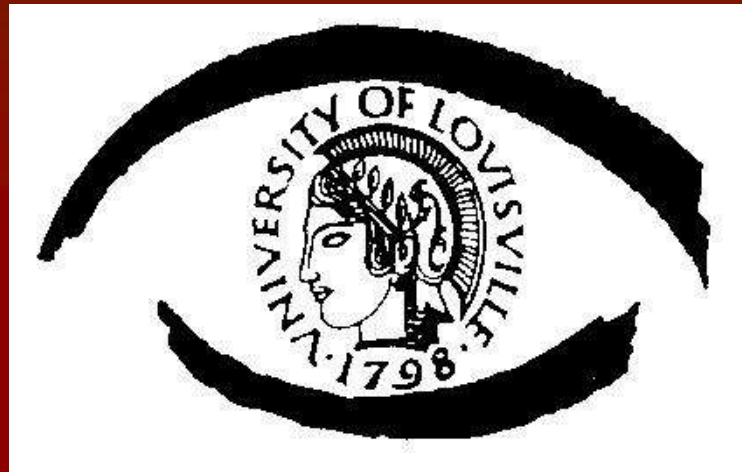


Clinical Rounds



Melissa Tong, M.D.

University of Louisville School of Medicine

Department of Ophthalmology and Visual Sciences

12/03/10

Subjective

CC: “Needs exam for school”

HPI: 5 year old Hispanic male with history of poor vision OS for at least one year. Mom states that she has been told that his vision OS could not be fixed.

