



Clinical case

Cerebral schistosomiasis mimicking a brain tumor

Une bilharziose simulant une tumeur cérébrale

K Dansokho^{*1}, AM Gaye², GNC Deguenonvo³, R Nougou², RA Ntab⁴,
M Wade¹, MJ Dieme-Ahouidi¹, I Thiam², CMM Dial^{2,3}

Résumé

Introduction : La bilharziose cérébrale est une complication neurologique rare et potentiellement grave de la schistosomiase. Sa présentation clinique et radiologique est peu spécifique et peut simuler une tumeur cérébrale. L'examen histopathologique peut apporter la confirmation diagnostique lorsqu'un prélèvement tissulaire est disponible. Nous rapportons un cas de bilharziose cérébrale à *Schistosoma mansoni* chez une femme de 40 ans.

Cas clinique : Une femme de 40 ans consultait pour des céphalées hémicrâniennes chroniques, des vomissements et des crises convulsives tonico-cloniques généralisées évoluant depuis sept ans. L'examen neurologique retrouvait un ptosis droit, une hémiparésie droite cotée à 4/5, un signe de Babinski positif à droite et indifférent à gauche, avec un score de Glasgow à 15/15. Une hyperéosinophilie à $0,9 \times 10^3/\mu\text{L}$ était notée. La TDM cérébrale

montrait un processus expansif cortico-sous-cortical pariéto-frontal gauche évoquant un glioblastome. L'IRM retrouvait un processus intracrânien pariétal gauche d'allure nécrotique, entouré d'un important œdème avec début d'engagement sous-falcien. L'examen histopathologique de la lésion montrait une inflammation granulomateuse avec histiocytes épithélioïdes, cellules géantes multinucléées et nombreux œufs bilharziens calcifiés et viables, dont l'épéron latéral était compatible avec *Schistosoma mansoni*. La coloration de Ziehl-Neelsen mettait en évidence une coloration rouge-rosée de la coque ovulaire. La patiente a reçu du praziquantel associé à une corticothérapie.

Conclusion : La bilharziose cérébrale à *Schistosoma mansoni* est une présentation rare de la schistosomiase et peut mimer une tumeur cérébrale. Le diagnostic doit être évoqué en zone d'endémie devant une lésion expansive cérébrale associée à un contexte

épidémiologique compatible. L'histopathologie permet une confirmation définitive lorsqu'un prélèvement est obtenu.

Mots-clés : Bilharziose ; cerveau ; *Schistosoma mansoni* ; Sénégal.

Abstract

Introduction: Cerebral schistosomiasis is a rare and potentially severe neurological complication of schistosomiasis. Its clinical and radiological presentation is nonspecific and may mimic a brain tumor. Histopathological examination can provide definitive confirmation when tissue is available. We report a case of cerebral schistosomiasis due to *Schistosoma mansoni* in a 40-year-old woman.

Clinical case: A 40-year-old woman presented with chronic hemicranial headache, vomiting, and generalized tonic-clonic seizures evolving over seven years. Neurological examination revealed right-sided ptosis, right hemiparesis graded 4/5, a right extensor plantar response with an equivocal response on the left, and a Glasgow Coma Scale score of 15/15. Laboratory testing showed eosinophilia at $0.9 \times 10^3/\mu\text{L}$. Brain computed tomography showed a left parietofrontal cortico-subcortical expansile lesion suggestive of glioblastoma. Magnetic resonance imaging demonstrated a necrotic-appearing left parietal intracranial lesion surrounded by marked edema with early subfalcine herniation. Histopathological examination revealed granulomatous inflammation composed of epithelioid histiocytes and multinucleated giant cells surrounding numerous calcified and viable schistosomal eggs, whose lateral spine was compatible with *Schistosoma mansoni*. Ziehl-Neelsen staining highlighted the egg shell in red-pink. The patient was treated with praziquantel and corticosteroids.

Conclusion: Cerebral schistosomiasis due to *Schistosoma mansoni* is an uncommon presentation of schistosomiasis and can closely mimic a brain tumor. In endemic settings, it should be considered in the differential diagnosis of an intracranial mass when the epidemiological context is compatible.

Histopathology provides definitive confirmation when tissue is obtained.

Keywords: Schistosomiasis; brain; *Schistosoma mansoni*; Senegal.

