



Toxoplasmosis

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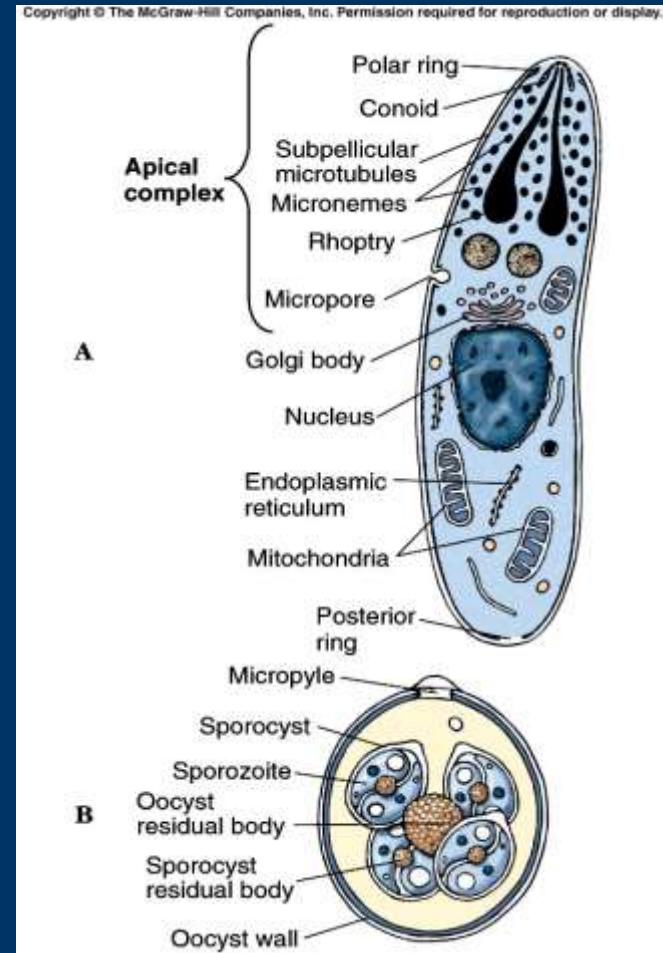
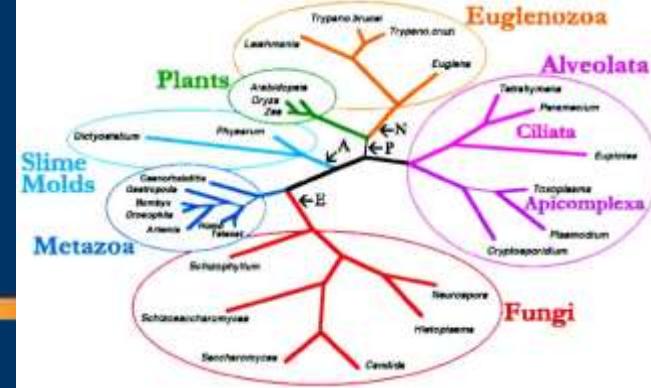
Table 2. Estimated Prevalence of Neglected Infections of Poverty in the US.

Neglected Disease Category	Disease	Estimated Number of Cases	Major Regions or Populations at Risk	References
Soil-transmitted helminth infections	Ascariasis	<4 million	Appalachia, American South	[29]
	Toxocariasis	1.3–2.8 million	Inner cities, American South, Appalachia	[14,79,84]
	Strongyloidiasis	68,000–100,000	Appalachia, African refugees	[14,19,25,35]
	Trichinellosis	16 (insufficient data)	Arctic Alaska	[149]
Platyhelminth Infections	Cysticercosis	41,400–169,000	US–Mexico borderlands	[19,96,113]
	Schistosomiasis	8,000	African refugees	[89,90]
	Echinococcosis	Insufficient data	Tribal Lands and Arctic Alaska	—
Protozoan Infections	Giardiasis	2.0–2.5 million	All regions	[123,147]
	Trichomoniasis	880,000 (black women)	American South, inner cities	[14,66]
	Cryptosporidiosis	300,000	All regions	[123]
	Chagas disease	3,000 to >1 million	US–Mexico borderlands, American South	[11,102,103,105,109]
	Cyclosporiasis	16,624	All regions	[123]
Bacterial Infections	Congenital toxoplasmosis	≤4,000 annually	American South, inner cities, US–Mexico borderlands, Arctic Alaska	[65]
	Leishmaniasis	Insufficient data	US–Mexico borderlands	—
	Amebiasis	Insufficient data	US–Mexico borderlands	—
	Congenital syphilis	1,528 between 2000 and 2002	American South, inner cities	[62]
	Brucellosis	1,554	US–Mexico borderlands	[122,123]
	Bovine tuberculosis	129 cases between 1994 and 2000	US–Mexico borderlands	[124]
	Leprosy	166	US–Mexico borderlands	[148]
Vector-borne Diseases	Trench fever	Insufficient data	Inner cities	—
	Leptospirosis	Insufficient data	Inner cities	—

Toxoplasmosis

Introducción

- Organismos unicelulares
- Especialización intracelular
- En el pasado era un phylum, como los helmintos, el phylum Protozoa (1964)
 - Contaba con 4 subphyla:
 - Sarcomastigophora
 - **Sporozoa**
 - Cnidospora
 - Ciliophora
- En 1980 algunos de esos subphyla fueron elevados al rango de Phylum
- Phylum **Apicomplexa**



Toxoplasmosis

Introducción

- ✓ **Rizópodos (amebas):** *Entamoeba histolytica.*
- ✓ **Ciliados:** *Balantidium coli.*
- ✓ **Flagelados:**
 - **Hemáticos y tisulares:** *Leishmania spp.*
Trypanosoma spp.
 - **Cavidades naturales:** *Trichomonas vaginalis.*
Giardia lamblia
- ✓ **Esporozoos:**
 - **Hemáticos y tisulares:** *Plasmodium spp.*
Toxoplasma gondii
 - **Cavidades naturales:** *Cryptosporidium spp.*

Phylum: Apicomplexa

Class : Sporozoea

Subcl. : Coccidia

Order : Eucoccidiida

Subord. : Eimeriina (**Tissue & Intestinal Coccidia**)

Family : Eimeriidae Cryptosporiidae Sarcocystidae

Genus : Cystoisospora Cyclospora Cryptosporidium Sarcocystis **Toxoplasma**

Species: belli cayetanensis parvum hominis suis hominis **gondii**
 hominis
 natalensis

Toxoplasmosis

Taxonomía

- Eukaryota (super reino);
 - Alveolata;
 - Apicomplexa (ph);
 - Conoidasida;
 - » **Coccidia (c);**
 - **Eucoccidiorida (o);**
 - Eimeriorina (so); **Cryptosporidiidae (f);** *Cryptosporidium parvum*
 - Eimeriorina (so); **Eimeriidae (f);** *Cyclospora cayetanensis*
 - Eimeriorina (so); **Sarcocystidae (f);** *Sarcocystis hominis*
 - Eimeriorina (so); **Sarcocystidae (f);** *Toxoplasma gondii*
 - Eimeriorina (so); **Sarcocystidae (f);** *Cystoisospora belli*



