

## **The unique discovery of the *Toxoplasma* parasite within a group of microbial communities in 2 pediatric cases diagnosed with anterior uveitis in rural Egypt.**

Key words: *Toxoplasma*- anterior chamber- uveitis- metagenomic- aquatic-environment

This study is an initial endeavor to discover the nature of waterborne ocular infections that affect many children living in rural areas in Egypt, causing anterior uveitis up to the loss of vision. This infection was previously believed to be due to a parasitic stage related to trematodes, correlating its appearance after bathing of children in the Nile River canals which are known to harbor such parasitic stages. Unfortunately, all the recommended medical therapeutic protocols were unsuccessful to treat these ocular lesions. Whole genome sequencing with subsequent analytical bioinformatics was done for 4 ocular lesions after surgical removal from the eye's anterior chamber of 4 affected children. Surprisingly, *Toxoplasma gondii* was reported to attain the highest ratio among a large number of Eukaryotes and prokaryotes communities, including various genera related to Ascomycota, Bacteria and Archaea within all the 4 samples which were proved serologically negative for both anti-*Toxoplasma* IgG and IgM in pre-operative investigation. It's argued that urbanization, global warming, and economic globalization, among other anthropocentric and environmental changes may impact the way of emergence and spread of many microbial infections including *Toxoplasma*. The results of this 39 preliminary research may change the view of specialists in parasitology, environmental health, and Medicine in general, about the nature of *Toxoplasma* infection, from being opportunistic only to becoming harmful to a vital body organ as the eye, specifically of children. In addition, the study may stimulate further research concerning *Toxoplasma* transmission via water and its ecological relationship to the plethora of aquatic species, plus finding an exceptional therapeutic approach, suitable to deal with such microbial community in this sensitive location. Expanding on the possible ecological and biological changes that may have occurred in the microbes themselves, their propagation, and steady fastness in nature, are all worth further investigation.

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