POH: Poor vision OS

PMH: None

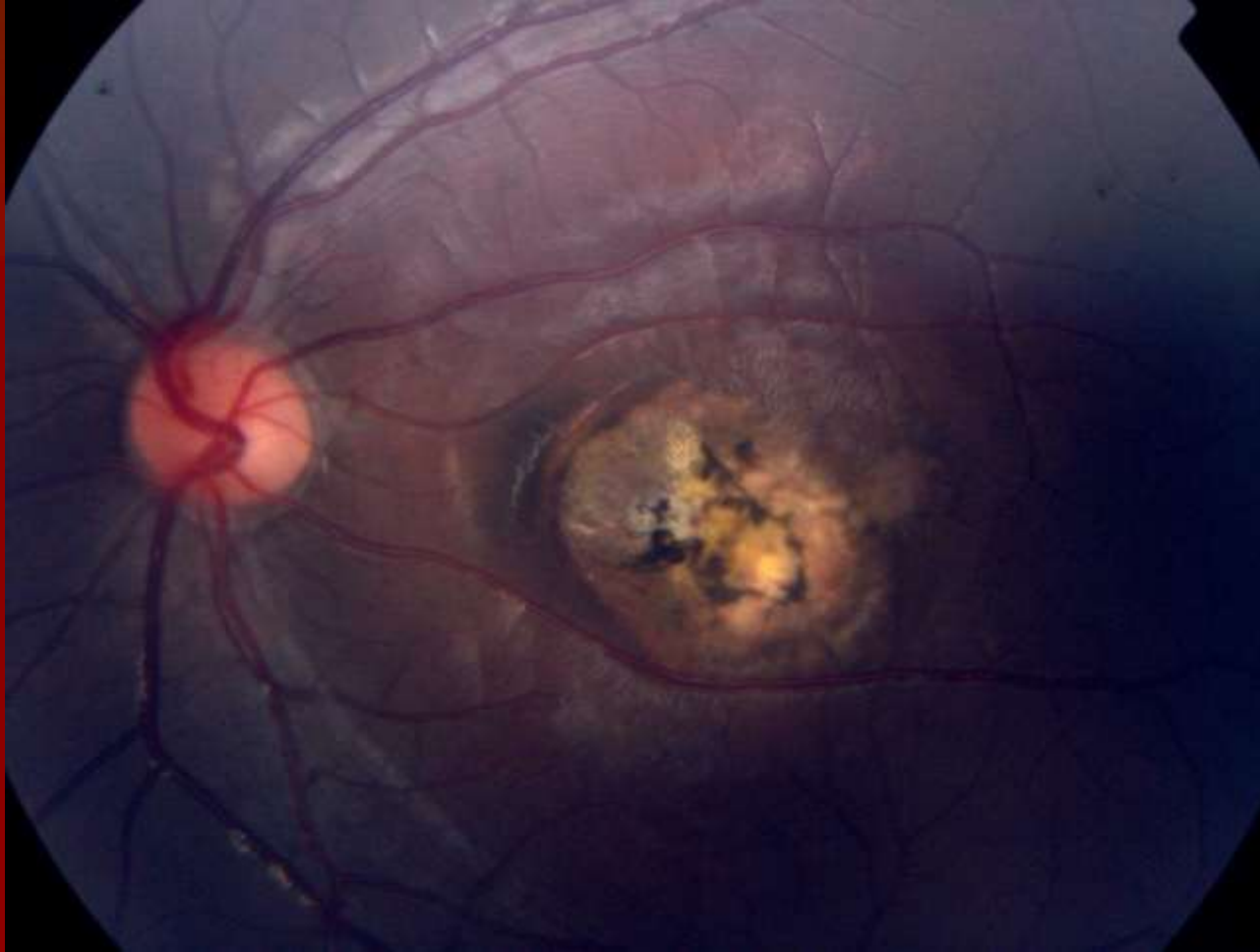
ROS: Non contributory

FH: Non contributory

Exam

	OD	OS
<u>BCVA:</u>	20/30 (+1.00 +0.50 x90)	20/100 (+1.00 +0.50 x90)
<u>Pupils:</u>	4 - 2	4 - 2
	+1 APD	
<u>EOM:</u>	full OU	
<u>Anterior Segment:</u>	WNL OU	

Fundus Exam



Color fundus photograph of central inactive macular lesion OS.

Impression

5 year old hispanic boy with OS central lesion of long duration consistent with congenital toxoplasmosis.