Toxoplasmosis



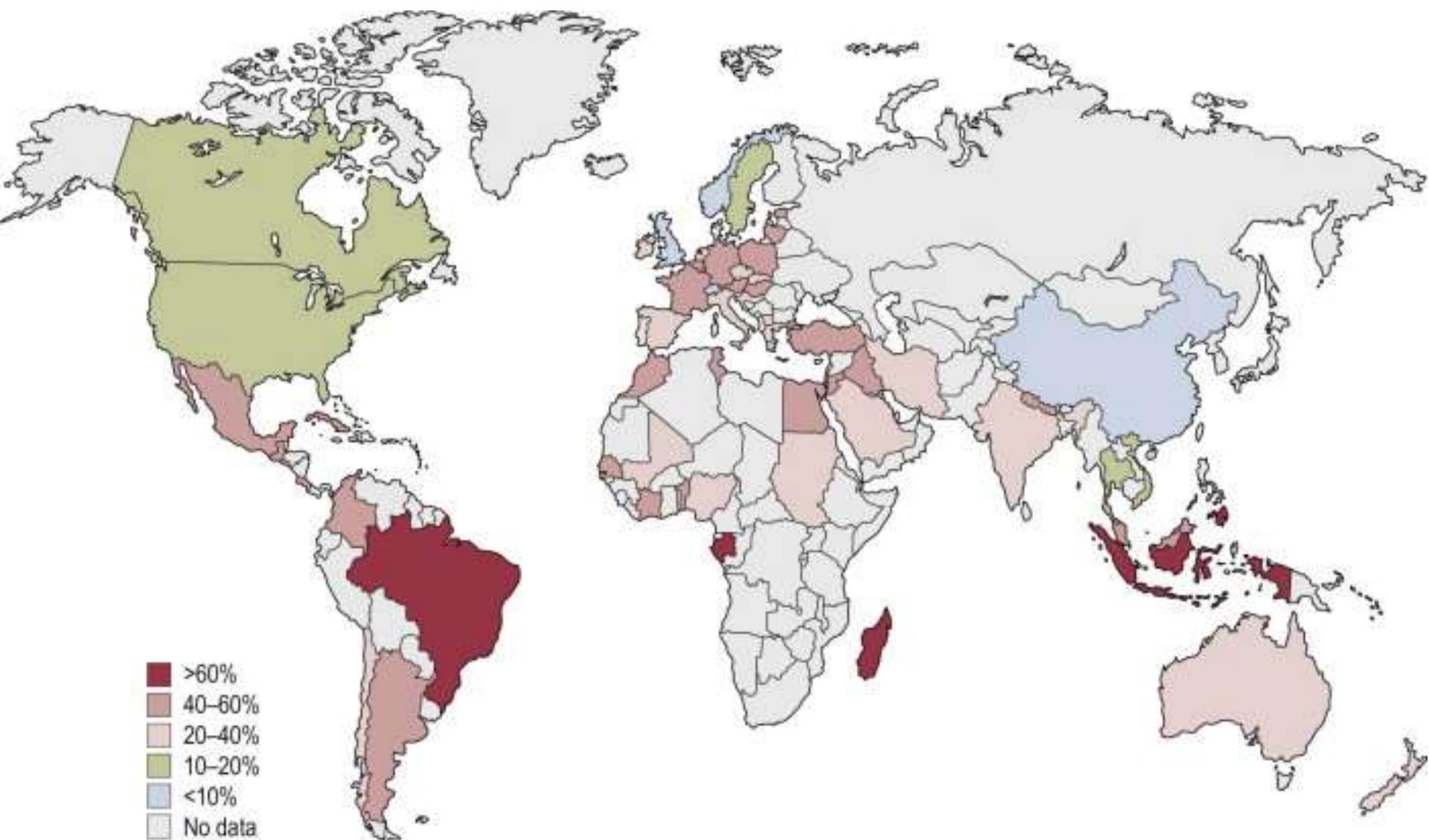
- CIE 10 B 58
- Zoonosis parasitaria del hombre, mamíferos y aves producida por un protozoo coccidio el *Toxoplasma gondii*
- En el hombre esta infección es habitualmente asintomática, las formas clínicas varían dependiendo el grado de inmunidad del huésped y las características el agente (número, virulencia)

Toxoplasmosis



- distribución: cosmopolita
- magnitud
 - prevalencia variable de acuerdo a los hábitos y costumbres
- mecanismos de transmisión
 - carnivorismo (quistes)
 - transfusional
 - transplacentario (zoítos)
 - contaminación fecal con heces de gatos (ooquistes)

T. gondii seroprevalence rates worldwide in females of reproductive age or pregnant.
(Modified from Pappas G, et al. Int J Parasitol 2009;39:1385–94.)



Toxoplasmosis



- Distribución: mundial
- Magnitud: variable, en Colombia, altamente endémic/estudiada
- Ciclo heteroxénico
- Huésped
 - definitivo: gatos y otros felinos
 - intermediario cientos de mamíferos incluso el hombre

A MATERNAL SCREENING PROGRAM FOR CONGENITAL TOXOPLASMOSIS IN QUINDIO, COLOMBIA AND APPLICATION OF MATHEMATICAL MODELS TO ESTIMATE INCIDENCES USING AGE-STRATIFIED DATA

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Abstract. We studied 937 pregnant women from Quindio, Colombia for the presence of specific anti-*Toxoplasma gondii* IgG antibodies using the indirect immunofluorescence antibody technique (IFAT-IgG). Specific anti-*T. gondii* IgM antibodies detected using the immunosorbent agglutination assay (ISAgA-IgM) were investigated in patients with high titers in the IFAT-IgG (dilutions $\geq 1:1,024$). We used mathematical models based on the age prevalence results of the IFAT-IgG to estimate the number of seroconversions and these were compared with the results predicted by the IgM based-incidence results. We found 15 positive cases by ISAgA-IgM and we were able to follow the children of six mothers from this group in which we found one case of congenital toxoplasmosis with the development of a retinal scar despite prenatal and postnatal treatment. The estimation of new cases for the annual total of pregnancies (approximately 8,000) in the Quindio region was 30–120 according to the ISAgA-IgM results and 57–85 using mathematical models. Thus, mathematical models based on age prevalence can give useful estimations of the magnitude of the problem.

Detection of Specific Immunoglobulin E during Maternal, Fetal, and Congenital Toxoplasmosis

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Toxoplasma immunoglobulin E (IgE) antibodies in 664 serum samples were evaluated by using an immunoassay method with a suspension of tachyzoites prepared in the laboratory in order to evaluate its usefulness in the diagnosis of acute *Toxoplasma gondii* infection during pregnancy, congenital infection, and progressive toxoplasmosis. IgE antibodies were never detected in sera from seronegative women, from patients with chronic toxoplasma infection, or from infants without congenital toxoplasmosis. In contrast, they were detected in 86.6% of patients with toxoplasmic seroconversion, and compared with IgA and IgM, the short kinetics of IgE was useful to date the infection precisely. For the diagnosis of congenital toxoplasmosis, specific IgE detected was less frequently than IgM or IgA (25 versus 67.3%), but its detection during follow-up of children may be interesting, reflecting an immunological rebound. Finally, IgE was detected early and persisted longer in progressive toxoplasmosis with cervical adenopathies, so it was also a good marker of the evolution of toxoplasma infection.

