

## BIBLIOGRAPHIC INFORMATION SYSTEM

**Journal Full Title:** [Journal of Biomedical Research & Environmental Sciences](#)

**Journal NLM Abbreviation:** J Biomed Res Environ Sci

**Journal Website Link:** <https://www.jelsciences.com>

**Journal ISSN:** 2766-2276

**Category:** Multidisciplinary

**Subject Areas:** [Medicine Group](#), [Biology Group](#), [General](#), [Environmental Sciences](#)

**Topics Summation:** 133

**Issue Regularity:** [Monthly](#)

**Review Process:** [Double Blind](#)

**Time to Publication:** 21 Days

**Indexing catalog:** [IndexCopernicus ICV 2022: 88.03](#) | [GoogleScholar](#) | [View more](#)

**Publication fee catalog:** [Visit here](#)

**DOI:** 10.37871 ([CrossRef](#))

**Plagiarism detection software:** [iThenticate](#)

**Managing entity:** USA

**Language:** English

**Research work collecting capability:** Worldwide

**Organized by:** [SciRes Literature LLC](#)


**License:** Open Access by Journal of Biomedical Research & Environmental Sciences is licensed under a Creative Commons Attribution 4.0 International License. Based on a work at SciRes Literature LLC.

Manuscript should be submitted in Word Document (.doc or .docx) through

**Online Submission**

form or can be mailed to [support@jelsciences.com](mailto:support@jelsciences.com)

**IndexCopernicus  
ICV 2022:  
83.03**

 **Vision:** Journal of Biomedical Research & Environmental Sciences main aim is to enhance the importance of science and technology to the scientific community and also to provide an equal opportunity to seek and share ideas to all our researchers and scientists without any barriers to develop their career and helping in their development of discovering the world.

CASE REPORT

# Granulomatous Amebic Encephalitis Caused by *Entamoeba Dispar*

Weiwei Qi, Junjie Guo and XueXu\*

Department of Neurology, First Affiliated Hospital of Sun Yat-Sen University, Guangzhou

## Abstract

*Entamoeba dispar*, belonging to the Genus *Entamoeba* along with *Entamoeba histolytica* that causes amebiasis, was previously considered a non-pathogenic amoeba and an ideal model for studying the pathogenesis of amebiasis. However, since its strains were isolated from symptomatic patients in Brazil in 1996, its pathogenic potential has been a subject of discussion. We report a case of multiple granulomatous encephalitis in a 4-year-old immunocompetent boy presenting with left eye esotropia. Sequences of *E. dispar* were detected in his cerebrospinal fluid through Next-Generation Sequencing (NGS). After three courses of metronidazole therapy, the brain and lung lesions showed significant reduction in subsequent examinations. This case expands the spectrum of diseases associated with *E. dispar*.

A previously healthy 4-year-old boy presented with a 2-year history of progressive left eye esotropia, without accompanying systemic symptoms such as headache, fever, or vomiting. His medical and family histories were unremarkable, with no exposure to contaminated water, undercooked meat, or pigeon feces. Neurological examination revealed subtle signs: slight limitation in left eye abduction and a positive Babinski sign on the left side. Initial laboratory tests showed normal hematologic parameters (WBC  $7.76 \times 10^9/L$ , hemoglobin 130 g/L) and mildly elevated serum alkaline phosphatase (273 U/L) and calcium (2.31 mmol/L). Brain MRI demonstrated multiple heterogeneous lesions in bilateral cerebellar hemispheres, left occipital lobe, medial temporal lobes, right thalamus, and right frontal/parietal lobes. These lesions exhibited ring enhancement with perilesional edema and some with adjacent cystic components (Figures 1a-e).

A stereotactic biopsy of the right frontal lobe lesion revealed granulomatous inflammation with focal necrosis, lymphocyte infiltration, multinucleated giant cells, and structures morphologically consistent with amoebic cysts and trophozoites (Figures 2,3).

