

Prevalence of and Risk Factors for *Toxoplasma gondii* Infection and Ocular Toxoplasmosis in Cameroon



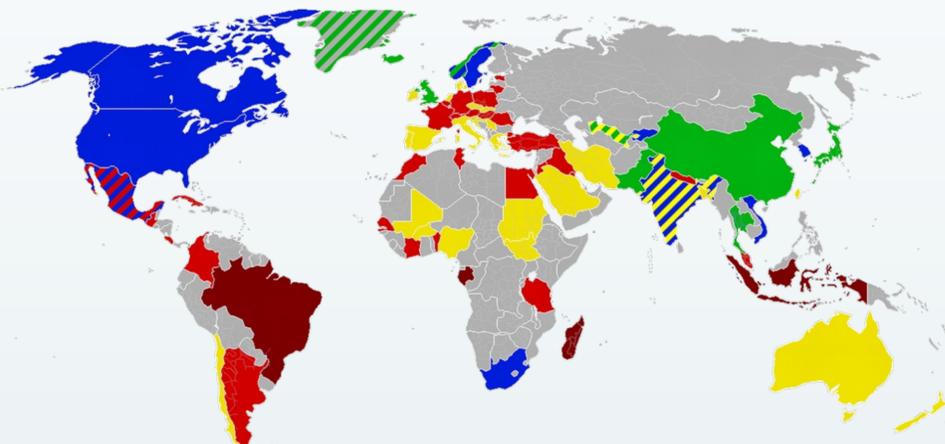
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Introduction

- *Toxoplasma gondii* is a protozoan parasite that infects **25-30%** of humans worldwide.¹
- Felines are the definitive hosts for *T. gondii*.
- Humans can get infected via water, soil, and vegetables contaminated with cat feces, as well as undercooked contaminated meat.
- In humans, *T. gondii* can infect the retina, causing toxoplasmic retinochoroiditis, the most common intraocular infection worldwide.
- Rates of infection and rates of ocular involvement vary widely by geographic region.²⁻⁵

World Map of Global Seroprevalence for *T. gondii*¹



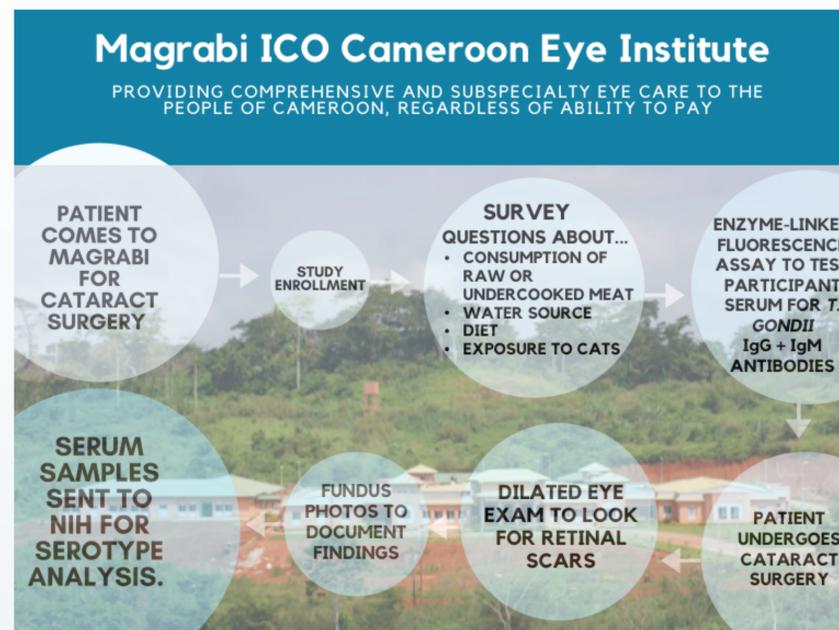
Color Code: Dark red: >60%; Red: 40-60%; yellow: 20-40%; Blue: 10-20%; Green <10%; Grey: no data available; Striated: strong regional differences

- **Strain hypothesis:** Divergent, atypical strains of *T. gondii* contribute to the variability of ocular risk observed across different regions.³

Objectives

1. Determine prevalence of *T. gondii* infection and ocular toxoplasmosis in Cameroon.
2. Characterize the distribution of *T. gondii* strains in seropositive patients.
3. Evaluate the relationship between *T. gondii* serotype and prevalence of infection and ocular involvement.
4. Assess factors other than parasite strain type that could be associated with higher rates of *T. gondii* infection and ocular involvement.

