

# Multiple Neurocysticercosis A Long Follow-Up of 7 Years: A Case Report

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**Abstract:** *Neurocysticercosis is prevalent in northeastern regions due to local dietary practices involving pork meat and abundant green leafy vegetables. Initial manifestations often include recurring seizures, with affected individuals, influenced by social stigmas, opting for home remedies over seeking medical treatment. Common symptoms include late-onset seizures, headaches, and intracranial hypertension. Diagnosis relies on radiological imaging and identification of specific antigens and antibodies in the bloodstream and cerebrospinal fluid. Affected patients require an extended course of antiepileptic medications and vigilant monitoring for seizure recurrence and potential hydrocephalus development. This case report details a 42-year-old female patient with multiple neurocysticercosis lesions, emphasizing the importance of long-term follow-up and management in such cases.*

**Keywords:** Neurocysticercosis, Helminthic, Seizure, Intracranial, Cerebrospinal Fluid

## 1. Introduction

Cysticercosis is an infection triggered by the encysted larval stage of the tapeworm *Taenia solium*, and it stands as one of the most prevalent parasitic afflictions affecting the human nervous system. It poses a significant public health challenge, particularly in many developing nations. (1) Epilepsy emerges as the most common clinical presentation associated with parenchymal Neurocysticercosis, while hydrocephalus tends to be the predominant manifestation in cases of meningeal Neurocysticercosis. (2) The presence of multiple calcifications within the brain parenchyma signifies the aftermath of a previous infestation in which the host's immune system successfully dealt with the acute infection without causing major neurological complications. (3) On brain computed tomography (CT) scans, solid and rounded calcifications, typically measuring less than 10 mm in diameter, are frequently observed in cases of Neurocysticercosis. These calcifications are most commonly situated in the supratentorial compartment. (4) Patients with such calcified lesions often present with seizures, and their neurological examinations may appear normal. Generally, they do not require any specific therapeutic interventions apart from the administration of anti-seizure medications. In certain instances, seizures may become refractory due to secondary atrophy or sclerosis of the hippocampus. (5) Some individuals, despite being on antiseizure medications, may experience breakthrough seizures due to perilesional edema. This phenomenon is believed to result from intermittent exposure of the host's immune system to cysticercosis antigens contained within the interior of calcifications, triggered by remodeling processes. In cases where calcified lesions exhibit edema or enhancement, intermittent or even long-term continuous corticosteroid therapy has been employed as a treatment strategy. However, it is important to note that there is a lack of comprehensive studies assessing the benefits and risks associated with this approach. (6)

Understanding the diverse clinical presentations and management options for Neurocysticercosis is crucial in effectively addressing this challenging parasitic disease of the nervous system.

## 2. Case Report

This case details a 42-year-old female patient with Neurocysticercosis (NCC) under seven years of care. The initial presentation included five episodes of seizures within two hours, prompting Neuro ICU admission. CT and MRI scans revealed multiple cerebral lesions at various NCC stages. Treated with steroids and antiepileptic medications, she experienced recurrent seizures, leading to adjustments in medication dosage. After three years of being seizure-free, attempts to reduce medication resulted in renewed seizures. Dietary history revealed pork and raw vegetable consumption, potentially linked to NCC. This case underscores the challenges in long-term NCC management, requiring tailored approaches and ongoing vigilance.