Introduction

Human schistosomiasis is a parasitic disease caused by blood flukes of the genus *Schistosoma* [1]. It is a neglected tropical disease that remains endemic in many tropical regions [2]. Urogenital, intestinal, and hepatosplenic involvement are the most common clinical forms. Central nervous system involvement is uncommon and may present with nonspecific neurological manifestations, resulting in diagnostic delay. Cerebral involvement is classically described more often with *Schistosoma japonicum*, whereas *Schistosoma mansoni* more frequently causes spinal disease; however, cerebral *S. mansoni* granulomas are well documented [3]. Histopathological examination is particularly valuable when a focal mass lesion is biopsied or resected.

We report a histologically confirmed case of cerebral schistosomiasis due to *Schistosoma mansoni* in a 40-year-old woman whose intracranial lesion initially mimicked a primary brain tumor.

Clinical case

A 40-year-old female market gardener from Labgar (Linguère), in northeastern Senegal, was admitted to the Neurosurgery Department of the Fann University Hospital Center for vomiting, generalized tonic-clonic seizures, and relative functional impairment of the right side of the body in a context of chronic headache evolving over seven years. On further questioning, she reported a history of rectal bleeding and abdominal pain.

Physical examination showed a good general condition and no conjunctival pallor. Neurological examination revealed right-sided ptosis, right hemiparesis graded 4/5, a right extensor plantar response with an

equivocal response on the left, and a Glasgow Coma Scale score of 15/15. The remainder of the clinical examination was unremarkable. Laboratory tests showed leukocytosis with eosinophilia at $0.9 \times 10^3/\mu\text{L}$.

Brain computed tomography showed a 23×16 mm left parietofrontal cortico-subcortical expansile lesion with a tumoral appearance, initially suggestive of glioblastoma. Magnetic resonance imaging demonstrated a $25.6 \times 18.8 \times 20.8$ mm necrotic-appearing left parietal intracranial lesion with irregular margins, extensive surrounding edema, and early subfalcine herniation (Figure 1). Magnetic resonance spectroscopy showed an increased choline/N-acetylaspartate ratio, interpreted as supporting a glial neoplasm.

The patient was hospitalized and surgical excision was performed. The immediate postoperative course was uneventful. A control CT scan on postoperative day 2 demonstrated a 3.5 mm left frontoparietal subdural hematoma, deep left frontoparietal hypodensity, and rightward displacement of the lateral ventricles. She was discharged on postoperative day 5 with analgesic therapy, antiepileptic treatment, and a proton-pump inhibitor.

The resected tissue fragment measured 2×1 cm. Histological examination showed brain parenchyma with granulomatous inflammatory lesions composed of epithelioid histiocytes and multinucleated giant cells, with fewer eosinophils, surrounding numerous calcified and viable schistosomal eggs, some with a lateral spine and associated fibrosis (Figure 2). The lateral-spine morphology was compatible with *Schistosoma mansoni*. Ziehl-Neelsen staining produced red-pink staining of the egg shell (Figure 3), a supportive histochemical feature that was interpreted together with egg morphology rather than as a stand-alone species-identification method.

At postoperative day 50, the patient had no complaints. Her general condition was good, the Glasgow Coma Scale score remained 15/15, and no focal motor deficit was found. She was receiving praziquantel and corticosteroids. *Schistosoma* serology had been

requested but was not performed. The patient was subsequently lost to follow-up after one year.