Lumbar puncture under general anesthesia showed elevated CSF pressure ( $>330$  mm H<sub>2</sub>O), lymphocytic pleocytosis ( $7 \times 10^6/L$ , 89% lymphocytes), and elevated protein (634 mg/L), though glucose levels were normal (2.7 mmol/L). Next-Generation Sequencing (NGS) of CSF

### \*Corresponding author(s)

**XueXu**, Department of Neurology, First Affiliated Hospital, Sun Yat-Sen University, No. 58 Zhongshan Road 2, Guangzhou 510080, China

**Tel:** +862-082-379-575


**Email:** xuxue2@mail2.sysu.edu.com

**DOI:** 10.37871/jbres2138

**Submitted:** 25 June 2025

**Accepted:** 01 July 2025

**Published:** 01 July 2025

**Copyright:** © 2025 Santos Federico OR, et al., Distributed under Creative Commons CC-BY 4.0 

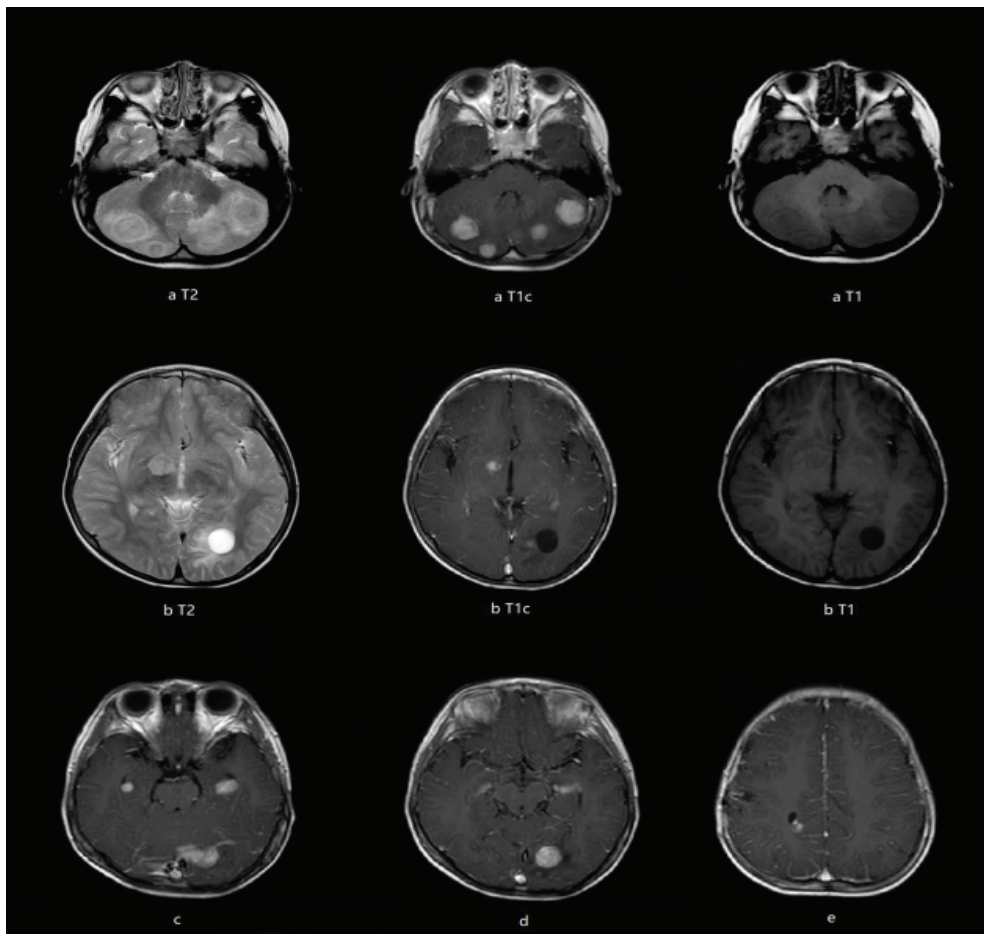
**OPEN ACCESS**

VOLUME: 6 ISSUE: 7 - JULY, 2025

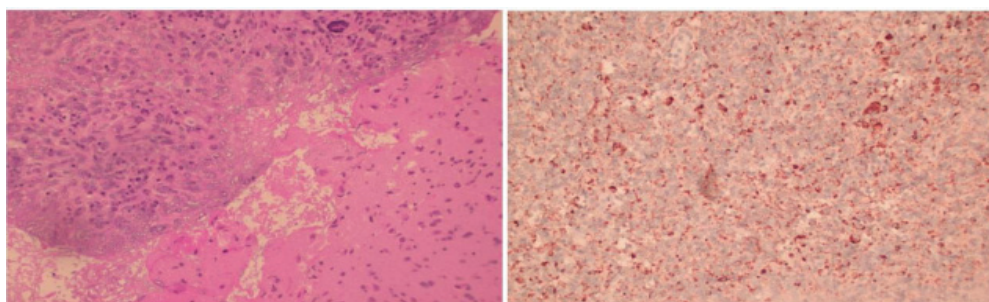


Scan Me