Prevalence of *Toxoplasma gondii* in cats from Colombia, South America and genetic characterization of *T. gondii* isolates

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Abstract

Cats are important in the epidemiology of *Toxoplasma gondii* infection because they are the only hosts that can excrete the environmentally-resistant oocysts. In the present study, prevalence of *T. gondii* was determined in serum, feces, and tissues of 170 unwanted cats from Colombia, South America. Antibodies to *T. gondii* were assayed by the modified agglutination test and found in 77 of 170 (45.2%) cats with titers of <1:5 in 93, 1:5 in eight, 1:10 in 17, 1:20 in 10, 1:40 in seven, 1:80 in four, 1:160 in eight, 1:320 in six, and 1:640 or higher in 17 cats. *T. gondii* oocysts were not found in feces of any cat as ascertained by bioassay in mice. Tissues (brain, heart, tongue) of 116 cats were bioassayed in mice or cats. *T. gondii* was isolated from tissues of 15 of the 42 cats with titers of 1:40 or higher and not from any of the 90 cats titers of 1:20 or lower. Of the 29 cats whose tissues were bioassayed individually, *T. gondii* was isolated from the tongues of nine, hearts of eight, and brains of five. Mice inoculated with tissues of 12 of 15 infected cats died of toxoplasmosis; with nine *T. gondii* isolates all infected mice died. Overall, 65 of 92 (70%) of *T. gondii*-infected mice died of toxoplasmosis. Genotyping of these 15 isolates using polymorphisms at the SAG1, SAG2, SAG3, BTUB, and GRA6 loci revealed that three isolates (TgCtCo1, 2, and 7) had Type I alleles and one isolate (TgCtCo8) had Type II allele at all five loci. Eleven isolates contained the combination of Type I and III alleles and were divided into three genotypes, with TgCtCo3, 5, 6, 9, 12, 13 and 15 had alleles I, I, III, I and III, TgCtCo4, 10, 11 had alleles I, III, III, I and I, and TgCtCo14 had alleles I, III, III, III, and III, at loci SAG1, SAG2, SAG3, BTUB and GRA6, respectively. All infected mice from

Screening by Ophthalmoscopy for *Toxoplasma* Retinochoroiditis in Colombia

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Jorge Enrique Gómez-Marín, MD, PhD

PURPOSE: To measure the prevalence of toxoplasmic retinal scars in a young university population.

DESIGN: Observational cohort study.

METHODS: The study was performed at the “Universidad del Quindío,” Armenia (Colombia), from November to December 2005. Indirect ocular funduscopy by ophthalmologists was performed in students, teachers, and administrative staff between 18 and 45 years of age without previous ocular pathology. The diagnostic criteria were based on the observation of typical funduscopic lesions and the detection of positive immunoglobulin (Ig) G anti-*Toxoplasma* antibodies.



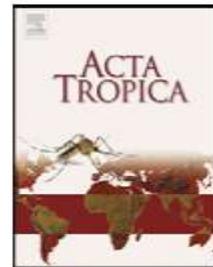
First Colombian Multicentric Newborn Screening for Congenital Toxoplasmosis

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Table 2. Frequency of markers for congenital toxoplasmosis in hospitals and maternal child care centers in 7 cities.

City	Toxoplasmosis history during pregnancy	IgM umbilical cord blood	IgA umbilical cord blood	Hospitals or maternal child centers
Armenia	27/753 (3.5%)	6/753 (0.79%)	0/75 (0%)	1. Hospital San Juan de Dios
	35/568 (6.1%)	19/568 (3.3%)	0/57 (0%)	2. Hospital La Misericordia
	5/196 (2.5%)	6/196 (3.0%)	0/19 (0%)	3. Hospital del Sur
Total in Armenia	64/1517 (4.2% IC95% 3.4–5.3)	31/1517 (2.0% IC95% 1.3–2.8)	0/151 (0% IC95% 0–2.4)	Total markers: 6.2%
Barranquilla	6/1043 (0.5%)	1/1043 (0.09%)	0/104 (0%)	4. H. Universidad del Norte
	7/688 (1.0%)	0/688 (0%)	1/95 (1.0%)	5. Hospital Santa Mónica
	4/1170 (0.3%)	1/1170 (0.8%)	3/117 (2.5%)	6. Hospital Niño Jesús
Total in Barranquilla	17/2901 (0.58% IC95% 0.5–1.3)	2/2901 (0.06% IC95% 0–2)	4/316 (1.2% IC95% 0.3–3.3)	7. Total markers: 1.8%
Bogota	5/544 (0.9%)	4/544 (0.73%)	0/54 (0%)	8. Clínica Colombia
	15/1971 (0.76%)	2/1971 (0.1%)	1/191 (0.52%)	9. Engativá
	0/301 (0%)	0/301 (0%)	0/30 (0%)	10. La Victoria
	2/545 (0.36%)	1/545 (0.18%)	0/28 (0%)	11. Simon Bolívar
	14/2037 (0.68%)	5/2037 (0.24%)	1/203 (0.49%)	12. Instituto Materno Infantil
Total in Bogota	36/5398 (0.66% IC95% 0.4–0.8)	12/5398 (0.2% IC95% 0.08–0.3)	2/506 (0.39% IC95% 0.04–1.4)	13. Total markers: 1.2%
Bucaramanga	2/1.019 (0.19%)	1/1.019 (0.09%)	1/141 (0.7%)	14. Hospital de Floridablanca
	0/659 (0%)	2/659 (0.3%)	1/76 (1.3%)	15. UIMIST
	7/596 (1.1%)	1/596 (0.16%)	0/69 (0%)	16. Los Comuneros
	0/560 (0%)	3/560 (0.53%)	1/66 (1.5%)	17. Local del Norte
	1/202 (0.49%)	0/202 (0%)	0/30 (0%)	18. ESE Giron
Total in Bucaramanga	10/3036 (0.32% IC95% 0.1–0.5)	7/3036 (0.23% IC95% 0.04–0.4)	3/382 (0.78% IC95% 0.1–2.2)	19. Total markers: 1.3%
Cucuta	6/1124 (0.53% IC95% 0.06–1)	0/1124 (0% IC95% 0–0.3)	0/110 (0% IC95% 0–3.2)	20. Hospital Erasmo Meoz; Total markers: 0.5%
Florencia	4/510 (0.78% IC95% 0.2–1.9)	9/510 (1.8% IC95% 0.5–3)	0/56 (0% IC95% 0–6.3)	21. Clínica MediLaser; Total markers: 3.1%
Riohacha	6/801 (0.74% IC95% 0.09–1.4)	0/801 (0% IC95% 0–0.4)	0/92 (0% IC95% 0–3.9)	22. Nuestra Señora de los Remedios; Total markers: 0.7%



Toxoplasmosis in military personnel involved in jungle operations

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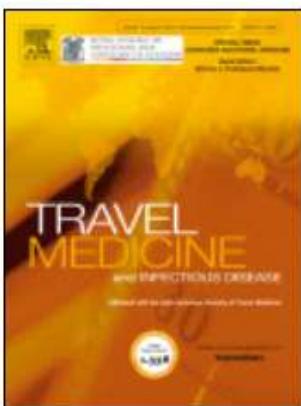


Fig. 1. Colombian map indicating the geographical region where soldiers performed operations in the jungle. The zone is depicted in red. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Table 2Risk factors associated to prevalence in Colombian soldiers operating in the jungle.^a.