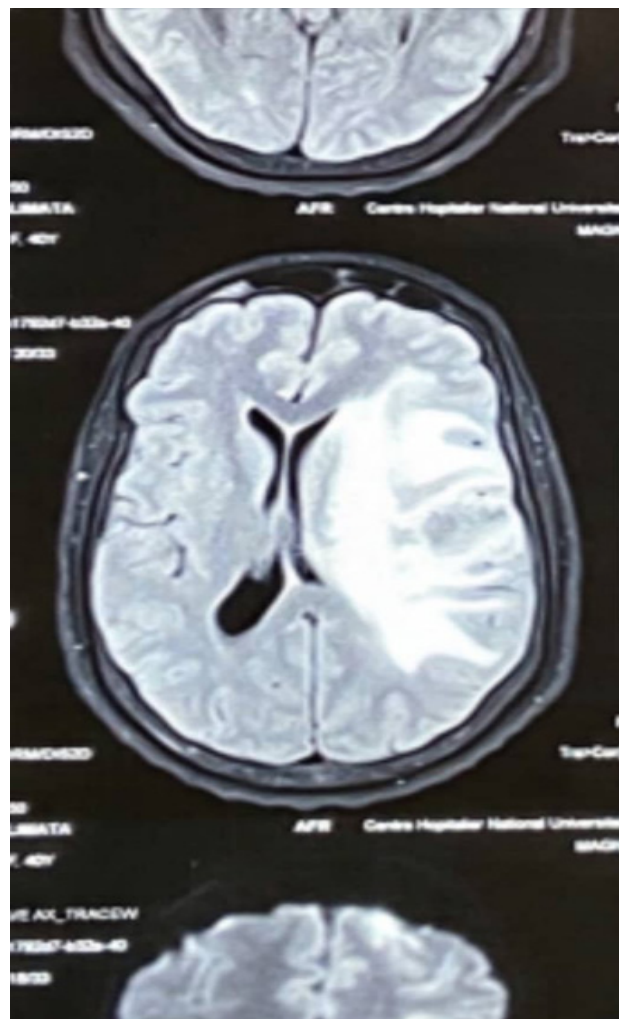


Figure 1. Axial T2/FLAIR-weighted brain MRI showing a necrotic-appearing left parietal intracranial lesion with extensive surrounding hyperintensity.

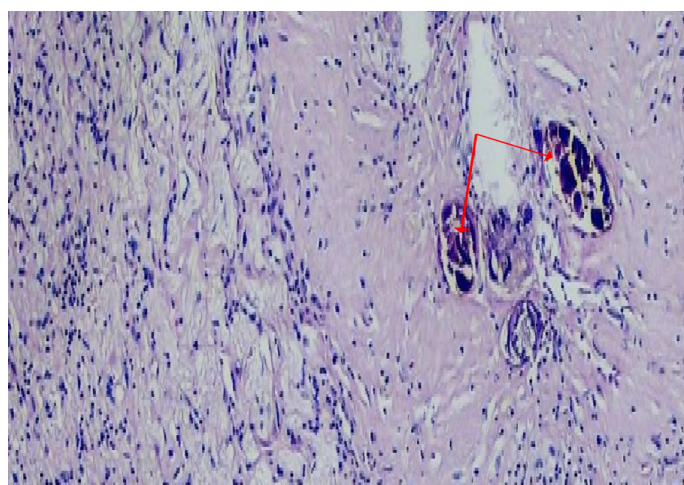


Figure 2. Cerebral schistosomiasis: brain tissue showing granulomatous inflammation composed of epithelioid cells and multinucleated giant cells surrounding schistosomal eggs (arrows), H&E $\times 100$, ACP UCAD.

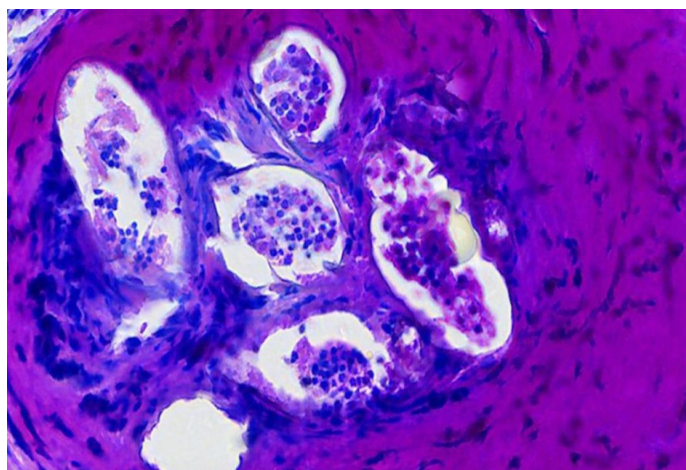


Figure 3. Cerebral schistosomiasis due to *Schistosoma mansoni*: schistosomal egg shells staining red-pink with Ziehl-Neelsen stain ($\times 200$), ACP UCAD.

Discussion

Schistosomiasis remains endemic in Senegal, with important transmission foci in the northern and eastern regions, including areas epidemiologically compatible with the residence of our patient [4,5]. Central nervous system involvement is rare. Tumor-like cerebral forms have been reported, including cerebellar presentations [6]. Schistosomal eggs may reach the central nervous system through retrograde venous migration via Batson's vertebral venous plexus or through systemic vascular pathways [7].

