Veterans Affairs Long Beach Healthcare System

Chorioretinal Folds: Wrinkles that Warrant Investigation

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ABSTRACT

Chorioretinal folds found during examination warrant further investigation to rule out ocular pathology or systemic conditions. Thorough case history and possible imaging need to be taken and ordered before they can be deemed idiopathic.

I. CASE HISTORY

- Patient demographics: 46-year-old white male
• **Chief complaint:** Sees well at distance and near with current separate distance and near glasses, expressed interest in Progressive lenses
  o No other visual concerns or complaints
  o No distortions or reduction in vision

• **Ocular, medical history:**
  o Personal ocular history:
    ▪ Last eye exam on 09/27/13
    ▪ No history of trauma, surgery, or ocular infection/inflammation
  o Personal medical history:
    ▪ (+) Type-II diabetes mellitus, diagnosed August 2013; does not regularly check blood glucose; hemoglobin A1c was 6.9% on 01/06/14
    ▪ (+) Hypertension
    ▪ (-) History of Graves’ disease
  o Family ocular and medical histories: Unremarkable

• **Medications:** Carvedilol 12.5 mg (Coreg), hydrochlorothiazide 12.5 mg/lisinopril 20 mg (Prinzide), and metformin hydrochloride 1000 mg (Glucophage XR)

• **Other salient info:** (-) Headaches, nausea, or vomiting

II. PERTINENT FINDINGS

• **Clinical:**
  o Entering unaided distance visual acuities: 20/30 OD, 20/50+1 PH 20/30-2 OS, 20/30-1 OU
o Previous manifest refraction: +1.50 -0.50 x 167 OD, +1.75 DS OS, Add +1.00

o Lensometry for single vision near glasses: +2.25 DS OD, +2.75 DS OD

o Entrance testing (confrontation visual fields, extraocular motilities, pupils):
  Normal

o Subjective refraction: +1.75 -0.75 x 175 OD, +2.00 DS OS, Add +1.75.

o Best-corrected visual acuity:
  ▪  Distance: 20/20 OD, 20/20 OS, 20/20 OU
  ▪  Near: 20/20 OU

o Anterior segment examination (OU):
  ▪  Lids, lashes, conjunctiva, cornea, angles, iris, and lens: Normal
  ▪  Anterior chamber: (-) cells/flare
  ▪  Intraocular pressures (Tono-Pen): 14 OD, 14 OS

o Posterior segment (OU):
  ▪  Vitreous, posterior pole, vessels, and periphery: Normal
  ▪  C/D ratio: 0.2V/0.2H
  ▪  Optic nerve head: Pink and healthy rim tissue with distinct margins,
    (-) edema, (-) pallor
  ▪  Macular findings: Deep parallel horizontal streaks

o Fundus photos with autofluorescence (OU):
  ▪  Pattern of alternating light and dark bands on macula

o Ocular Coherence Tomography (OCT) Macula Cube:
• OD: Central thickness 279 microns, chorioretinal folds with retina following undulations of choroid, (-) subretinal fluid or edema, normal foveal contour

• OD: Central thickness 287 microns, chorioretinal folds with retina following undulations of choroid, (-) subretinal fluid or edema, normal foveal contour

• **Physical:** Normal

• **Laboratory/Radiology studies:** B scan unavailable, CT scan of orbits ordered, appointment to be determined

### III. DIFFERENTIAL DIAGNOSIS

• **Primary/Leading:** Chorioretinal folds with etiology likely related to hyperopia

• **Others:** Chorioretinal folds with etiology related to:
  
  o Hypotony
  
  o Uveitis
  
  o Choroidal detachment
  
  o Choroidal Tumor
  
  o Orbital tumor
  
  o Scleral buckling procedure
  
  o Chorioretinal scar
  
  o Choroidal neovascularization
  
  o Thyroid ophthalmopathy
  
  o Papilledema
IV. DIAGNOSIS AND DISCUSSION

- **Condition:**
  - Chorioretinal folds are parallel grooves or striae that involve the inner choroid, Bruch’s membrane, retinal pigment epithelium (RPE), and retina, and develop due to any process that causes compressive stress within these layers.
  - Chorioretinal folds can be caused from choroidal thickening from hypotony or uveitis; compression of the choroid from choroidal detachments, choroidal tumors, orbital tumors, scleral buckling procedures, chorioretinal scars, or choroidal neovascularization; local flattening of the globe by edema and congestion within the orbit from thyroid ophthalmology; or compression of peripapillary tissues from papilledema.
  - Signs: Parallel lines, grooves, or striae, typically horizontal and located at the posterior pole.
  - Symptoms: Determined by cause, range from no effect on vision or impaired vision to permanently reduced vision.

- **Unique features:**
  - Chorioretinal folds have the characteristic appearance of a pattern of alternating light and dark bands that can be seen with autofluorescence imaging or fluorescein angiography. With autofluorescence imaging, light bands represent troughs, resulting from RPE compression, and dark
bands represent crests, resulting from RPE stretching and thinning. With fluorescein angiography, the bands are inverted so that light bands represent crests and dark bands represent troughs.

- An OCT scan of chorioretinal folds typically shows undulations of the retina, RPE, and choroid, while an OCT scan of choroidal folds shows undulations of the RPE and underlying choroid but a flat retinal surface.

V. TREATMENT, MANAGEMENT

- **Treatment:** Treatment will depend on the results of the CT scan, results pending.
  - No space-occupying mass on CT scan:
    - Chorioretinal folds are idiopathic, observe.
    - No symptoms or signs of papilledema (i.e., no headaches) were reported by patient, consider MRI if increased intracranial pressure is suspected or reported.
  - Space-occupying mass on CT scan: Refer to appropriate specialty to see if removal of mass is indicated.

- **Research:**
  - An observational, retrospective case series study found nearly half of patients with chorioretinal folds that were reviewed had some form of autoimmune disorder.
  - A prospective study found that increased intracranial pressure might be a more common cause of choroidal folds than previously thought.
A study found that OCT scans could be used to differentiate chorioretinal folds from choroidal folds.

**Bibliography:**


VI. CONCLUSION

- **Clinical pearls:** This case shows the importance of ruling out any ocular or orbital pathology or systemic conditions before idiopathic chorioretinal folds is considered as a diagnosis of exclusion.