**How to cite this article:** Qi W, Guo J, Xu X. Granulomatous Amebic Encephalitis Caused by *Entamoeba Dispar*. J Biomed Res Environ Sci. 2025 Jul 01; 6(7): 858-861. doi: 10.37871/jbres2138, Article ID: JBRES2138, Available at: <https://www.jelsciences.com/articles/jbres2138.pdf>



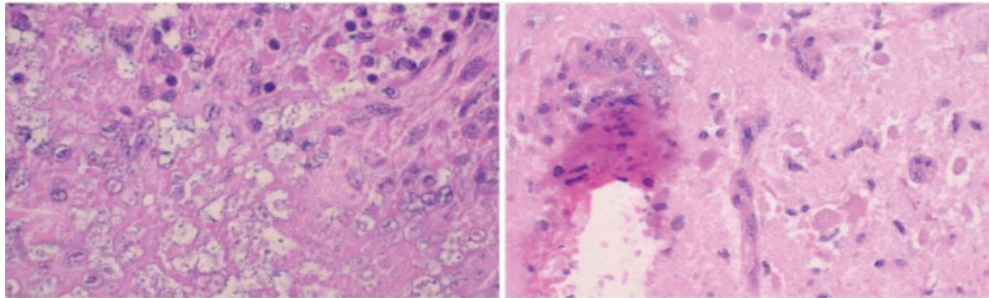
**Figure 1** Magnetic Resonance Imaging (MRI) scans showing multiple heterogeneous lesions in bilateral cerebellar hemispheres, left occipital lobe, medial temporal lobes, right thalamus, and right frontal/parietal lobes. Lesions exhibit ring enhancement, perilesional edema, and some contain adjacent cystic components.



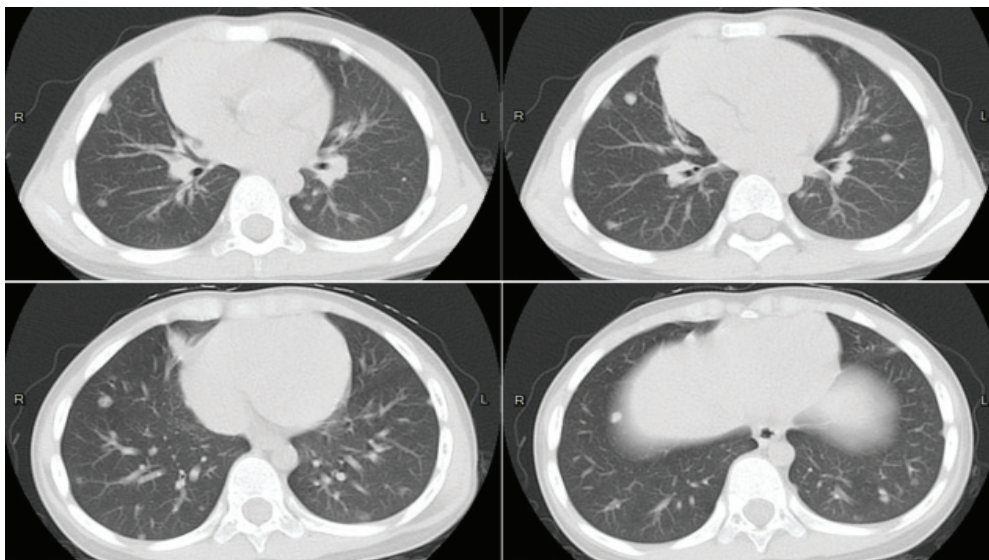
**Figure 2** Histopathological image of stereotactic brain biopsy showing granulomatous inflammation with focal necrosis, lymphocyte infiltration, and multinucleated giant cells.