Risk factor	Prevalence in exposed to jungle military operations population n/N (%)	Prevalence in non-exposed to jungle military operations population n/N (%)	OR	p Value
Contact with cats	119/153 (77)	272/336 (81)	0.82	0.24
Consumption of wild animals	287/361 (79)	108/132 (81)	0.86	0.33
Armadillo	219/277 (79)	40/176 (81)	0.85	0.29
Iguane	25/35 (71)	37/458 (80)	0.59	0.13
Bear	9/23 (71)	89/372 (80)	0.61	0.16
Tigrillo (<i>Felis tigrina</i>)	2/3 (66)	393/490 (80)	0.49	0.48
Turtle	97/123 (78)	298/370 (80)	0.9	0.38
Deer	12/15 (80)	383/478 (80)	0.99	0.6
Occasional use of chlorine tablets for water	52/70 (74)	341/420 (81)	0.66	0.12
Undercooked meat	74/90 (82)	303/381 (79)	1.19	0.33
Dinking boiled water	12/17 (70)	383/474 (80)	0.57	0.22

^aAnswers were missed in some questionnaires.

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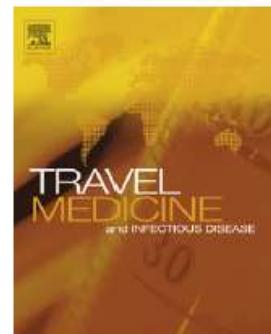
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REVIEW

Toxoplasmosis as a travel risk



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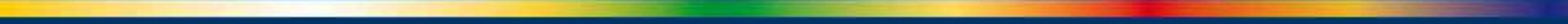
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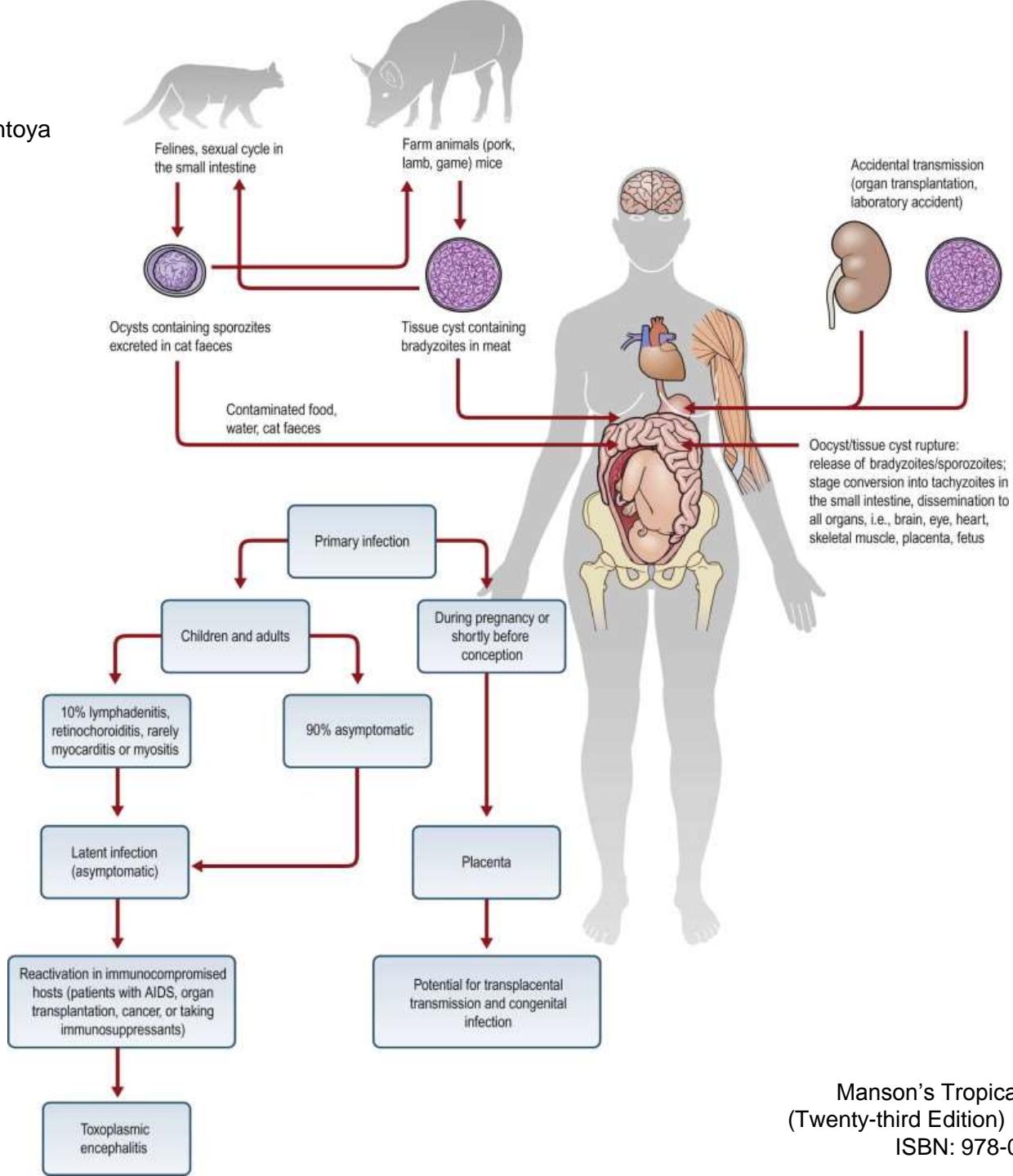
Toxoplasmosis



- Grupos de mayor riesgo
 - embarazadas no infectadas
 - inmunodeprimidos

Life cycle of *T. gondii* and clinical manifestations of toxoplasmosis.

(With permission from Montoya JG, Liesenfeld O. Lancet 2004;363:1965–76.)



