Basilar Artery Saccular Aneurysm Diagnosis Secondary to the Detection of an Afferent Pupillary Defect

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BACKGROUND

Intracranial saccular, or berry aneurysms occur in approximately 1-2% of the population and are responsible for 80-85% of non-traumatic subarachnoid hemorrhages.[1] They are more commonly found in women and in the elderly population. Intracranial aneurysms can present with ophthalmic symptoms such as third or sixth cranial nerve palsies, visual loss, afferent pupillary defect, ophthalmoplegia, nystagmus, and vertigo.[1,2] Other neurologic symptoms include persistent nausea and an altered mental status.

CASE PRESENTATION

A 71-year-old Native American female presented to clinic with a history of age-related macular degeneration, cataracts, hypertension and breast cancer presented for her annual eye examination with no visual complaints.

Medications: amitriptyline 25 mg, azathioprine 50mg, cyanocobalamin 1000mcg/mL, cyclobenzaprine 10mg, denosumab 60 mg/mL, ergocalciferol 50,000 intl units, fenofibrate 160 mg, fluticasone 50 mcg/inh, folic acid 1mg, gabapentin 600 mg, hydroxyzine 25mg, lisinopril 20 mg, potassium chloride 20 mEq, simvastatin 80 mg, and duloxetine 60 mg
FHx: (+)ARMD mother
SHx: (+)cigarette smoker

CLINICAL TESTING

	OD	OS
Visual Acuity cc	20/25	20/25
Extraocular Muscle Testing	SFROM (-)pain, (-)diplopia	SFROM (-)pain, (-)diplopia
Confrontation Visual Field	FTFC	FTFC
Pupil testing	Dim: 4mm, bright: 3mm, 4+ direct and consensual response, (-)RAPD	Dim: 4mm, bright: 3mm, 4+ direct and consensual response, **3+ RAPD**
Slit Lamp Examination	WNL	WNL

2 years prior: Pupil testing documented as ***possible 2+ RAPD OS***

1 year prior: Pupil testing documented as ***negative RAPD OD, OS***

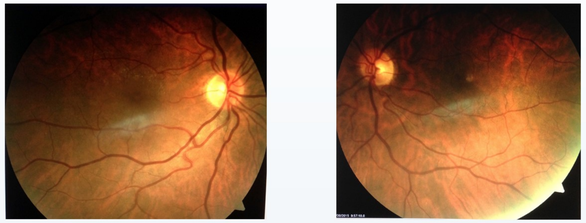

Figure 1. Fundus photos show pink, distinct optic discs with no vasculopathy. An epiretinal membrane is noted in both eyes with scattered soft and hard drusen.

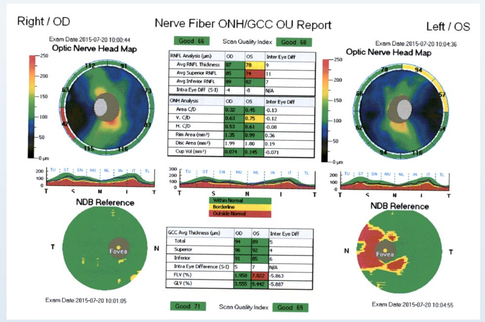

Figure 2. Optical coherence tomography (OCT) of the nerve fiber layer reveal inferior temporal thinning, right eye and mild superior temporal thinning, left eye.

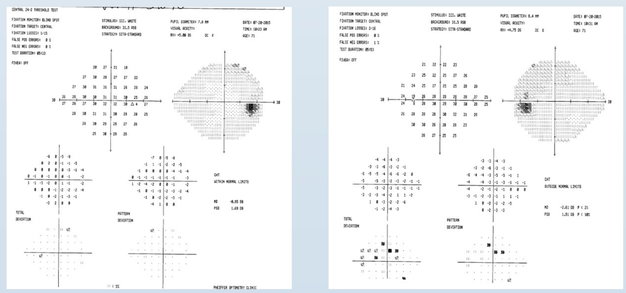

Figure 3. Humphrey Visual Field 24-2 show unspecified superior field defects in the left eye; non-corresponding to the RNFL thinning detected on the OCT.

PLAN

Due to the inconclusive findings from the analysis of the OCT and visual field testing, a CT scan of the brain and orbits with and without contrast was ordered to rule out a compressive lesion or vascular event

NEUROIMAGING

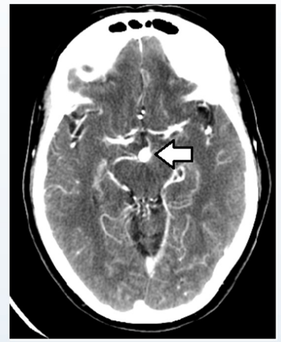

Figure 4. CT scan highlighting a 9x8mm basilar artery aneurysm (white arrow)

A 9x8mm basilar saccular aneurysm was found with no evidence of intracranial hemorrhage. The orbits were within normal limits. An immediate neurosurgical consult was recommended.

TREATMENT

Within one month of the neurosurgical consult, the patient underwent successful endovascular embolization stent surgery. No afferent pupillary defect was detected on her follow-up examination. According to retrospective data, aneurysms that were located in the basilar tip, in the overall vertebrobasilar location and in the posterior communicating artery were at greatest risk for rupture.[1] Surgery or endovascular procedures are typically recommended for aneurysms that are >7mm in size.[1,3]

DISCUSSION

According to literature, the most common inherited disorder associated with intracranial saccular aneurysms is autosomal dominant polycystic kidney disease.[1] Other risk factors include age, female gender, cigarette smoking and hypertension.[1]
Differential diagnoses of a relative afferent pupillary defect (RAPD) include ischemic optic neuropathy, optic neuritis, tumor, glaucoma, central retinal artery or vein occlusion, and less commonly a lesion of the optic chiasm/tract.[4] Our patient did not have an optic nerve or retinal pathology that would account for the RAPD, nor did her visual field provide us with a distinguishable defect. Therefore, a CT scan of the brain and orbits was warranted to determine the etiology of the afferent pupillary defect.

CONCLUSION

This case highlights the sheer importance of clinical pupil testing and the value of neuroimaging in the role of optometry. Due to the life-threatening potential of the condition, prompt referral and collaboration with her PCP and neurology was key in the successful outcome of our patient.

References

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