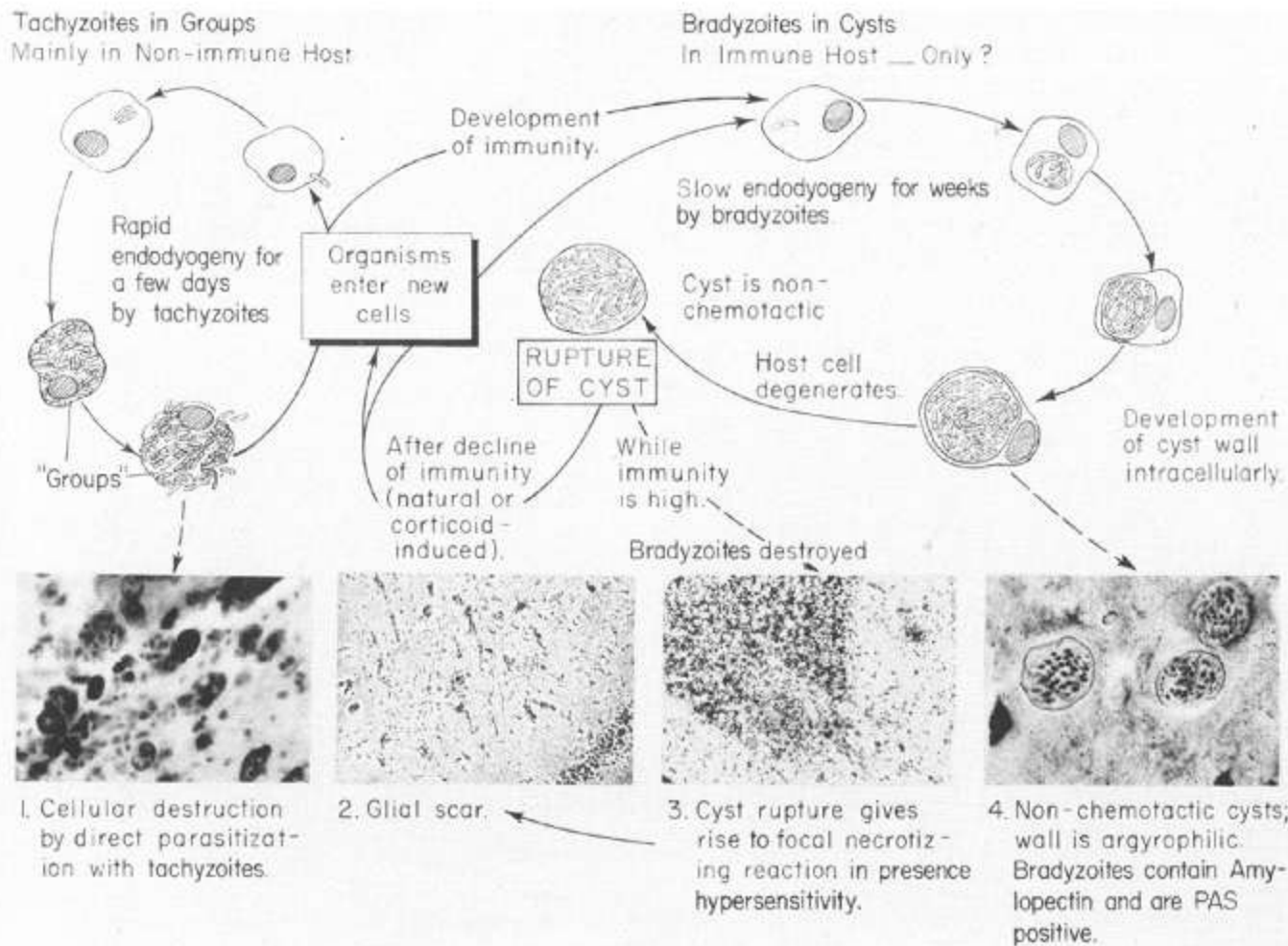
Differential Diagnosis

Congenital Toxoplasmosis

Toxocariasis

Toxoplasmosis

- Parasite *Toxoplasma gondii*; ubiquitous in nature
- Definite host is the cat
- Three forms
 - Tachyzoite (infectious form)
 - Bradyzoite (encysted intracellular form)
 - Sporozoite



Extraintestinal or tissue cycle of *Toxoplasma* and histologic response.

Diagram of tissue cycle of *Toxoplasma*.

From: Frenkel JK. Pathology and pathogenesis of congenital toxoplasmosis. Bull N Y Acad Med. 1974 February; 50(2): 182–191.

- Acquired disease
 - Ingestion of either sporozoites or tissue cysts in inappropriately cooked injected meat
 - Inhalation of spores
 - Contaminated blood transfusion
 - Organ transplant

- usually asymptomatic in immunocompetent people

■ Congenital

- Transplacental transmission of tachyzoites from mother infected just before or during pregnancy to the developing fetus
- Highest severity of congenital infection when acquired during first trimester of pregnancy
- Highest frequency of transmission in third trimester

Clinical Features

- Majority of ocular toxoplasmosis cases are congenital
- Study of 300 cases of congenital toxoplasmosis in newborns
 - 76% ocular lesions
 - Microphthalmia, enophthalmos, ptosis, nystagmus, choroidal colobomas, strabismus
 - 51% neural involvement
 - 32% intracranial calcifications
 - 26% hydrocephalus

Diagnosis

- Definitive diagnosis requires demonstration of tachyzoites in ocular tissues
 - Presence of cysts in tissue samples does not prove acute infection
- Cytologic evaluation of vitrectomy specimens to detect presence of organism is sometimes useful
- Toxoplasma retinochoroiditis is usually a clinical diagnosis based on compatible lesion in the fundus and positive serologic results

Serology

- Classic serodiagnosis of acute infection requires
 - demonstration of seroconversion; significant rise in specific antibody titers taken 4-6 weeks apart
 - Presence of anti Toxoplasma IgM antibody in single serum sample

Congenital Toxoplasmosis

- Retinochoroiditis is the most common ocular presentation
- Detected after birth in 10% of infected infants
- In Europe, 20% of infected children have one or more retinal lesions by age 5
- Lesions more common and more severe in South America due to more virulent parasite strains
 - Vallochi AL, Nakamura MV, Schlesinger D et al. “Ocular toxoplasmosis: more than just what meets the eye” Scand J Immunol. 2002 Apr;55(4):324-8. e.