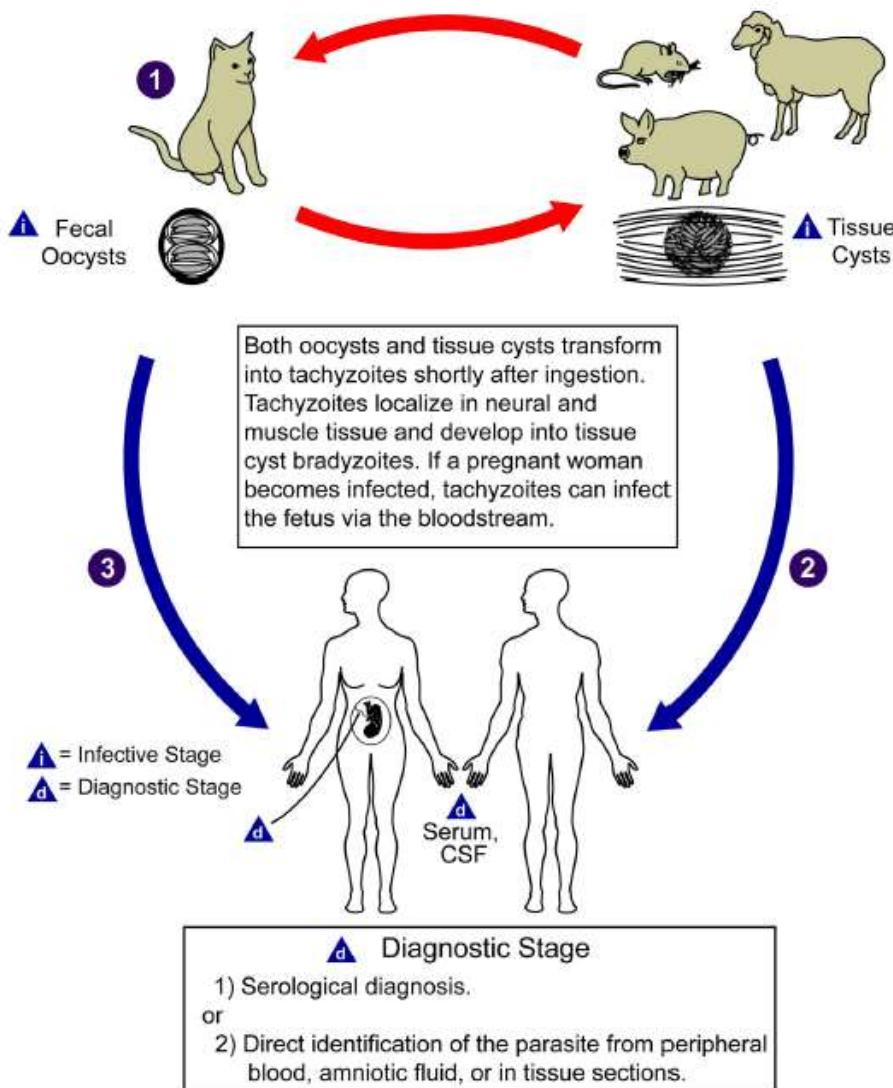
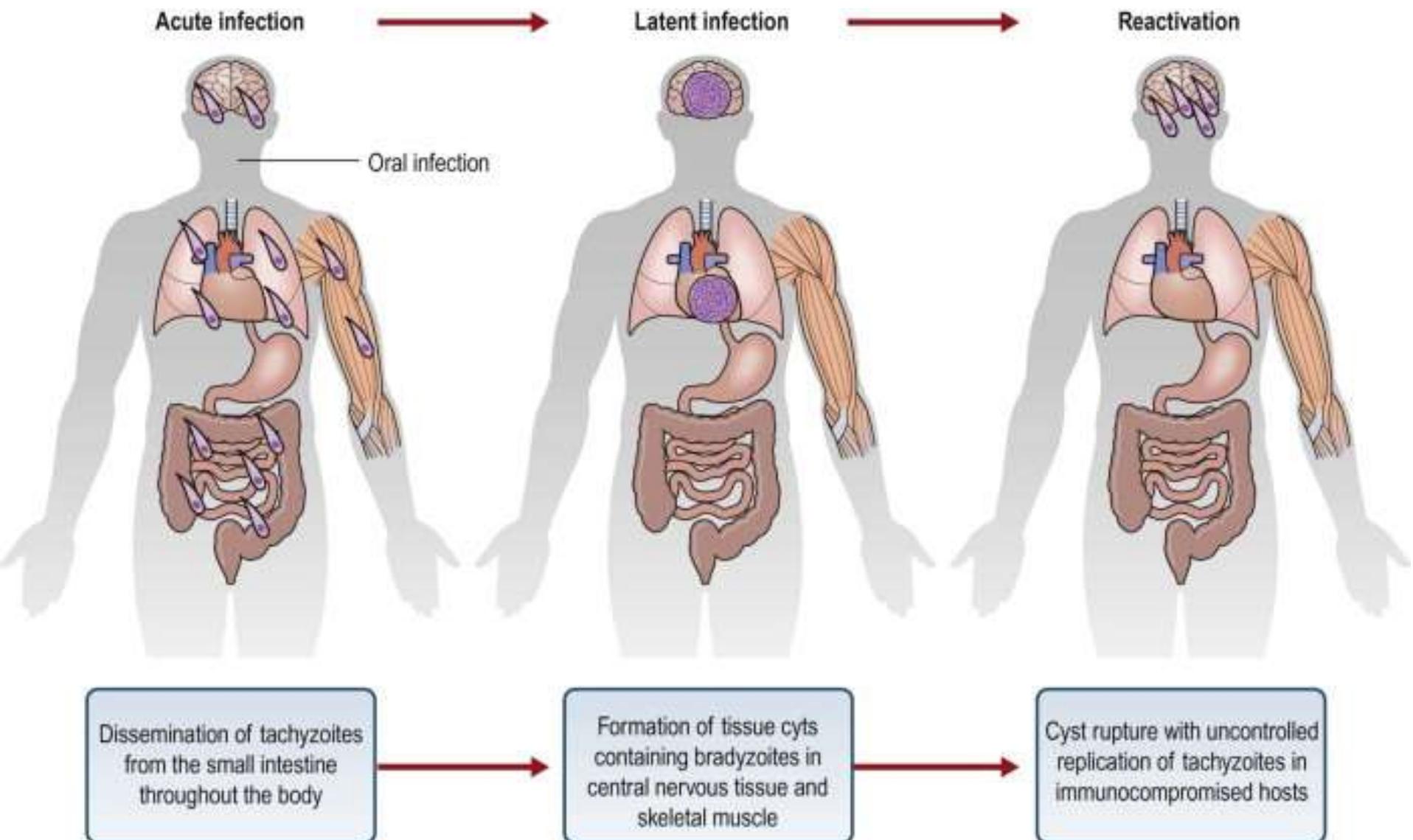


Fig. 1 Life cycle of *T. gondii* (From <http://www.dpd.cdc.gov/dpdx>). Members of the cat family (Felidae) are the only known definitive hosts for the sexual stages of *T. gondii* and thus are the main reservoirs of infection. Cats become infected with *T. gondii* by carnivorous ①. After tissue cysts or oocysts are ingested by the cat, viable organisms are released and invade epithelial cells of the small intestine where they undergo an asexual followed by a sexual cycle and then form oocysts, which are excreted. The unsporulated oocyst takes 1–5 days after excretion to sporulate (become infective). Although cats shed oocysts for only 1–2 weeks, large numbers may be shed. Oocysts can survive in the environment for several months and are remarkably resistant to disinfectants, freezing, and drying, but are killed by heating to 70 °C for 10 min. Human infection may be acquired in several ways: A) ingestion of undercooked infected meat containing *Toxoplasma* cysts ②; B) ingestion of the oocyst from fecally contaminated hands or food ③; C) organ transplantation or blood transfusion; D) transplacental transmission; E) accidental inoculation of tachyzoites. The parasites form tissue cysts, most commonly in skeletal muscle, myocardium, and brain; these cysts may remain throughout the life of the host.

