

Is Biopsy Necessary? An unusual case of Toxoplasmosis

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Introduction

Toxoplasma gondii is a parasite that infects many animals including mammals, marsupials and birds, and humans are accidental hosts. Primary infection is usually subclinical or mild in healthy patients, however, in immunocompromised patients it can present as headache, confusion, motor weakness, fever; if left untreated it can be fatal. It can affect many organs, but more commonly affects the nervous system. Usually, multiple ring enhancing lesions are seen on brain imaging. The objective of this case is to be aware of atypical presentations.

Case Report

- The patient is a 48-year-old woman with history of HIV on Bictegravir/Emtricitabine/Tenofovir with a CD4 of 91 and a HIV viral load of 80 copies/mL, who was transferred for neurosurgical evaluation due to 2 weeks right sided temporoparietal headache with dizziness and loss of visual acuity.
- Imaging showed a solitary <2cm ring enhancing lesion in the right parietal lobe with edema.
- Laboratory studies including CBC, BMP, Blood cultures, RPR, Quantiferon gold, Galactomannan assay, Beta D glucan, EBV PCR, CMV PCR Chest X-ray and CT abdomen/pelvis were unremarkable.
- Toxoplasma serology was negative for IgM and positive for IgG.
- Ophthalmology exam was obtained and was unrevealing. MRI of the brain showed findings supporting AIDS-associated lymphoma rather than toxoplasmosis.
- The decision to pursue biopsy was made with patient as she was concerned for malignancy.
- Biopsy was consistent with Toxoplasmosis as it revealed tachyzoites and extensive necrosis.
- After biopsy, patient was started on a 6-week course of Trimethoprim/Sulfamethoxazole and a steroid taper and she made a full recovery.

Imaging and Pathology

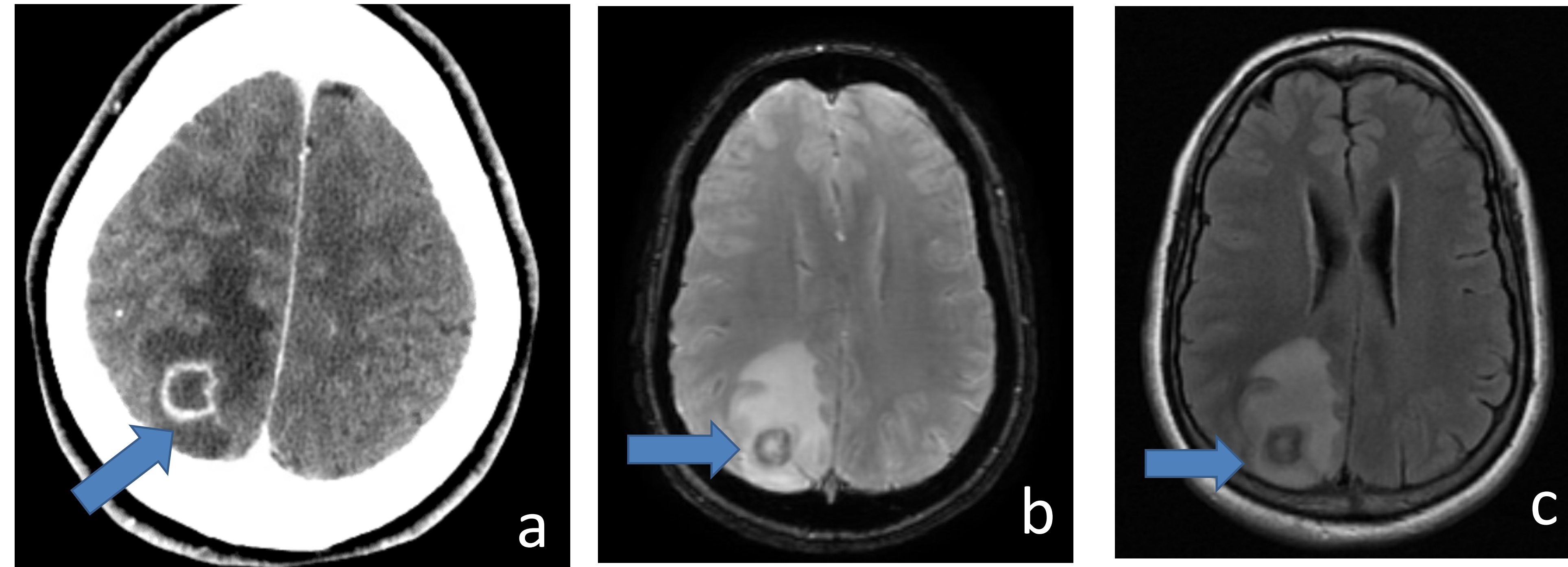


Image a: CT scan brain with <2cm ring enhancing lesion shown with blue arrow
Images b and c: Brain MRI showing ring enhancing solitary lesion shown with blue arrow

