly always report a “spot in their vision” but depending on location of the scotoma may or may not have decreased BCVA
 - c. Historically associated with :
 - i. Type-A personalities (Stress = Cortisol)
 - ii. Exogenous Corticosteroid use
 - iii. Pregnancy
 - d. Central Serous Chorioretinopathy – Types:
 - i. Acute Idiopathic CSCR
 - ii. Steroid associated CSCR
 - iii. “Variation” noted associated with optic nerve pits

- e. When corticosteroids are associated with CSCR
 - i. Both the choroid and retinal pigment epithelium (RPE) appear involved
 - ii. Hypothesis: For pt that is prone to CSCR, they may have a “susceptibility and/or modification” of the mineralocorticoid pathway
 - iii. THINNER choroidal thickness relative to pts with Acute Idiopathic CSCR
 - f. Central Serous Retinopathy – *Management and Corticosteroid considerations*
 - i. Detailed review of meds and “mood/affect” history
 - ii. Types of steroids associated may vary widely
 - iii. OCT of area of elevation and associated tissues (Choroid) □
 - 1. Confirm diagnosis of CSCR
 - 2. Rule-out other high-risk differentials and/or co-morbidities□
 - a. Most common concern = choroidal neovascular membrane
 - b. OTHERS
 - g. Additional information on OCT and CSCR
 - i. Study assessing differences in OCT measurements of choroid between eyes with CSCR associated with steroids versus acute idiopathic CSCR
 - 1. OCT CHOROIDAL measurements during acute phase with CSCR comparing □ Associated with steroids vs. Acute idiopathic CSCR
 - 2. Measurements made between the outer border of the RPE and the choriocleral border using SD-OCT
 - h. Central Serous Chorioretinopathy: *Management Continued*
 - i. Initial management of pts with CSCR may include:
 - 1. Reassurance and observation
 - 2. Stress relief management
 - 3. Regular dilated examinations (three to six weeks) until resolution
 - 4. Modifications of meds (steroids) for pts with associated use.
 - ii. If chronic (persistent subretinal fluid for 3-6 months) OR recurrent CSCR □

Various therapeutic options:

 - 1. Yellow laser: Short-duration, multi-session subthreshold micropulse
 - 2. Photodynamic therapy (PDT) with vertoporphin
 - 3. Oral aldosterone antagonists and options in development
- VII. Case 2: 48 year old White Male: PART TWO
- a. Fully dilated presentation
 - b. Additional Info and Medical Hx Context □ Referral ASAP for ocular evaluation
 - i. What happened INSTEAD □ Admitted to hospital for systemic symptoms
 - ii. Concurrent heart issues, in ICU for 1 week
 - iii. Referred while in hospital (based on notes/exam) to ocular oncologist
 - c. Metastatic Renal Cell Carcinoma
 - d. Metastatic Tumors to Eye

- i. Most common malignant tumors in adults overall are ocular metastases (*Shields & Shields*):
 - 1. Breast cancer (47%) □ *females, late metastasis*
 - 2. Lung cancer (21%) □ *males, early*
 - 3. Others: prostate, renal cell, cutaneous melanoma
- ii. Most common LOCATION for metastasis:
 - 1. CHOROID
 - 2. Less common: Ciliary body and Iris
- iii. Posterior segment appearance: Characteristics
 - 1. Creamy yellow-white
 - 2. May have mottled pigment clumping = "Leopard spots"
 - 3. Generally low to medium elevation
 - 4. Often overlying SEROUS detachment
 - 5. Predilection = P. Pole, Multifocal and Bilateral (20%)
- iv. Metastatic Tumors Prognosis: Poor
 - 1. Median survival ~ 8.5 mo from diagnosis
 - 2. Patient presented = 6 weeks
- v. Testing recommendations: B-scan, OCT, FA
- vi. Treatment considerations:
 - 1. Possible removal of tumor
 - 2. Radiotherapy - External Beam Radiation Therapy (EBRT)
 - 3. Brachytherapy
 - 4. Chemotherapy
 - 5. Enucleation
- vii. Metastatic Tumors Images before and after EBRT
- e. Renal Cell Carcinoma (RCC) and the eye
 - i. Most common sites of metastasis from RCC:
 - 1. Lung (50%)
 - 2. Bone (33%)
 - 3. Ocular metastasis of RCC is rare
 - 4. IF RCC does involve the eye:
 - a. Most likely to involve choroid in 88%
 - b. Iris in 9% and Ciliary body in 2%
 - ii. Timing:
 - 1. Can occur at beginning of Dx of RCC
 - 2. Also reported a few yrs to 20 yrs after nephrectomy
 - iii. Symptoms:
 - 1. When tumor occupation small □ may be asymptomatic
 - 2. When mass grows □ most common symptoms are vision loss, blur and occlusion of visual field