Methods

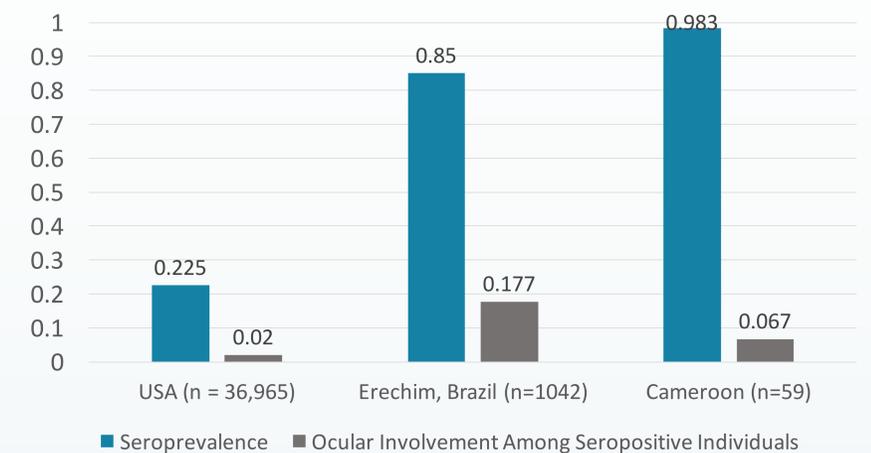


- This cross-sectional study is being conducted at Magrabi ICO Cameroon Eye Institute (MICEI).
- We chose 234 patients with unrelated cataract surgery to represent the general population.
- A survey assesses factors that may contribute to risk of infection or ocular involvement.
- We use enzyme-linked fluorescence assays to test participant serum for *T. gondii* IgG and IgM antibodies to confirm infection.
- Ophthalmologists perform dilated eye exams to evaluate participants for signs of ocular toxoplasmosis. All findings are documented with fundus photos.
- At the NIH, we will use serotyping assays to test serum samples for antibody reactivity against allelic peptide motifs derived from distinct parasite strains to characterize the distribution of strains in Cameroon.

Results (In Progress)

- So far, we have enrolled 85 individuals in the study.
- For those study participants, we have received *T. gondii* antibody test results for 59 individuals to date; 58 out of those 59 individuals had IgG antibodies against *T. gondii*, indicating past infection.
- We have documented four cases of ocular toxoplasmosis.
- Survey responses have yet to be reviewed and analyzed.

Prevalence of *T. gondii* Infection and Ocular Toxoplasmosis^{4,5}



Fundus photo taken from a participant with a scar suggestive of ocular toxoplasmosis. Participant also had IgG antibodies against *T. gondii*. Ocular toxoplasmosis scars can be non-specific, but common characteristics of inactive scars include:

1. Distinct borders with variable pigment
2. Full-thickness with variable excavation of the choroid
3. Disproportionally affects the macula

Conclusions

- Preliminary data indicates the prevalence of *T. gondii* infection is exceptionally high in Cameroon.
- Survey data will help us assess the relevance of known risk factors to this elevated infection rate.
- The four documented cases of ocular toxoplasmosis suggest that the rate of ocular involvement among seropositive individuals may be higher than the rate in countries like the US, but lower than the rate in Brazil.
- We will characterize the distribution of *T. gondii* strains in seropositive individuals and look for atypical divergent strains that may be responsible for the ocular involvement rates we observe.

Acknowledgements

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