Clinical and radiological findings are nonspecific and can mimic a primary brain tumor, thereby delaying diagnosis. Localized cerebral neuroschistosomiasis may present with seizures, headache, signs of raised intracranial pressure, and focal neurological deficits, while *S. mansoni* neuroschistosomiasis more commonly involves the spinal cord [3]. Peripheral eosinophilia may support the diagnosis, particularly in active infection, but it is neither constant nor specific. In our patient, the prolonged history of headache and seizures, associated with right hemiparesis and eosinophilia, was compatible with a chronic focal cerebral process.

On imaging, CT may show focal hyperdense or mass-like lesions with surrounding hypodense edema and variable enhancement. MRI may demonstrate nodular

or linear enhancement with an arborized appearance, often accompanied by marked vasogenic edema [8,9]. Diffusion-weighted imaging and apparent diffusion coefficient measurements may contribute to the differential diagnosis from glioma or metastasis, although these findings are not pathognomonic [10]. In our case, CT suggested a glioblastoma and MRI showed an irregular necrotic-appearing left parietal lesion with extensive edema and early subfalcine herniation. Magnetic resonance spectroscopy also supported a neoplastic hypothesis, illustrating the radiological overlap between neuroschistosomiasis and brain tumors.

Serology and parasitological examination of stool or urine can support evidence of systemic *Schistosoma* infection [11]. When a focal intracranial lesion is surgically sampled, histopathological examination provides definitive tissue diagnosis. The typical lesion is a granulomatous inflammatory reaction centered on schistosomal eggs, with epithelioid histiocytes, multinucleated giant cells, eosinophils, and variable fibrosis. In *S. mansoni*, the characteristic lateral spine is an important morphological clue. Ziehl-Neelsen staining may show acid-fast positivity of the *S. mansoni* egg shell; however, staining can be variable and should not be used alone for species identification. Molecular methods such as polymerase chain reaction may provide additional confirmation when available [16].

Praziquantel remains the antiparasitic treatment of choice for schistosomiasis. In symptomatic cerebral disease, particularly when a mass lesion is surrounded by substantial edema, corticosteroids are commonly used as adjunctive therapy to reduce the inflammatory response [12]. Surgery is not mandatory in all cases. It is primarily considered when there is major mass effect, diagnostic uncertainty, neurological deterioration despite medical therapy, or a need for tissue confirmation. In the present case, the lesion was completely resected because a primary brain tumor was strongly suspected, and specific antiparasitic therapy was initiated after histopathological diagnosis. The prognosis of cerebral schistosomiasis is often

favorable when diagnosis and treatment are timely, although outcome depends on lesion location, neurological complications, and the degree of tissue injury. In this case, the patient was clinically asymptomatic at postoperative day 50. The main limitations were the absence of schistosomal serology, the absence of parasitological examination of stool and urine, the lack of molecular species confirmation, and subsequent loss to long-term follow-up.

Conclusion

Cerebral schistosomiasis due to *Schistosoma mansoni* is a rare and potentially severe manifestation of schistosomiasis that can closely mimic a brain tumor. The diagnosis should be considered in patients from endemic areas who present with a cerebral mass lesion, particularly when seizures, focal neurological deficits, eosinophilia, or a compatible exposure history are present. Careful epidemiological history and correlation of clinical, biological, and radiological findings are essential. When tissue is obtained, histopathological examination can provide definitive confirmation, while parasitological, serological, and molecular investigations may strengthen species identification and the overall diagnosis.

*Correspondence :

Khadidiatou Dansokho

dansdija@gmail.com

Available online : September 22, 2026

1 : Laboratory of Pathological Anatomy and Cytology, Fann University Hospital Center, Dakar, Senegal

2 : Laboratory of Pathological Anatomy and Cytology, Cheikh Anta Diop University, Dakar, Senegal