Stages of infection with *T. gondii* in humans.



Toxoplasmosis

En el hospedero intermediario

- Hombre
 - Fase proliferativa: zoítos penetran las células se multiplican por endodiogenia, y rompen la célula liberando taquizoítos
 - Fase quística: los zoítos penetran a una célula formando una membrana quística se multiplican por endodiogenia, degeneran la célula formando un seudoquiste

Toxoplasmosis

En el hospedero definitivo

- Fase esquizogónica
 - el zoíto penetra las células de la pared intestinal del felino, forma allí esquizontes los que después se rompen.
- Fase gamagónica
 - el zoíto penetra a las células de la pared intestinal del felino formando micro y macro gametos
- Fase esporogónica
 - los gametos se fecundan formando un cigoto que sale a la luz intestinal - ooquiste-2 esporoblastos- 4 esporozoítos- 4 trofozoítos.

TABLE
48.1**Rates of Congenital Transmission and Risk of Congenital Infection in Offspring**

Gestational Age at Maternal Seroconversion (Weeks)	Risk of Congenital Infection		Development of Clinical Signs in Infected Off-Spring	
	(%)	95% CI	(%)	95% CI
13	6	3–9	61	34–65
26	40	33–47	25	18–33
36	72	60–81	9	4–17

Modified after Montoya JG, Remington JS. Clin Infect Dis 2008;47:554–66.

Toxoplasmosis

- Trofozoíto (taquizoitos)
 - forma de media luna
 - 4-6 micras de largo, 2 micras de ancho
 - núcleo redondo a un extremo, cuerpo paranuclear
 - gránulos yuxtanucleares, conoide y taxonemas
- ooquiste
 - oval
 - 11-14 micras por 9-11 micras
 - 4 esporozoítos
 - pared refringente y transparente

▼ ***Toxoplasma gondii* tachyzoites.**

Tachyzoites (trophozoites) of *Toxoplasma gondii* are approximately 4-8 µm long by 2-3 µm wide, with a tapered anterior end, a blunt posterior end and a large nucleus. They may be found in various sites throughout the body of the host.

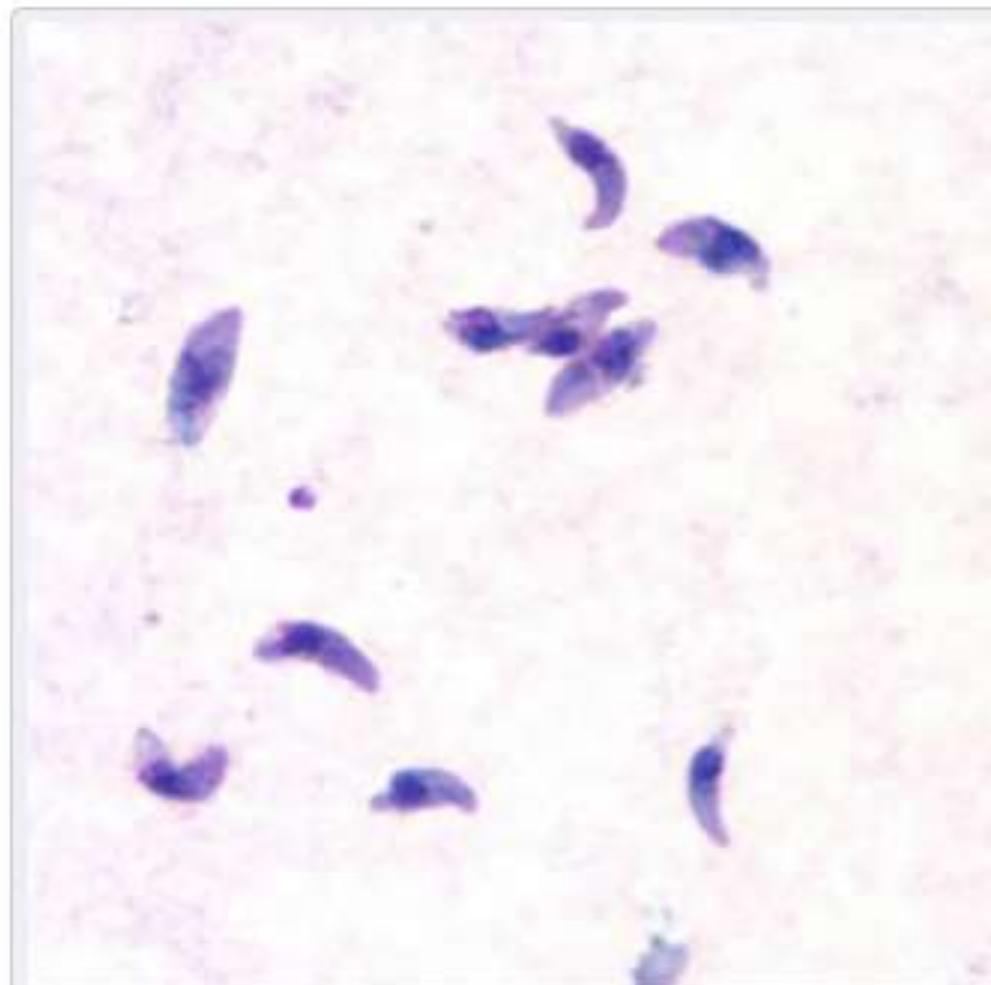


Figure A: *Toxoplasma gondii* tachyzoites, stained with Giemsa, from a smear of peritoneal fluid obtained from a laboratory-inoculated mouse.

▼ ***Toxoplasma gondii* unsporulated oocysts.**

Oocysts of *Toxoplasma gondii* are shed only in the feces of domestic and wild felids, the definitive hosts. Sexual reproduction takes place in the intestinal epithelium of the cat host and cysts are shed unsporulated in the feces. In the environment, cysts take 48-72 hours to sporulate and become infective. Mature oocysts measure 10-12 µm in diameter and contain two sporozoites. Human infection may occur either from ingestion of sporulated oocysts, or ingestion of meat infected with trophozoites.



Figure A: Unsporulated *T. gondii* oocyst in an unstained wet mount.



Figure B: Unsporulated oocyst of *T. gondii* in an unstained wet mount, viewed with differential interference contrast (DIC) microscopy.