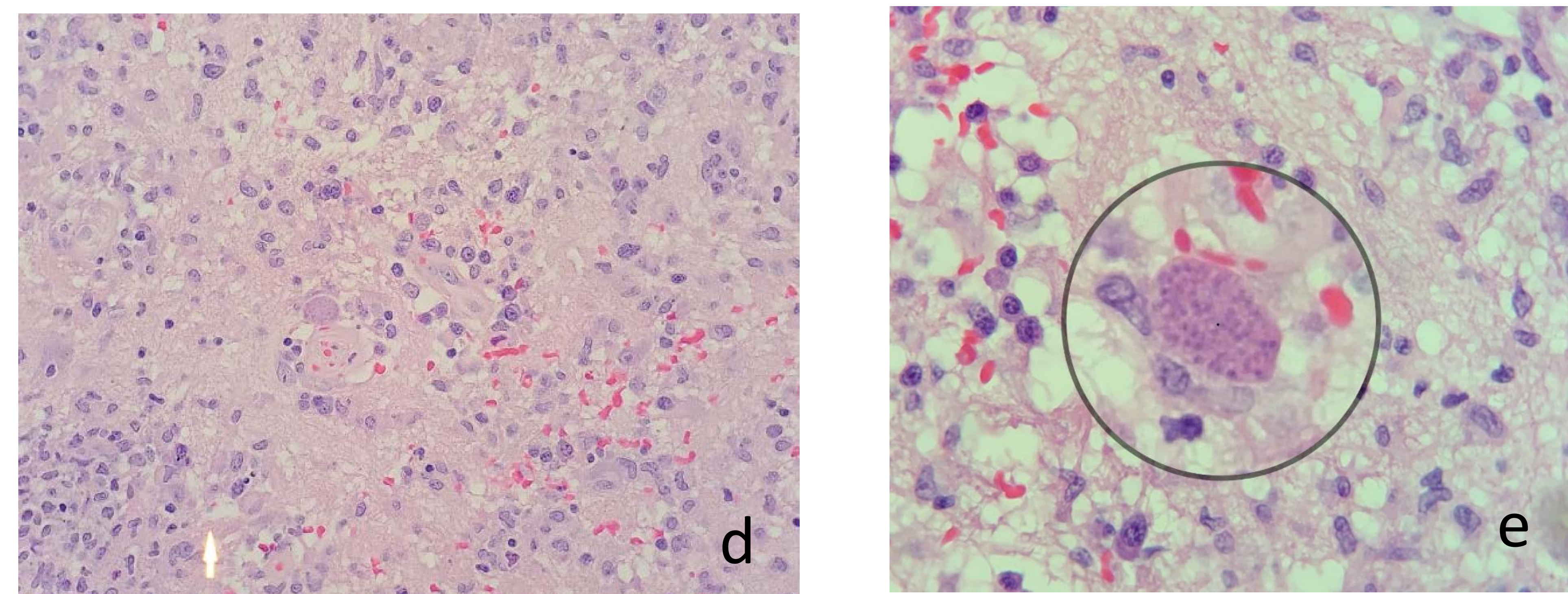


Image d and e: Brain biopsy showing tachyzoites. Image e showing it in magnification