Prognosis

	Visual Acuity					Percent with Visual Impairment <6/12
	≥6/12	≥6/18 to <6/12	>6/60 to <6/18	>6/120 to ≤6/60	≤6/120	
Visual acuity in the best eye	n = 168	n = 1	n = 0	n = 0	n = 1	
Bilateral posterior pole ± periphery	5	0	0	0	1	Any posterior pole lesion, 8.7% (1.1% to 28.0%)
Unilateral posterior pole ± periphery same side	13	0	0	0	0	
Unilateral posterior pole + periphery opposite side	3	1	0	0	0	
Bilateral periphery only	5	0	0	0	0	Any peripheral lesion, 0% (0% to 25.9%)
Periphery only unilateral	5	0	0	0	0	
No retinochoroiditis	137	0	0	0	0	
Visual acuity in the affected eye*	n = 321	n = 4	n = 2	n = 4	n = 9	
Posterior pole ± periphery	15	1	0	4	9	48.3% (29.5% to 67.5%)
Periphery only	16	2	1	0	0	15.8% (3.4% to 39.6%)
No retinochoroiditis	290	1	1	0	0	0.7% (0.1% to 2.5%)

Visual acuity in best and affected eye according to site of retinal lesion in children with congenital toxoplasmosis.

From Tan HK, Schmidt D, Stanford M. "Risk of visual impairment in children with congenital toxoplasmic retinochoroiditis." Am J Ophthalmol. 2007 Nov;144(5):648-653.

- Bilateral impaired vision less than 6/12 rare
- Prognosis of an eye affected with a posterior pole lesion is that half will have normal or near normal vision
- Caution advised when giving prognosis of an eye with only peripheral lesions as 1 in 6 likely to have visual impairment

- From Tan HK, Schmidt D, Stanford M. "Risk of visual impairment in children with congenital toxoplasmic retinochoroiditis." Am J Ophthalmol. 2007 Nov;144(5):648-653.

Acquired vs Congenital

	Origin of the Infection				Total n = 425
	Acquired n = 100	Congenital n = 62	P value	Unknown n = 263	
Age, mean (range)	21.7 (6 to 69)	9.1 (0.1 to 37)	<.0001	31.9 (10 to 81)	26.2 (0,1 to 81)
Gender (M/F)	34/66	25/37	.55	105/158	164/261
Aspect of chorioretinitis, n (%)					
Active only	29 (29%)	4 (6.4%)	<.0001	54 (20.5%)	87 (20.5%)
Active with scar(s)	28 (28%)	9 (14.5%)	<.0001	105 (39.9%)	142 (33.4%)
Scared only	43 (43%)	49 (79%)	<.0001	104 (39.5%)	196 (46.1%)
Bilateral	4 (4%)	27 (43.5%)	<.00001	29 (11%)	60 (14.1%)
OD	47 (47%)	20 (32.3%)		120 (45.6%)	187 (44%)
OS	49 (49%)	15 (24.2%)		114 (43.3%)	178 (41.9%)
Visual acuity					
Best eye decimal	1.0	0.8	<.0001	1.0	1.0
logMAR	0.0 ± 1 line	0.1 ± 4 lines		0.0 ± 1 line	0.0 ± 2 lines
Worst eye decimal	0.4	0.25	.04	0.4	0.4
logMAR	0.4 ± 5 lines	0.6 ± 7 lines		0.4 ± 5 lines	0.4 ± 6 lines
NA	0	8		0	8

F = female; logMAR = logarithm of the minimum angle of resolution; M = male; NA = not available; OD = right eye; OS = left eye.

Comparison between patients with acquired vs congenital toxoplasmosis.

From Delair E, Monnet D, Grabar S et al. "Respective roles of acquired and congenital infections in presumed ocular toxoplasmosis." Am J Ophthalmol. 2008 Dec;146(6):851-5. Epub 2008 Aug 23.

Therapy

- Aim of therapy is to stop multiplication of tachyzoites during active retinochoroiditis
- Triple therapy: Sulfadiazine with pyrimethamine, clindamycin, steroids

References

- Frenkel JK. Pathology and pathogenesis of congenital toxoplasmosis. Bull N Y Acad Med. 1974 February; 50(2): 182–191.
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- Delair E, Monnet D, Grabar S et al. “Respective roles of acquired and congenital infections in presumed ocular toxoplasmosis.” Am J Ophthalmol. 2008 Dec;146(6):851-5. Epub 2008 Aug 23.
- Barney NP, Daley TJ, Foster CS. “Toxoplasmosis”. In Albert DM, Miller JW (Ed), *Albert and Jakobiec's Principles and Practice of Ophthalmology*. 3rd Ed. 2008 pp 2087-2093.