- VIII. ATYPICAL POSTERIOR SEGMENT IMAGES: COATS & CONE Dystrophy and Concussive Lightning strike
- IX. Case 3: Congenital Aphakia: 26 year old Hispanic male
- a. CONCURRENT Deaf and secondary glaucoma
 - b. Patient presents with Sign-Language translator
 - i. CC: "My glasses are scratched & need to be evaluated for DMV requests"
 - ii. HPI: Blurry vision OD>OS, more than two years, symptoms are constant, patient wearing old Rx
 - iii. "No complaints" of physical ocular symptoms, HA or double vision
 - c. EXAM RESULTS
 - i. Entering VA with current (scratched) correction
 1. OD: 20/600 PH: NI
 2. OS: 20/60 (-1.00-0.50x017)
 3. Near- OU: 20/20
 - ii. Final VA with correction
 1. OD: 20/600 Balance Rx
 2. OS: 20/20 (-1.75-1.25x010) - POLYCARB
 - iii. CF:
 1. OD -Diffuse depression in all areas
 2. OS - FTFC
 - iv. IOP: iCare (due to COVID restrictions/ confirmed OD with Goldmann)
 1. Initial: OD - 40mmHg OS - 14mmHg iCare 4:08pm
 2. After COMBIGAN OD ~ 17 minutes: OD - 38mmHg @ 4:25pm
 3. After approximately one hour: OD -29mmHg @ 5:08pm
 - v. Slit Lamp specific findings:
 1. Cornea:
 - a. OD: (+) Band keratopathy nasal, MICROCORNEA, (+)pigment on endothelium
 - b. OS: (+)peripheral crocodile shagreen, clear central
 2. Iris: OD: Iridodonesis
 3. Anterior Chamber: VH open- deep, 360 degrees; (-) cell, flare
 4. Lens: APHAKIA OD, Normal OS
 - vi. Dilated Fundus Examination:
 1. Optic nerve: OD & OS: Distinct with good color 360
 2. C/D: OD & OS: .4 round / .45 round
 3. Macula: Flat & intact w/o pigmentation changes OU
 4. Vessels & Periphery: normal OD, OS
 - vii. Diagnosis: Congenital aphakia with concurrent eye deviation (Right hypo)
 1. Related anterior segment findings (band keratopathy microcornea & iridodonesis)

2. Ocular Hypertension vs. glaucoma OD>>OS
3. Elevated BP in office w/o dx of Hypertension without retinopathy

viii. Plan:

1. Discussed findings with patient through translator
 - a. Advised HIGH risk for glaucoma development/ vision loss potentially due to young age
 - b. Initiated Combigan BID OD until evaluation with OMD.
 - c. Recommend appt 2-3 weeks FU. RTC if issues with drops.
 - d. REFER for consultation with OMD/glaucoma specialist due to complicated/ atypical nature of disease.
 - e. Consider evaluation for rubella (congenital)
 - f. Dispensed new Rx - recommended polycarb/safety lenses

ix. APHAKIA: Absence of Crystalline lens

1. Usually secondary to surgery, rarely trauma (total dislocation)
2. Very rarely, CONGENITAL
3. Signs/Symptoms:
 - a. Poor accommodation and decreased visual acuity
 - b. High Hyperopia
 - c. Iridodonesis

d. Developmental anterior segment and lens anomalies /Dysgenesis □
Unilateral or Bilateral

e. PRIMARY APHAKIA = Failure of lens development

1. Associated w/ microphthalmia and severe intraocular dysgenesis
2. Generally expect retinal dysplasia and corneal opacity
3. HIGH RISK OF GLAUCOMA

f. Aphakia influence on Ocular Development:

4. Normal lens development associated with proper corneal development.

x. LESS COMMON:

1. Aphakia Glaucoma:

- a. Most common form of pediatric glaucoma
- b. Typically in “older children”
- c. **All children undergoing cataract surgery risk glaucoma □
BUT no surgery here....

