Case Report: The visual and ocular consequences of a skull based meningioma with orbital involvement over a two year period

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Abstract

Meningiomas are the most common primary brain tumor, accounting for 30% of all brain tumors. The following case demonstrates the outcome of a patient with a meningioma extending into the orbit, and the visual consequences.

I. Case History

- **Patient Demographics:** 34 year old African-American male
- **Chief complaint:** Loss of field of vision OD, photophobia, blindness OS
- **Ocular history:** CN VI palsy OS, Visual field defect OU, corneal scarring OS due to exposure keratoconjunctivitis/proptosis
- **Medical history:** Meningioma of sella/cavernous sinus and orbit OS (s/p excision/debulking x 2011), anemia, hypothyroidism, migraine, post-traumatic stress disorder, dysphagia, neck pain, hypopituitarism, conductive hearing loss
- **Medications:** amitriptyline HCL, carboxymethylcellulose, gabapentin, ibuprofen

II. Pertinent findings

- **Clinical**
  - BCVA 20/30 OD, NLP OS
  - Exophthalmometry OD 24, OS 28
  - Dilated fundus exam OD large ONH cupping OD w/ mild pallor, OS unable to observe due to central corneal scarring
  - Fundus photos OD
  - RNFL OCT OD: RNFL thinning in all quadrants except inferior-nasal
  - Humphrey visual field 24-2 Sita Fast OD outside normal limits with inferior nasal step, inferior arcuate detect and 270 degree field constriction; superior nasal and central 10 degrees intact
  - MRI of brain and orbits from radiology

III. Differential Diagnosis

- **Primary:** Vision loss OU secondary to skull based meningioma engulfing the bilateral internal carotid arteries and extending into the left orbit
- **Others:** Early concurrent glaucoma OD, Thyroid Eye Disease, Other space occupying lesion
IV. Diagnosis and Discussion

- **Diagnosis**: Vision loss OU secondary to skull based meningioma engulfing the bilateral internal carotid arteries and extending into the left orbit

- **Discussion**:
  - Clinical Features and classification
  - Associated ocular findings: proptosis, visual field loss, etc.
  - Pathogenesis
  - MRI imaging, fundus photos, Visual Fields
  - Treatment options:
    - Low vision, O&M training
    - Surgical intervention, observation with periodic MRI’s, radiation

V. Treatment and Management

- **Management**:
  - Referral for repeat MRI

- **Treatment**:
  - Continue vigorous use of preservative-free Artificial Tears Q2H OU and Lacrilube QHS OU
  - Referral for O&M training, patient declined services

- **Prognosis**: visual prognosis is poor – vision loss is ultimately permanent

- **Results from MRI 4 weeks after eye exam**:
  - Definitive increase in size in skull based meningioma with progression of orbital involvement
  - Mass extends into optic foramen, optic fissure on the right side and extends into the orbit
  - Mass effect is identified on the optic nerve on the left, with exophthalmos greater on the left than the right
  - Encasement of the carotid arteries, with further extension into the suprasellar cistern

VI. Conclusion

- Clinical pearls
  - Despite being benign tumors, meningiomas can have profound effects on vision, including blindness
  - Optometrists can play a vital role in detecting early changes of certain brain tumors, such as meningiomas

Comments to Reviewer:
This is a patient who has been followed at our facility for 2.5 years, before he became legally blind in his left eye.
Clinical images available for presentation: Serial Visual Fields OU, Serial OCT RNFL images, serial MRI’s of brain and orbits

Primary topic: Neuro-optometry

Keywords: Meningioma, MRI, tumor, Visual Field