Figure C: *T. gondii* oocysts in a fecal floatation.

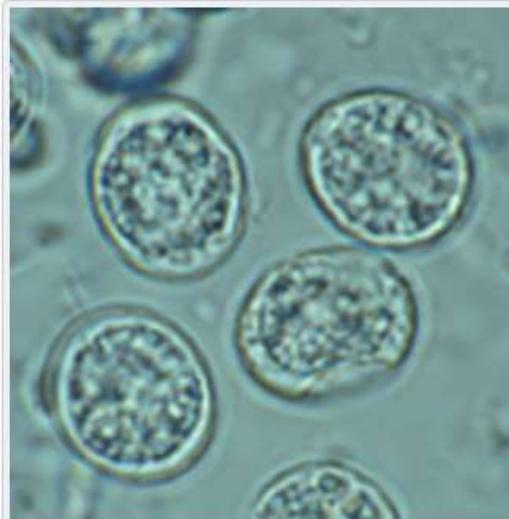


Figure D: Higher magnification of **Figure C**.

► ***Toxoplasma gondii* sporulated oocyst.**

Oocysts of *Toxoplasma gondii* are shed only in the feces of domestic and wild felids, the definitive hosts. Sexual reproduction takes place in the intestinal epithelium of the cat host and cysts are shed unsporulated in the feces. In the environment, cysts take 48-72 hours to sporulate and become infective. Mature oocysts measure 10-12 µm in diameter and contain two sporocysts. Human infection may occur either from ingestion of sporulated oocysts, or ingestion of meat infected with trophozoites.



Figure A: *Toxoplasma gondii* sporulated oocyst in an unstained wet mount.



Figure B: *Toxoplasma gondii* sporulated oocyst in an unstained wet mount, viewed under differential interference contrast (DIC) microscopy.



▼ ***Toxoplasma gondii* cyst in brain tissue.**

Cysts of *Toxoplasma gondii* usually range in size from 5-50 μ in diameter. Cysts are usually spherical in the brain but more elongated in cardiac and skeletal muscles. They may be found in various sites throughout the body of the host, but are most common in the brain and skeletal and cardiac muscles.

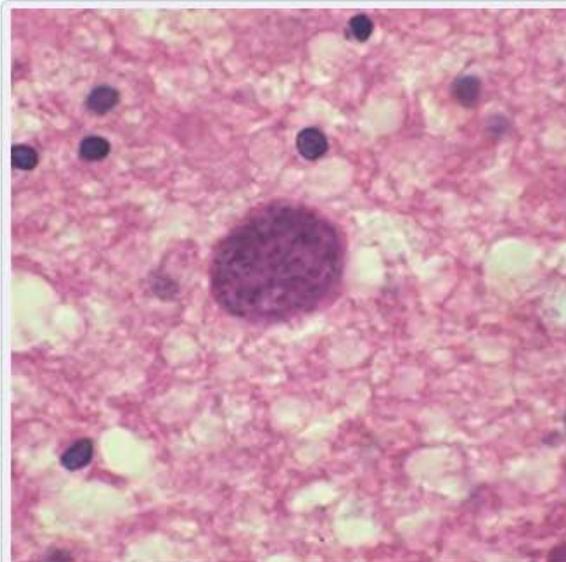


Figure A: *Toxoplasma gondii* cyst in brain tissue stained with hematoxylin and eosin.

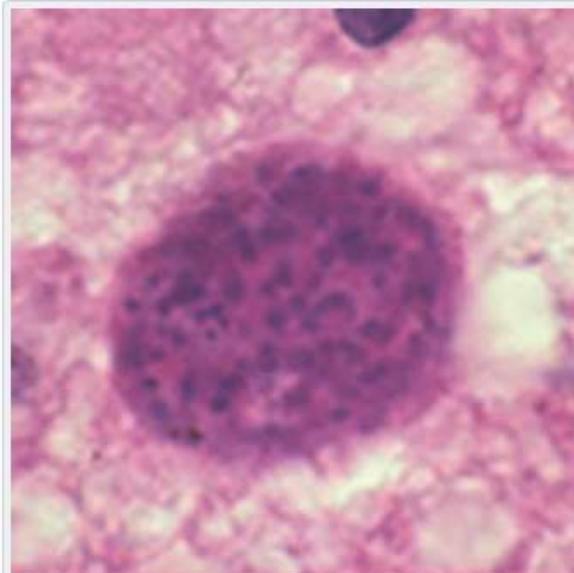


Figure B: *Toxoplasma gondii* cyst stained with hematoxylin and eosin.



▼ **Ocular toxoplasmosis: Chorioretinitis.**
Ocular toxoplasmosis.



Figure A: Severe, active retinochoroiditis.



Figure B: Peripheral retinochoroiditis.



Figure C: Central, healed retinochoroiditis.

Toxoplasmosis

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Table 1 Main clinical presentations of toxoplasmosis.

Host immune status	Clinical presentation	Signs and symptoms	Percentage ^a [ref]
Immunocompetent	Asymptomatic	None	80–90% [14–18]
	Infectious mononucleosis-like syndrome	Cervical adenopathies	75% [23,24]
		Asthenia	69–81% [18,19,24]
		Fever	45–81% [18,19,23]
		Sore throat	15–20% [18,19,23]
	Ocular toxoplasmosis	Chorioretinitis	2–19% [15–17,19]
Immunocompromised	Congenital toxoplasmosis	Ocular lesions	18% [85]
		Intracranial lesions	13% [85]
		Any clinical manifestation	24% [85]
	Ocular toxoplasmosis	Chorioretinitis	1–21% [86]
	Toxoplasmic encephalitis	Focal signs	70% [87]
		Headache	55% [87]
		Motor-sensory defects	49% [87]
		Seizures	22% [87]
		Other neurological signs	8% [87]

^a Percentage of each sign or symptom with regard to clinical presentation. [ref] Reference.

Toxoplasmosis

Clínica

TABLE
48.2

Overview of Clinical Presentations, Associated Symptoms, Pathological Changes, and Differential Diagnoses of Infection with *T. Gondii*

Clinical Feature (Host Immune Status)	Signs and Symptoms	Pathology	Differential Diagnosis
Lymphadenitis (immunocompetent)	Absent (90% of cases); rarely fever, malaise, night sweats, hepatosplenomegaly, lymphadenopathy	Follicular hyperplasia, irregular clusters of epithelioid histiocytes invading the margins of the germinal centres	Hodgkin's disease, mononucleosis, cat scratch fever, lymphoma, leukaemia
Toxoplasmic encephalitis (immunocompromised)	Hemiparesis, personality changes, aphasia, seizures, weakness, sensory abnormalities	Multiple brain abscesses, foci of enlarging necrosis, microglial nodules	Multifocal leukoencephalopathy, fungal and mycobacterial infection
Retinochoroiditis (immunocompetent and immunocompromised)	Ocular pain, loss of visual acuity, scotoma, photophobia	Necrotizing retinitis at the posterior pole and inner layer (frequently unilateral)	CMV retinitis, syphilis, infection with herpes simplex or varicella zoster
Congenital toxoplasmosis (immunocompetent mothers)	Microcephaly, blindness, epilepsy, psychomotor or mental retardation	Necrosis of cortex and basal ganglia, hydrocephalus, periaqueductal and periventricular vasculitis	Infection with herpes simplex virus, CMV, rubella virus