identified *Entamoeba dispar* (447 reads), while extensive serological tests for bacterial, fungal, and parasitic pathogens (including tuberculosis, toxoplasmosis, and neurocysticercosis) were negative. Chest CT revealed subpleural and mid-lung field nodules (Figure 4), suggesting possible pulmonary involvement. The patient received three

10-day courses of metronidazole (50 mg/kg/day) over five months, with intervals of 1-2 months between courses. Follow-up MRI of 4 years showed progressive resolution of brain lesions, including absorption of the cysts, reduction of lesion size, decreased enhancement and alleviation of the perilesional edema (Figures 5a-e).



**Figure 3** Microscopic visualization of structures morphologically consistent with amoebic cysts and trophozoites within the brain tissue.



**Figure 4** Chest CT scan showing subpleural and mid-lung field nodules, suggestive of possible pulmonary involvement.

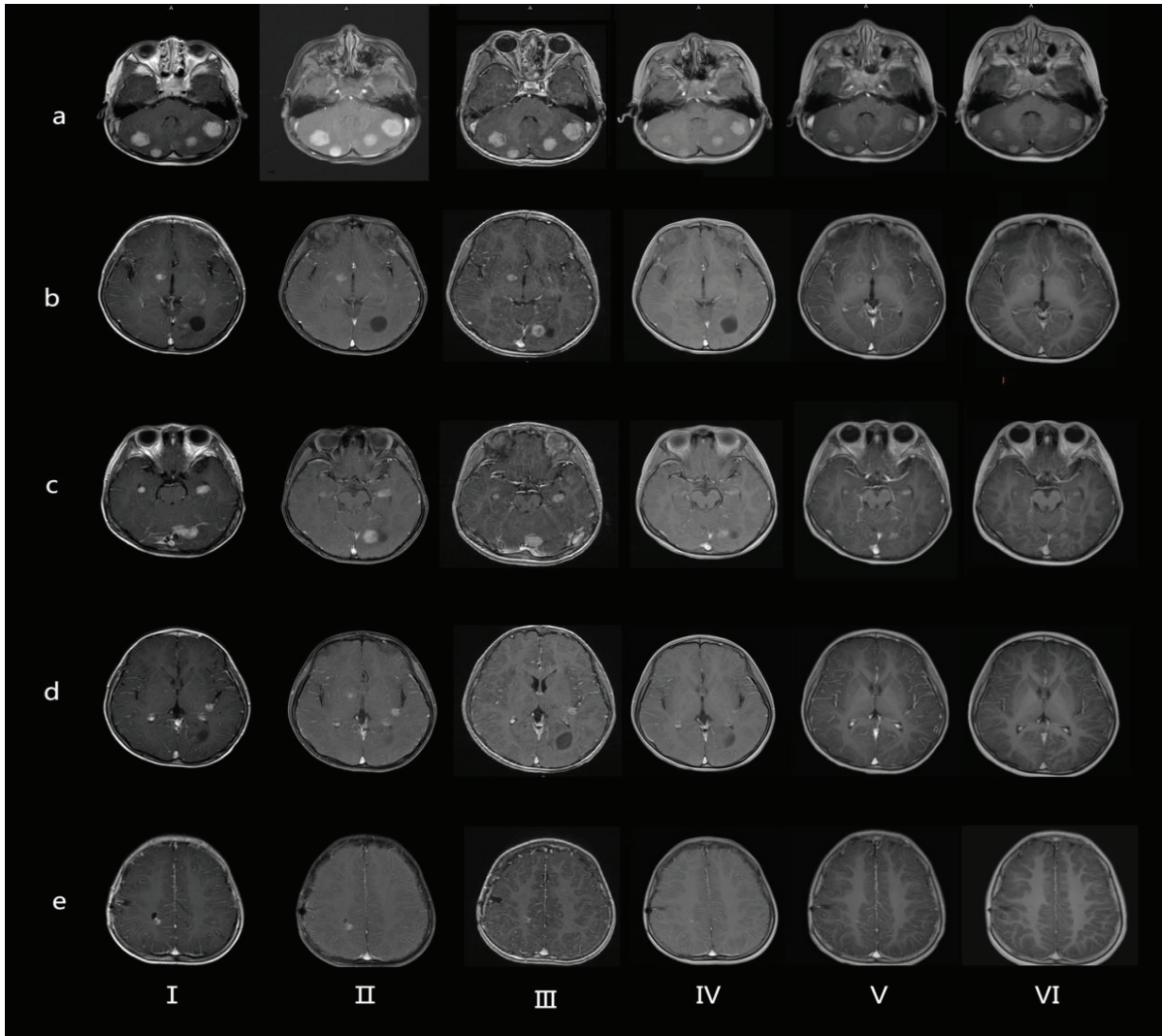
His esotropia resolved completely by the fifth month of treatment, with no residual neurological deficits at one-year follow-up.

