www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Short Report

Open Access, Volume 6

Typical imaging features of cerebral toxoplasmosis in an immunocompromised patient: A fatal case report

Asma Cherif*; Fadwa Jaheddine; Zineb Labbi; Firdaous Touarsa, Mohamed Jiddane

Department of Neuroradiology (Specialty Hospital), Ibn Sina University Hospital, Rabat, Morocco.

***Corresponding Author: Asma Cherif**

Department of Neuroradiology (Specialty Hospital), Ibn Sina University Hospital, Rabat, Morocco.

Email: asmacherif27@gmail.com

Abstract

Cerebral toxoplasmosis remains a major opportunistic infection in immunocompromised patients. We describe a fatal case in a 39-year-old woman whose diagnosis was established through CT and MRI. This case illustrates the typical radiologic features of cerebral toxoplasmosis and emphasizes the importance of early imaging-based identification.

Received: May 05, 2025

Accepted: May 27, 2025

Published: Jun 03, 2025

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3618

Case presentation

A 39-year-old woman with a history of immunosuppression was admitted with progressive headaches, altered mental status, and right-sided hemiparesis. A non-contrast CT of the brain demonstrated multiple hypodense lesions with surrounding edema in the basal ganglia and frontal lobes. Brain MRI confirmed the presence of multiple ring-enhancing lesions on post-contrast T1-weighted images. These were accompanied by hyperintense signals on T2-weighted and FLAIR sequences, especially at the corticomedullary junction and basal ganglia, consistent with cerebral toxoplasmosis [1,2]. Empiric anti-toxoplasma therapy was initiated promptly. Despite intensive care management, the patient's condition deteriorated, and she passed away. Post mortem examinassions confirme the diagnoses.

Discussion

Cerebral toxoplasmosis is the most frequent cause of intracranial mass lesions in patients with advanced immunosuppression, particularly HIV/AIDS [3]. The disease typically manifests on imaging as multiple ring-enhancing lesions with surrounding vasogenic edema. These lesions are often located in deep gray matter structures, particularly the basal ganglia, and at the gray-white matter junction [4]. A key radiological clue is the "eccentric target sign," which appears as a mural nodule attached to the wall of a ring-enhancing lesion (Figures 1,2) an imaging feature considered suggestive of toxoplasmosis [5]. In immunocompromised patients presenting with neurologic deficits and such findings, cerebral toxoplasmosis should be strongly suspected. Differentiating toxoplasmosis from primary CNS lymphoma and other opportunistic infections is critical, as management and prognosis vary significantly. In some cases, advanced imaging such as Thallium-201 SPECT can help distinguish between infectious and neoplastic lesions. One recent case report illustrates how negative thallium uptake favored toxoplasmosis over tumor recurrence in a patient with astrocytoma [3]. Although diagnosis can often be inferred from imaging and serology, treatment delay-especially in high-risk patients-can lead to poor outcomes, as was evident in this case [6,7].

Figure 1: Coronal post-contrast CT image showing revealing ring-enhancing lesions predominantly in the basal ganglia with extensive surrounding edema.

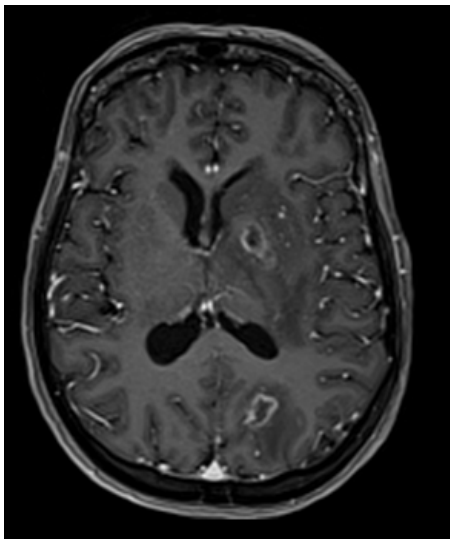

Figure 2: Post-contrast axial T1-weighted MRI revealing ring-enhancing lesions predominantly in the basal ganglia.

Conclusion

This case demonstrates the classical imaging appearance of cerebral toxoplasmosis in a severely immunocompromised patient. Accurate and prompt interpretation of CT and MRI is vital for early diagnosis and therapeutic decision-making. Delays in treatment can have fatal consequences, underscoring the importance of recognizing these typical radiological patterns.

References

1. Awang Senik NI, Abdul Halim S, Sapia NA. A case of cerebral toxoplasmosis: "Eccentric and concentric sign" in MRI. IDCases. 2023; 33: 01824. doi: 10.1016/j.idcr.2023.e01824.

2. Ghasemi R, Hakim Zadeh Z, Gilani A, et al. An HIV-positive woman with massive brain lesion due to toxoplasmosis: A case report. Clin Case Rep. 2023; 11(7): 7688. doi:10.1002/ccr3.7688.

3. Dela Vega MP, Opinaldo PV, Batara JM. Differentiating cerebral toxoplasmosis and tumor recurrence by Thallium-201 SPECT in a 28-year-old female with astrocytoma. Case Rep Oncol. 2023; 16(1): 372-377. doi: 10.1159/000529830.

4. DiPellegrini G, Boccaletti R, Mingozzi A, et al. Single thalamic localization of brain toxoplasmosis mimicking brain tumors: Radiological and clinical findings. Surg Neurol Int. 2023; 14: 82. doi:10.25259/SNI_34_2023.

5. Bonato FCS, Rivero RLM, Garcia HH, Vidal JE. Calcified cerebral toxoplasmosis associated with recurrent perilesional edema causing neurological manifestations in an HIV-infected individual: case report with a decade-long follow-up. Rev Inst Med Trop Sao Paulo. 2024; 66: 15. doi:10.1590/S1678-9946202466015.

6. Turkistani A, AlSindi T, Homoud M, et al. Solitary cerebellar toxoplasmosis as the first presentation of HIV infection: A case report and review of literature. Cureus. 2024; 16(9): 70456. doi:10.7759/cureus.70456.

7. Brewer D, MacMillan ML, Schleiss MR, et al. Detection and treatment of cerebral toxoplasmosis in an aplastic pediatric post-allogeneic hematopoietic cell transplant patient: a case report. BMC Infect Dis. 2021; 21: 941. doi:10.1186/s12879-021-06650-2.