## 3. Discussion

Most parenchymal Neurocysticercosis (NCC) cases involve a few lesions and generally have a milder clinical course compared to the subarachnoid and ventricular forms. In these latter forms, a considerable number of patients may experience severe complications, and, tragically, some may succumb to the illness. (7)(8) Special attention is crucial for cases of massive parenchymal Neurocysticercosis (NCC) to mitigate risks from the disease or inadequate treatment. However, defining "massive" NCC lacks standardization. Various definitions exist, with some considering it when there are over 100 lesions in the brain parenchyma, while others use different thresholds. (3) The "starry sky" presentation, characterized by small and challenging-to-visualize cysticerci resembling stars on a night sky, is a subset of heavy non-encephalitic cysticercosis. (9) Treatment of NCC has involved cysticidal drugs like

praziquantel and albendazole for over 25 years, aiming to target cysticerci and alleviate symptoms.(10)(11) A Cochrane Collaboration systematic review, evaluating drug treatment effectiveness in human neurocysticercosis, found insufficient evidence to determine if anthelmintic drugs yield favorable outcomes in NCC cases.(12)

Treating Neurocysticercosis (NCC) is challenging due to its complexity and varied presentations. While anthelmintic drugs' efficacy is under ongoing research and debate, managing NCC often requires a multidisciplinary approach with individualized treatment plans based on the patient's clinical presentation. A meta-analysis suggests that combining corticosteroids with a short course of albendazole (15 mg/kg/day for 7 days) leads to more rapid radiologic resolution of lesions and fewer seizures in the subsequent six months. (13) For patients with one to two cystic lesions, guidelines from the Infectious Diseases Society of America (IDSA) and the American Society of Tropical Medicine and Hygiene (ASTMH) recommend albendazole. In cases with more than two cystic lesions, a combination of albendazole (15 mg/kg/day in two divided doses) and praziquantel (50 mg/kg/day in three divided doses) is suggested. (14) Regarding steroids, a study by Garcia et al. on parenchymal cystic lesions found that a more intensive dexamethasone regimen (8 mg/day for 28 days followed by a taper) resulted in fewer seizures compared to a lower dose (6 mg/day for 10 days), emphasizing the potential benefits of a prolonged and gradually tapered steroid treatment in NCC management. (15) The complexity of managing Neurocysticercosis (NCC) requires a case-by-case evaluation, considering lesion number, location, associated symptoms, and overall health. Careful consideration of drug interactions and appropriate dosing is crucial for optimizing management in individuals needing both antiepileptic and antiparasitic treatment. (16)

For patients with solitary cysticercus granuloma, research suggests that discontinuing antiepileptic drugs (AEDs) is safe when the granuloma fully resolves without calcification. Studies consistently support this for cases with no calcific residue, indicating a lower risk of seizure recurrence. Conversely, when calcific residues are present, a longer AED treatment (typically 12 to 24 months) is effective in preventing seizures. However, the exact duration remains uncertain, requiring long-term follow-up studies for definitive guidance. (17)(18)(19) In multiple parenchymal cysticercoses, predicting AED treatment duration is challenging due to variable cyst involution rates. Tailoring treatment to individual circumstances, considering lesion number, evolution, and clinical response, is advisable.(20)

Ultimately, the management of parenchymal cysticercosis requires a nuanced approach that considers both the individual characteristics of the patient and the nature of the cystic lesions, while keeping in mind the evolving understanding of optimal treatment durations.

#### 4. Conclusion

Parenchymal Neurocysticercosis (NCC) exhibits varied forms, each marked by distinct symptoms and neuroimaging findings, necessitating accurate diagnosis. Timely

recognition and management are vital for patient outcomes and reducing economic burdens like healthcare resources and medication costs. While anthelmintic drugs play a role, eradicating NCC depends on broader factors like healthcare system improvements. Public awareness campaigns are crucial in addressing root causes.

The classification into active, transitional, and inactive forms aids clinical correlations and guiding treatments. Individualized approaches may involve antiepileptic drugs, analgesics, and corticosteroids. In multiple lesions, continued antiseizure medication use, possibly lifelong, should be considered. Long-term studies are needed for generalized guidelines and outcomes. NCC's complexity requires a multifaceted approach involving public awareness, healthcare enhancement, accurate diagnosis, and tailored treatments. Ongoing research is crucial for refining understanding and optimizing management.

**Conflict of Interest:** None

**Source of Funding:** None

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