Both *Entamoeba dispar* and *Entamoeba histolytica* belong to the Genus *Entamoeba*. Unlike *E. histolytica*, which causes amebiasis, *E. dispar* was long considered a non-pathogenic amoeba and an ideal model for studying the pathogenesis of amebiasis. However, the isolation of *E. dispar* strains from symptomatic patients in Brazil in 1996 [1] and the detection of its DNA sequences in samples from patients with amoebic liver abscess [2] suggest that *E. dispar* may also contribute to the development of lesions in the human intestine and liver. Yet, no cases of Granulomatous Amoebic Encephalitis (GAE) caused by *E. dispar* have been reported.

The diagnosis of GAE relies on pathological evidence: the presence of trophozoites and cysts in brain tissue is necessary. Moderate granulomatous inflammation with prominent vascular involvement

is typically observed on brain biopsy. Additionally, radiological findings and CSF examinations are crucial. MRI often shows single or multiple space-occupying lesions with ring enhancement. CSF parameters usually reveal mild pleocytosis with lymphocytic predominance, high protein concentration, and low or normal glucose concentration. Rarely, *Acanthamoeba* trophozoites may be seen on Giemsa stain of the CSF sediment. With technological advancements, diagnosis can also be made using laboratory testing for the parasite's nucleic acid in CSF, biopsy, or tissue specimens [3,4].

The imaging findings of this case revealed multiple nodular enhancing lesions, with cystic changes in some of the lesions. The Cerebrospinal Fluid (CSF) pressure was significantly elevated, with mild elevation of CSF protein levels, while the CSF glucose and chloride levels were essentially normal. The diagnosis of GAE was established through the detection of *Entamoeba dispar* sequences in the CSF



**Figure 5** Follow-up MRI performed four years after initial presentation, showing progressive resolution of brain lesions, absorption of cystic components, reduced lesion size and enhancement, and alleviated perilesional edema.

by next-generation sequencing. Follow-up after treatment showed gradual reduction in the size of the lesions, which supports the correct diagnosis and effective treatment. This case has expanded our understanding of the pathogenic potential of *Entamoeba dispar*.

## References

- de Martinez AM, Gomes MA, Viana Jda C, Romanha AJ, Silva EF. Isoenzyme profile as parameter to differentiate pathogenic strains of *Entamoeba histolytica* in Brazil. *Rev Inst Med Trop Sao Paulo*. 1996 Nov-Dec;38(6):407-12. doi: 10.1590/s0036-46651996000600004. PMID: 9293086.
- Ximénez C, Cerritos R, Rojas L, Dolabella S, Morán P, Shibayama M, González E, Valadez A, Hernández E, Valenzuela O, Limón A, Partida O, Silva EF. Human amebiasis: breaking the paradigm? *Int J Environ Res Public Health*. 2010 Mar;7(3):1105-20. doi: 10.3390/ijerph7031105. Epub 2010 Mar 16. PMID: 20617021; PMCID: PMC2872301.
- Pana A, Vijayan V, Anilkumar AC. Amebic Meningoencephalitis. 2023 Jan 21. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. PMID: 28613505.
- Kalra SK, Sharma P, Shyam K, Tejan N, Ghoshal U. Acanthamoeba and its pathogenic role in granulomatous amebic encephalitis. *Exp Parasitol*. 2020 Jan;208:107788. doi: 10.1016/j.exppara.2019.107788. Epub 2019 Oct 21. PMID: 31647916.