Ocular Cysticercosis: A Domino Effect

Redion Petrela MD[1], Thomas Bersani MD[1], Robert Swan MD[1]

1 Department of Ophthalmology & Visual Sciences, SUNY Upstate Medical University

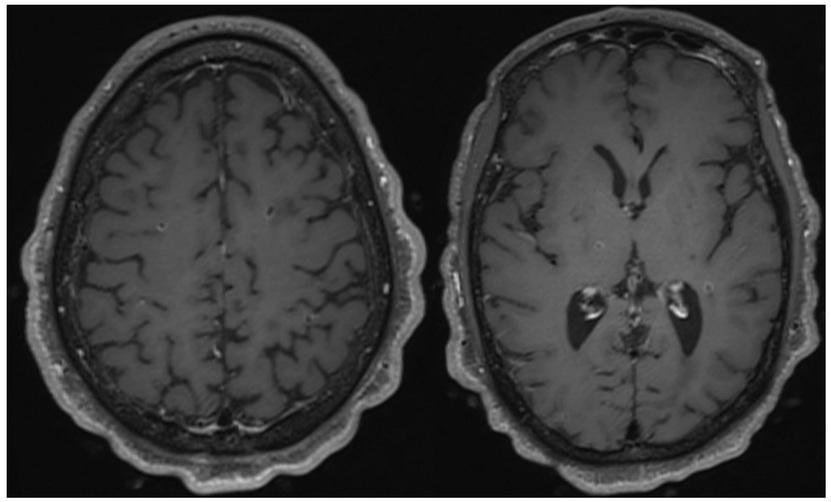
Introduction

Cysticercosis is a parasitic infection caused by Taenia solium, the pork tapeworm. Infection results upon consuming food or water contaminated with feces from someone infected with with the adult tapeworm. Tapeworm eggs are ingested, the eggs hatch into larva, pierce the gut, and disseminate throughout the body where they form cysts. Cysticercosis can affect any part of the body; when it affects the central nervous system, it is referred to as neurocysticercosis and is a leading cause of adult-onset epilepsy worldwide.[1] Ocular cysticercosis can affect any part of the eye or the orbit. Owing to its varied presentation, it may pose a diagnostic challenge and can result in blindness if not identified and treated.

Case

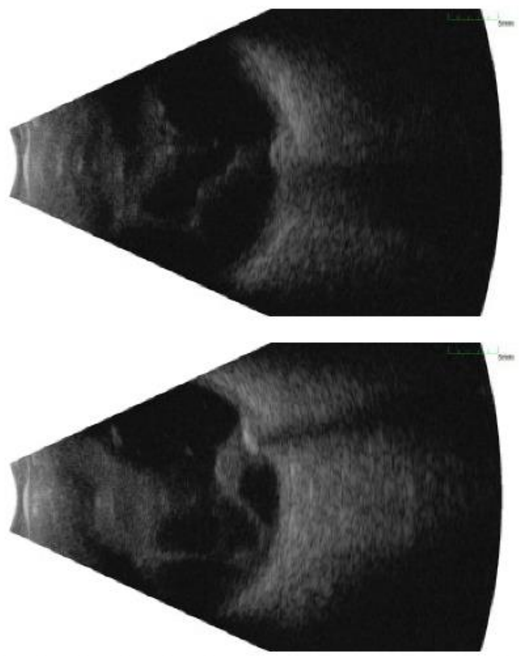
- 35M with recently diagnosed epilepsy and “calcium mass in the brain” presents to ED with 2 weeks of gradual vision loss, eye pain, and eye turn – all in the left eye
- Exam in ED revealed NLP vision OS, IOP 35, unreactive pupil and left XT.
- Angle was closed on gonioscopy with extensive mature and immature NVI spanning pupil to limbus and syneching to the anterior lens
- No view to the vitreous or posterior pole
- B scan showed funnel RD with hyperechoic signal adjacent to optic nerve measuring ~2mm
- Intraocular mass prompted neuroimaging, given history of “calcium mass in brain” and recent onset seizures
- MRI showed multiple foci of signal loss with peripheral enhancement most suggestive of cysticercosis
- Patient left hospital without being seen by neurology or starting treatment
- Post-ED follow up complicated by refusal to go back to the ED for evaluation, relocating to NYC, and no-shows
- Telephone encounters indicate patient had an appointment with infectious disease locally, and was seeking an ophthalmologist in NYC
- Chart review showed CT head was obtained to evaluate for calcifications, indicating further workup and care in progress

