ABSTRACT: 23 year old Latino male presents for comprehensive eye exam with reduced vision in the left eye. Examination revealed morning glory disc anomaly with contractile movement properties of the atrophic nerve. This case reviews the unique contractile characteristic of morning glory and the proposed mechanisms.

I. Case History

- 23 yo Latino male
- LEE: unknown
- CC: Blur OS, long standing, severe, sRx
- OcHx: (-) trauma, (-) Fhx, (+) strabismus sx @ ages 3 and 6
- MedHx: (-) HTN, cholesterol, diabetes, CAD
- Meds: none
- Allergies: NKDA

II. Exam Findings (Imaging acquired in bold)

- VA sc: 20/20 OD, CF @ 2.5 ft OS PHNI
- NCT: 18 pd LHT OS, 20 pd LXT with left jerk nystagmus
- Pupils: PERRL, 3+ RAPD OS
- EOM: SAFE OU
- VF: FTFC OD, FTFC OS @ 2.5 ft
- Manifest: +0.25-0.25x175, unable OS
- Anterior segment: palpebral aperture size OS<OD, otherwise unremarkable
- Posterior segment: C/D: OD 0.35v/0.40h
  - OS difficult to assess large atrophic nerve
  - Margins: distinct OU
  - FR: positive OD, absent OS
  - Macula: flat even OD
  - dragged c striations from contraction of atrophic nerve OS
- Vessels: normal OD, severe attenuation OS
- Periphery: attached 360 OU

III. Differential diagnosis

- Megalopapilla
- Peripapillary staphyloma
- Colobomatous optic discs
- Optic pit
- Morning glory disc anomaly

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TITLE: Oh What a Beautiful Morning (Glory)
IV. Diagnosis and discussion

- Longstanding morning glory disc anomaly with contractile movement properties of the optic nerve head

- Evidenced by a congenital funnel-shaped excavation of the posterior pole. The disc appears enlarged and maybe recessed or elevate centrally. A white tuft of glial tissue covers the central portion of the cup.\(^8\)

- Blood vessels appear to be increased in number and emanate from the edge of the disc. After arising from the disc, the vessels turn sharply at the edge of cup and have an abnormally straight pattern in the peri-papillary region.

- Pathogenesis: largely unknown but many theories
  - Genetic: 47 XYY syndrome associated with morning glory syndrome\(^2\)
  - Primary mesenchymal abnormality\(^6\)
  - Defective closure of the embryonic fissure\(^8\)
  - Basic defect of mesoderm combined with dynamic disturbance between the relative growth of mesoderm and ectoderm\(^6\)

- Clinical associations:
  - VA is 20/200 or worse in 90% cases, but also 20/20 in the number of cases\(^1\)
  - Retinal detachment in 30% of cases, and many are non-rhegmatogenous with subretinal fluid accumulation around optic disc\(^3\)
  - Can exhibit contractile movements in rare cases\(^6\)

- Two proposed mechanisms:
  - Pressure mechanism:
    Contractile movements are related to respiratory cycle and follow changes in venous pressure where there is an anomalous communication between the subarachnoid space and juxtapapillary subretinal space. Changes in transient pressure gradients occur between two compartments, causing contraction and expansion of the optic nerve head by the flow of fluid back and forth along the optic nerve.\(^7\)
    Interestingly in one case study, it was found that FA showed some fluid being ejected from optic disc into the vitreous cavity when contraction occurred.\(^2\)
  - Muscular contraction mechanism:
    - Presence of an ancient retractor bulbi muscle lying alongside the optic nerve that could pull directly on the staphyloma\(^9\)
    - Forced eyelid closure and light induced squinting of the normal eye.
• Sphincter iridis muscle, evoked by light stimulation and ended in a hippus like movement, stimulating pupillary movement 4
• Ciliary muscle in the posterior sclera would contract under the stimulation by strong light stimulation and accommodation effort5

V. Treatment Plan: Patching yielded variable results, mostly unsuccessful since morning glory disc anomaly is genetic and congenital in nature. Due to the long-standing history and poor prognosis of improvement with patching therapy, treatment of the morning glory disc anomaly of the patient’s left eye was not initiated. Given the severe attenuation of retinal blood vessels in the left eye, vascular abnormalities of the brain could be present. As such, vascular imaging studies of the brain such as magnetic resonance angiography or computed tomography would be indicated. Patient education of signs and symptoms of retinal detachment was implemented. Lastly, we advised protection of the well-seeing eye by prescribing polycarbonate or trivex lenses.

Sources


3) Haik BG, Greenstein SH, Smith ME, Abramson DH, Ellsworth RM. Retinal detachment in the morning glory anomaly. Ophthalmology. 1984;91:1638–1647