3 : Laboratory of Pathological Anatomy and

Cytology, Idrissa Pouye General Hospital, Dakar, Senegal

4 : Department of Neurosurgery, Fann University Hospital Center, Dakar, Senegal

© Journal of african clinical cases and reviews 2026

Conflict of interest : None

References

- [1] Rajaonarison JJC, Ratsiambakaina D, Rakotomahenina H, Ramiandrasoa AL, Maoulida ABM, Andriamiandrisoa AB, et al. La bilharziose génitale de la femme : à propos de cinq observations. *J Malg Gynecol Obstet.* 2017;1:6-8.
- [2] Brou AN. Connaissances de la bilharziose urinaire en milieu rural ivoirien : étude de cas à Bamoro et N'guessan-Pokoukro (district sanitaire de Bouaké). *Eur Sci J [Internet].* 2019 Oct 31 [cité 2026 Sep 22];15(30):113. Disponible sur: <https://eujournal.org/index.php/esj/article/view/12528>
- [3] Carod-Artal FJ. Neurological complications of *Schistosoma* infection. *Trans R Soc Trop Med Hyg.* 2008;102:107-116.
- [4] Diallo M, Niang SO, Faye PM, Ly F, Ba A, Diop A, et al. Panniculite granulomateuse bilharzienne. Une présentation inhabituelle de la bilharziose cutanée. *Ann Dermatol Venereol.* 2012;139:132-136.
- [5] Sy I, Diawara L, Ngabo D, Barbier D, Dreyfuss G, Georges P. Bilharzioses au Sénégal oriental : prévalence chez les enfants de la région de Bandafassi. *Med Trop.* 2008;68:267-271.
- [6] Bambirra EA, De Souza AJ, Cesarini I, Rodrigues RM. The tumoral form of schistosomiasis: report of a case with cerebellar involvement. *Trop Med Hyg.* 1984;33:76-79.
- [7] Betting LE, Pirani C, De Queiroz LS, Damasceno BP, Cendes F. Seizures and cerebral schistosomiasis. *Arch Neurol.* 2005;62(6):1008-1010.

- [8] Allen G, Ross Donald P, McManus Jeremy F, Richard J, Hunstman Darren J, Gray Yue-Sheng L. Neuroschistosomiasis. *J Neurol.* 2012;259:22-32.
- [9] Shih RY, Koeller KK. Bacterial, fungal, and parasitic infections of the central nervous system: radiologic-pathologic correlation and historical perspectives: from the Radiologic Pathology Archives. *RadioGraphics.* 2015;35(4):1141-1169.
- [10] Huang J, Luo J, Peng J, Yang T, Zheng H, Mao C. Cerebral schistosomiasis: diffusion-weighted imaging helps to differentiate from brain glioma and metastasis. *Acta Radiol.* 2017;58(11):1371-1377.
- [11] A simple device for quantitative stool thick-smear technique in Schistosomiasis mansoni [Internet]. ResearchGate; [cité 2026 Sep 22]. Disponible sur: https://www.researchgate.net/publication/18489942_A_simple_device_for_quantitative_stool_thick-smear_technique_in_Schistomiasis_Mansoni
- [12] Fowler R, Lee C, Keystone JS. The role of corticosteroids in the treatment of cerebral schistosomiasis caused by *Schistosoma mansoni*: case report and discussion. *Trop Med Hyg.* 1999;61:47-50.
- [13] Ferrari TC. Involvement of central nervous system in the schistosomiasis. *Mem Inst Oswaldo Cruz.* 2004;99:59-62.
- [14] Gjerde IO, Larsen JL, Huldt G, Aarli JA. Cerebral schistosomiasis presenting as a brain tumor. *Eur Neurol.* 1984;23:229-236.
- [15] Ibahioin K, Chellaoui A, Lakhdar A, Hilmani S, Naja A, Sami A, Achouri M, et al. La bilharziose cérébelleuse : à propos d'un cas. *Neurochirurgie.* 2004;50(1):61-65.
- [16] Imai K, Koibuchi T, Kumagai T, Maeda T, Osada Y, Ohta N, et al. Cerebral schistosomiasis due to *Schistosoma haematobium* confirmed by PCR analysis of brain specimen. *J Clin Microbiol.* 2011;49(4):1796-1800.

To cite this article

K Dansokhoa, AM Gaye, GNC Deguenonvo, R Nougauoui, RA Ntab, M Wade et al. Cerebral schistosomiasis mimicking a brain tumor. *Jaccr Infectiology* 2026; 8(3): 9-14

<https://doi.org/10.70065/2683.jaccrInfect.001L012209>