Figures

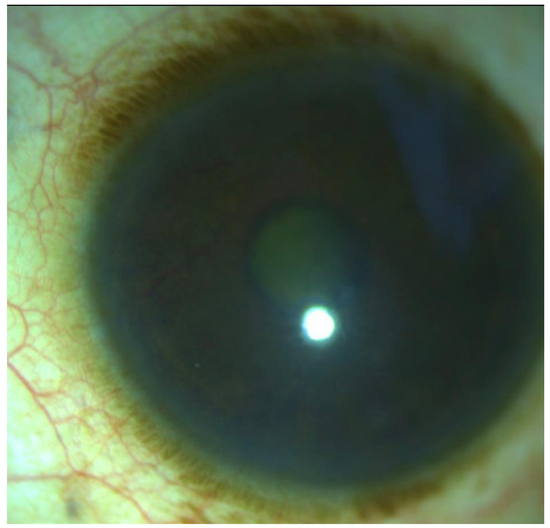


Axial T1 images. Scattered cysts noted with surrounding enhancement. There is involvement of the basal ganglia.

Coronal T2 FLAIR. Enhancement of left globe suggests fluid leakage secondary to inflammation. A cyst can be seen in the right frontal lobe.



B scan demonstrating retinal detachment and hyperechoic lesion adjacent to the optic nerve



Slit lamp photograph demonstrating mature NVI

Discussion

Ocular/orbital cysticercosis (OOC) can have different manifestations depending on the location of the cysts. Symptoms depend on structures affected and can range from angle closure to retinal detachment. In the Western world, distribution is as follows:[2]

-35% in the subretinal space
-22% in the vitreous
-22% subconjunctival
-5% in the anterior segment
-1% in the orbit

Diagnostic testing includes:

-CBC: leukocytosis with eosinophilia
-ELISA: serologic test, low sensitivity
-MRI: hypointense cystic lesion with surrounding enhancement from inflammation
-B-scan: cyst in the eye/orbit with a hyperechoic scolex

The scolex is the organism invaginated within the cyst and appears hyperechoic due to high calcium concentration.[3] Treatment is with four weeks of oral albendazole and oral steroid taper and is the same for both NCC and OOC.[4]

In our patient, it is likely that the hyperechoic lesion adjacent to the optic nerve represents the scolex. We suspect that tractional changes caused a retinal detachment, resulting in posterior pole ischemia leading to neovascular glaucoma. His sensory exotropia suggests a longstanding process. This domino effect underscores the many ways which cysticercosis can affect the eye and the importance of recognizing this rare condition.

References

1. Dhiman R, Devi S, Duraipandi K, Chandra P, Vanathi M, Tandon R, Sen S. Cysticercosis of the eye. Int J Ophthalmol. 2017 Aug 18;10(8):1319-1324. doi: 10.18240/ijo.2017.08.21. PMID: 28861361; PMCID: PMC5554854.
2. Kruger-Leite E, Jalkh AE, Quiroz H, Schepens CL. Intraocular cysticercosis. Am J Ophthalmol. 1985;99(3):252–257
3. Dhiman R, Devi S, Duraipandi K, et al. Cysticercosis of the eye. *Int J Ophthalmol*. 2017;10(8):1319–1324. Published 2017 Aug 18. doi:10.18240/ijo.2017.08.21
4. Cysticercosis of the eye. EyeWiki. (2024a, July 10). https://eyewiki.org/Cysticercosis_of_the_Eye

This study was funded in part by unrestricted grants from Research to Prevent Blindness, Inc. New York, New York and Lions District 20-Y1, Syracuse, New York. No other significant financial interests or relationships to disclosure

SUPPORTED BY Research to Prevent Blindness