2. RARE: Congenital rubella:

- a. Glaucoma
- b. CATARACT
- c. “Salt-and-pepper” retinopathy
- d. HEARING deficit
- e. Cardiac defects □ *But no cataract or retinopathy here....*

X. ATYPICAL LENS findings:

- a. Leukocoria “plus
 - b. Penetrating injury to Lens - Posterior Cortex, Posterior Capsule
 - 1. Lens Retroillumination
 - 2. Vitreous Evaluation – 90D
- XI. Case 4 : What’s in the center of it all?
- a. 54 yo Female
 - b. CC: Decreased BCVA OU x 16 years
 - c. History:
 - 1. POH: unremarkable
 - 2. Histories: PMH: (+)DM Type 2, Hypertension
 - 3. Medication and allergy
 - 4. FOH: unremarkable, (-)blindness
 - d. Vision and Prelims
 - 1. BCVA: OD 20/200 & OS 20/40
 - 2. Pupils: ERRL (-)APD
 - 3. CF: FTFC OD, OS
 - e. Slit Lamp and Goldmann
 - f. Posterior Segment – images and examples
 - 1. A different patient -- Dominant Drusen AND
 - g. Central Areolar Choroidal Dystrophy (CACD): Hereditary retinal disorder (autosomal dominant)
 - 1. Progressive macular atrophy leading to dramatic decline in VA
 - 2. Symptomatic in 3rd to 4th decade of life
 - 3. Involves RPE and choriocapillaris □ Primarily affects macula
 - 4. Results in regional, geographic areas of atrophy
 - 5. May result in absolute central scotomas
 - a. Early: Subtle, mottled depigmentation in the post. Pole
 - b. Later: Depigmentation enlarges into well-circumscribed round area of atrophy
 - c. Stages
 - i. Subtle focal parafoveal pigmentary RPE changes
 - ii. Oval-to-round, mildly atrophic, hypo-pigmented
 - iii. Well-demarcated RPE atrophy outside the fovea
 - iv. The RPE atrophy involves the foveal region
 - h. Gene mutations associated with CACD - various
 - 1. The Arg 195Leu mutation in the peripherin/RDS (retinal degeneration slow) gene has been cited as a possible cause of the autosomal dominant CACD
 - 2. Chromosome 17p13 has been linked to a variant of autosomal dominant CACD
 - 3. ALSO, P.Arg142Trp mutation implicated in both autosomal dominant CACD and dominant drusen

4. Typically, no flecks or drusen seen in isolated CACD
5. Idiopathic cases occur as well
6. IN GENERAL – Mutations in Peripherin/RDS gene have been associated with various hereditary ocular disorders
 - a. Dominant and Di-genic Retinitis Pigmentosa
 - b. Progressive macular degeneration
 - c. Cone-rod dystrophy
 - d. Pattern Dystrophy
- i. DIFFERENTIALS for CACD:
 1. Age Related Macular degeneration - most likely confusion
 2. Cone Dystrophy- bulls eye appearance: 1st to 2nd decade w/ moderate to severe vision loss
 3. Stargardts Disease
 4. Other macular dystrophies/conditions
- j. MANAGEMENT:
 1. Nutritional Supplementation
 2. Genetic counseling
 3. Low vision referral
- k. What's on the Horizon? *Genetic Therapies and "ORPHAN" drugs*
 1. GENE THERAPY: VIRAL vectors used to deliver a FUNCTIONAL COPY of a gene
 2. ADENOVIRUS carrier □ Small □ Take out viral genes, insert normal genes and "infect"
 3. CRISPR (CLUSTERED REGULARLY INTERSPACED SHORT PALINDROMIC REPEATS)
 - a. Entering the Discussions: March 5, 2020 Report in NATURE □
Title: CRISPR treatment inserted directly into the body for first time
 - b. Study of CRISPR (gene-editing therapy) for a hereditary blindness disorder (Lebers)
 - a. BRILLIANCE trial is first to deploy the CRISPR–Cas9 technique
 - b. Viral Vector (Conventional gene therapy) = TOO small use to insert a healthy copy of the mutated gene into affected cells
 - c. <https://www.nature.com/articles/d41586-020-00655-8>
 4. More TREATMENT options– Stem Cells [Retinitis Pigmentosa (RP)]
 5. TREATMENT– Optogenetics [RETINITIS PIGMENTOSA (RP)] MAY 2021
 - a. Sahel, JA., Boulanger-Scemama, E., Pagot, C. *et al.* Partial recovery of visual function in a blind patient after optogenetic therapy. *Nat Med* (2021). <https://doi.org/10.1038/s41591-021-01351-4>