Toxoplasmosis

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TABLE 1 Parasites involving the heart according to the causative agent, geographic distribution, and usual mode of transmission

Disease	Causative agent	Geographic distribution	Mode of transmission
Chagas' disease (American Trypanosomiasis)	<i>Trypanosoma cruzi</i>	Mexico, Central and South America	Skin or mucosal entry of stools of infected <i>reduviid</i> vectors Blood transfusion Organ transplantation Perinatal Oral
African Trypanosomiasis	<i>Trypanosoma brucei, rhodesiense or gambiense</i>	Africa (Sudan, Angola, Congo, Uganda, Ivory Coast, Chad)	Bites of <i>Glossina (Tsetse)</i> flies
Amoebiasis	<i>Entamoeba histolytica</i>	Developing countries	Fecal-oral
Toxoplasmosis	<i>Toxoplasma gondii</i>	Worldwide	Ingestion of undercooked infected pork meat Fecal-oral Blood transfusion Perinatal Transplantation
Cysticercosis	<i>Taenia solium</i>	Rural areas, poor hygiene, more prevalent in developing countries)	Ingestion of contaminated food with <i>Taenia solium</i> eggs (green leafs, salads)
Echinococcosis	<i>Echinococcus granulosus</i>	Worldwide distribution (rural areas)	Ingestion of eggs from infected canids
Trichinellosis	<i>Trichinella spiralis</i>	Worldwide distribution	Ingestion of infected undercooked pork meat

Toxoplasmosis

Clínica

Toxoplasmosis as a travel risk

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Fig. 3 Cervical lymphadenopathy in a patient after three months of untreated primary toxoplasmosis (Source: Dr. Jorge Enrique Gómez-Marin, Centro de Investigaciones Biomédicas, Armenia, Quindío, Colombia).



Fig. 4 Retinal exudative lesion in acquired ocular toxoplasmosis. (Source: Dr. Jorge Enrique Gómez-Marin, Centro de Investigaciones Biomédicas, Armenia, Quindío, Colombia).

Travel Med Infect Dis. 2014 Nov-Dec;12(6 Pt A):592-601.
doi: 10.1016/j.tmaid.2014.05.007. Epub 2014 Jun 7.
Toxoplasmosis as a travel risk.
Sepúlveda-Arias JC¹, Gómez-Marin JE², Bobić B³,
Naranjo-Galvis CA⁴, Djurković-Djaković O⁵.

Toxoplasmosis

Clínica

TABLE
48.3

Baseline Characteristics and Clinical Signs and Symptoms in Patients with Toxoplasmic Encephalitis

Parameter	Value
Baseline Characteristics	
Sex (% males)	86
Age (mean, SD)	40 ± 9.5
CD4 cell count (median, IQR /10 ⁶ /L)	27 (9–62)
Positive <i>T. gondii</i> serology	97%
Prophylaxis for toxoplasmosis	32%
Suggestive signs on brain imaging	98%
Signs and Symptoms	
Fever	59%
Headache	55%
Seizures	22%
Focal signs	70%
Motor-sensory defects	49%
Cranial nerve palsies	12%
Ataxia, aphasia, hemianopsia	15%
Cerebellar signs	10%
Diffuse neuropsychiatric signs	15%
Coma, lethargy	5%
Other neurological signs	8%

Modified after Raffi F, et al. AIDS 1997;11:177–84.

Toxoplasmosis

Congénita

- Triada de Sabin
 - Hidrocefalia
 - Calcificaciones
 - corioretinititis
- Diagnóstico diferencial con s. TORCH

Toxoplasmosis

Diagnóstico

- inmunocompetente
 - aguda: IgM positiva, IgG negativa o positiva en ascenso o título altos
 - crónica o latente: IgM negativa, IgG positiva (títulos bajos)

Toxoplasmosis

Diagnóstico

- Estudio de LCR
- Frotis sanguíneos
- Biopsia de tejidos
- Inoculación de animales de experimentación (bajo rendimiento)
- PCR (técnica biología molecular)

Toxoplasmosis

Diagnóstico serológico

- Sabin y Feldman (Test de referencia clásico)
- HMI (Hemoaglutinación indirecta)
- FC (Fijación de complemento)
- IFI (Inmunofluorescencia indirecta)
- ELISA (Inmunoensayoenzimatico)
- Intradermoreacción (poco usada)

Toxoplasmosis

Diagnóstico serológico

- inmunocompetente
 - aguda: IgM positiva, IgG negativa o positiva en ascenso o título altos
 - crónica o latente :IgM negativa, IgG positiva (títulos bajos)
- inmunodeprimido
 - aguda :IgM ? IgG?; crónica : IgM negativa IgG?
 - PCR T. gondii, de gran utilidad

Toxoplasmosis

Diagnóstico en RN

- Clínica, radiología (hidrocefalia, calcificaciones cerebrales)
- Serología
 - IgM se desarrolla tarde
 - IgG no apoya diagnóstico (traspaso desde la madre) si los títulos del rn fueran mayores podría orientar, no es frecuente
 - PCR ayuda

Toxoplasmosis

Tratamiento

Table 2 Recommended dose of antibiotics for toxoplasmosis. A. First line antibiotics. B. Second line antibiotics.

	Drug	Adult dose	Pediatric dose
A. First line antibiotics	Pyrimethamine	200 mg oral first day followed by 75 mg once a day.	2 mg/kg first dose and then 1 mg/kg day during one year (congenital form) or 4–5 weeks in acquired infections.
	Sulfadiazine	4 g/day.	50 mg/kg twice daily (100 mg/kg/day) during one year in congenital infection or for 4–5 weeks in acquired forms.
	Folinic acid	15 mg/day.	7.5 mg/day.
B. Second line antibiotics	TMP-SMX	TMP (160 mg)/SMX (800 mg) every 12 h. Or 2 pills TMP (80 mg)/SMX (400 mg) every 12 h, for 6 weeks.	No reports for use in children with congenital forms.
	Azithromycin Intravitreal clindamycin plus dexamethasone ^a	500 mg/day for 5 weeks. 1 mg intravitreal clindamycin and 400 µg dexamethasone.	10 mg/kg/day during two months. Not reported.

Trimethoprim (TMP), Sulfamethoxazole (SMX).

^a In refractory cases to first and second line antibiotics in ocular toxoplasmosis.

Toxoplasmosis

Conclusiones

- Patología sistémica de gran importancia
- Pocos estudios en Risaralda
- Importante en VIH/SIDA
- De gran relevancia durante el embarazo
- Riesgo de transmisión alimentaria

Toxoplasmosis

Conclusiones

- Necesidad de estudio e investigación, control y vigilancia