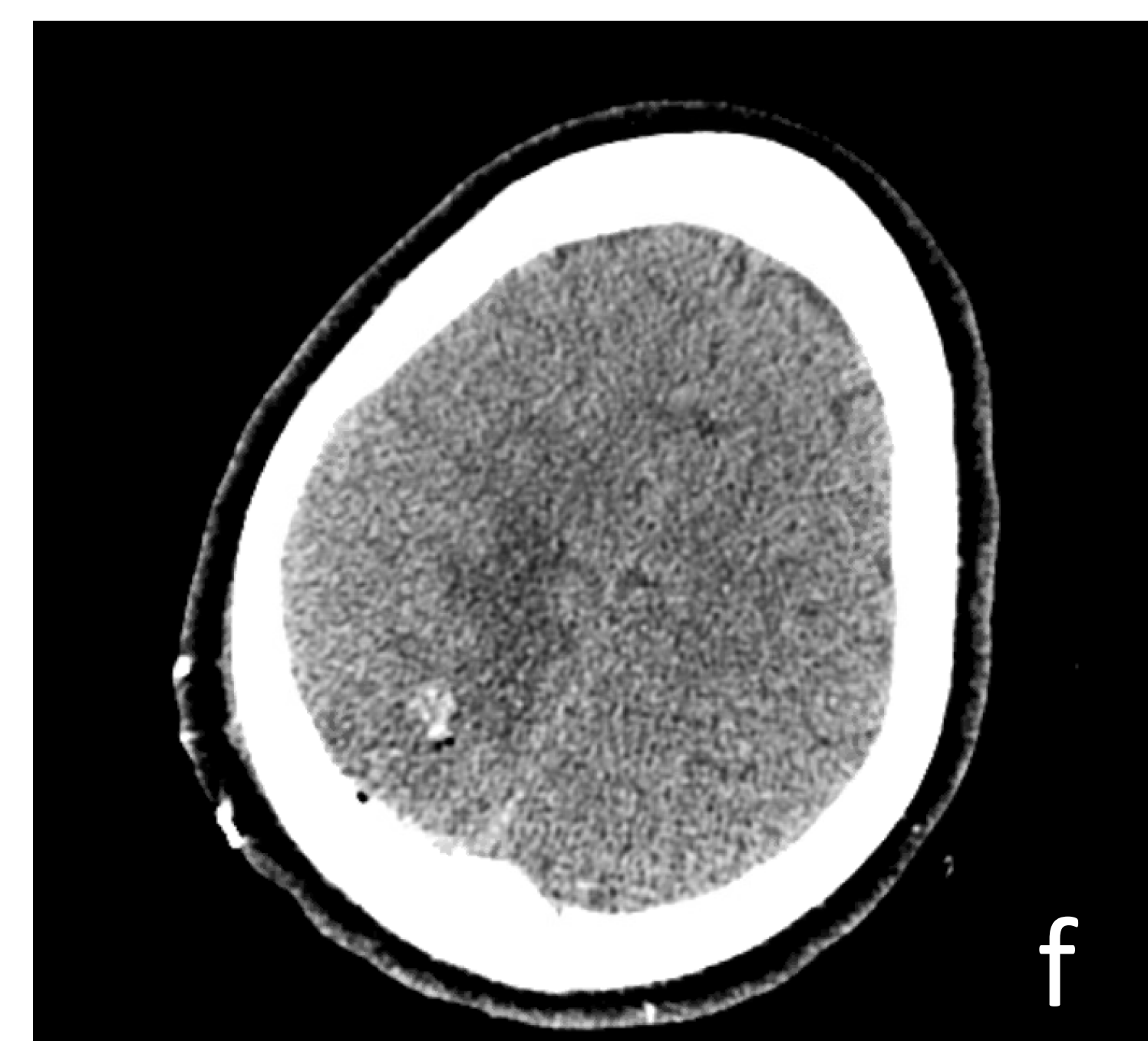


Image f: Brain CT imaging post biopsy showing post operative changes

Discussion

- *Toxoplasma gondii* is a widespread parasite that affects about one third of the world population.
- The prevalence of cerebral toxoplasmosis, however, has rapidly declined in the United States in the last decades due to advancements in sanitation, food and water management, as well as the more widespread availability of ART (anti retroviral therapy) for patients living with HIV.
- Treatment of Toxoplasmosis is usually based on clinical diagnosis based on presentation, imaging and following response to empiric therapy.
- When imaging is equivocal or concerning for other differential diagnosis biopsy should be pursued earlier as it can give a definitive diagnosis that will help with treatment plan.

References

- Dunay IR, Gajurel K, Dhakal R, Liesenfeld O, Montoya JG. Treatment of Toxoplasmosis: Historical Perspective, Animal Models, and Current Clinical Practice. *Clin Microbiol Rev.* 2018 Sep 12;31(4):e00057-17. doi: 10.1128/CMR.00057-17. PMID: 30209035; PMCID: PMC6148195.
- Greigert V, Bittich-Fahmi F, Pfaff AW. Pathophysiology of ocular toxoplasmosis: Facts and open questions. *PLoS Negl Trop Dis.* 2020 Dec 31;14(12):e0008905. doi: 10.1371/journal.pntd.0008905. PMID: 33382688; PMCID: PMC774838.
- Schlüter D, Barragan A. Advances and Challenges in Understanding Cerebral Toxoplasmosis. *Front Immunol.* 2019 Feb 14;10:242. doi: 10.3389/fimmu.2019.00242. PMID: 30873157; PMCID: PMC6401564.
- Toxoplasma gondii* Encephalitis | NIH. (2017, July 25). Clinical Info HIV. <https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-opportunistic-infection/toxoplasma-gondii-encephalitis>

Disclaimer statement: The authors of this case report have no commercial interest or relevant financial interests to disclose



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