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*CASE REPORT*

# Neuropsychiatric Manifestations of Neurocysticercosis: A Case Report of Confusion and Paranoia

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## ABSTRACT

This case report details the clinical presentation of a 70-year-old female patient presenting to the psychiatry outpatient department (OPD) with acute onset neuropsychiatric symptoms, including confusion, paranoia, and cognitive impairment, accompanied by a history of seizures. Three days prior to presentation, the patient experienced an episode of focal seizures with secondary generalization. Psychiatric assessment revealed disorientation, persecutory delusions, and significant memory deficits. Prompted by the seizure history and atypical psychiatric symptoms, a brain CT scan was conducted, revealing widespread miliary neurocysticercosis, a parasitic infection contributing to both neurological and psychiatric manifestations. The patient was treated with anti-epileptic (sodium valproate), anti-parasitic (albendazole with corticosteroids), and antipsychotic (olanzapine) medications. This case underscores the critical role of neuroimaging in psychiatric patients with seizures to identify treatable neurological conditions like neurocysticercosis, emphasizing the need to consider infectious etiologies in atypical psychiatric presentations.

**Keywords**: miliary neurocysticercosis, neuropsychiatric symptoms, confusion, paranoia, seizures

## Introduction

Neurocysticercosis (NCC) is a parasitic infection of the central nervous system caused by the larval stage of *Taenia solium*, leading to the formation of cysticerci in the brain. While seizures are the hallmark presentation, neuropsychiatric symptoms, such as confusion, paranoia, and cognitive deficits, are increasingly recognized as initial manifestations due to cyst-induced inflammation, edema, and disruption of neural pathways [1, 2]. These symptoms often mimic primary psychiatric disorders, posing diagnostic challenges, particularly in endemic regions where *T. solium* infection is prevalent. Misdiagnosis as a primary psychiatric condition can delay appropriate treatment, worsening patient outcomes. This case report describes a 70-year-old female patient presenting with acute neuropsychiatric symptoms and a seizure history, ultimately diagnosed with miliary neurocysticercosis through CT imaging. The objective is to highlight the necessity of consideration of neurological causes, such as NCC, in patients with atypical psychiatric presentations and to emphasize the pivotal role of neuroimaging for accurate diagnosis.

## Case study

A 70-year-old female patient was brought to the psychiatry OPD at Maharaja Agrasen Medical College, Agroha, by her son, who reported a three-day history of increasing suspiciousness, confusion, and intermittent memory disturbances. The patient had a known history of epilepsy, with a recent episode of focal seizures progressing to secondary generalized seizures three days prior to the visit. The family described the patient's suspiciousness as a belief that neighbors were plotting against her, accompanied by disorientation and difficulty engaging in daily activities. There was no reported history of head trauma, substance use, or recent infections.

On mental status examination, the patient displayed persecutory delusions, expressing fears of being harmed by others, and was disoriented to time and place but oriented to person. No auditory or visual hallucinations were reported, and affective symptoms, such as depressed mood, agitation, or aggression, were absent. Her insight was partially preserved, as she acknowledged memory difficulties but attributed them to external stressors. Speech was coherent but slow, with notable pauses, and she struggled to recall recent events, such as conversations or meals. Cognitive testing revealed impaired short-term memory and difficulty with attention and concentration. Vital signs were within normal limits (blood pressure 130/80 mmHg, pulse 78 bpm, temperature 36.7°C, respiratory rate 16 breaths/min). Systemic examination, including cardiovascular, respiratory, and abdominal assessments, showed no abnormalities, ruling out systemic causes of confusion, such as infections or metabolic derangements. Neurological examination revealed no focal deficits, but the history of seizures and acute neuropsychiatric symptoms prompted further investigation.

## Investigations and diagnosis

Given the acute onset of neuropsychiatric symptoms and the patient's seizure history, a brain CT scan was ordered to explore potential neurological etiologies. The CT scan revealed multiple calcified and cystic lesions scattered across cortical and subcortical regions, consistent with miliary neurocysticercosis. These lesions appeared as small, well-defined cysts with areas of calcification, indicative of chronic and active infection. Laboratory tests, including complete blood count, electrolytes, and liver function tests, were normal, ruling out metabolic encephalopathy. Differential diagnoses included vascular dementia, intracranial tumors, and metabolic encephalopathy, but the acute onset and characteristic CT findings strongly supported NCC as the primary cause. Neuroimaging was instrumental in distinguishing NCC from other causes of acute psychiatric symptoms, confirming that the patient's symptoms were secondary to cyst-related brain pathology affecting cognitive and psychiatric function.

## Treatment plan

The patient was initiated on a comprehensive treatment regimen targeting both the neurological and psychiatric manifestations of NCC. Sodium valproate 1 g daily was pre-

scribed to control seizures, based on its efficacy in managing focal and generalized seizures [1]. To address the parasitic infection, albendazole 400 mg twice daily was administered for 14 days, combined with dexamethasone 6 mg daily to mitigate inflammation and edema caused by cyst degeneration [1, 2]. Olanzapine 10 mg nightly was selected to manage the patient's paranoia and confusion, chosen for its efficacy in treating psychotic symptoms and lower risk of extrapyramidal side effects in elderly patients compared to alternatives like risperidone, which was considered but avoided due to potential motor side effects [3]. The patient and her family were educated on the importance of medication adherence, potential side effects, and the impact of NCC on cognitive and psychiatric health. They were advised to monitor for adverse effects, such as drowsiness or gastrointestinal upset, and to report any new seizures or worsening symptoms.

Follow-up visits were scheduled at two-week intervals to assess seizure control, psychiatric symptom resolution, and medication tolerability. Clinical improvement in seizures and neuropsychiatric symptoms was expected within 4–6 weeks, with long-term follow-up planned to evaluate residual cognitive impairment and monitor cyst resolution via repeat CT scans every six months. The family was actively involved in the care plan, receiving guidance on supporting the patient's recovery and ensuring a safe home environment to prevent seizure-related injuries.

## Discussion

Neurocysticercosis remains a significant cause of neurological and neuropsychiatric morbidity in endemic regions, particularly in areas with poor sanitation and prevalent *Taenia solium* infection. The disease's neuropsychiatric manifestations arise from inflammatory responses, perilesional edema, and altered neurotransmitter signalling in brain regions affected by cysticerci [2,4]. These changes can disrupt frontal, temporal, and subcortical networks, leading to symptoms such as paranoia, confusion, and cognitive decline, as observed in this patient. Forlenza et al. reported that 65.8% of NCC cases present with psychiatric symptoms and 87.5% with cognitive decline, with depression (52.6%) and psychosis (14.2%) being common [4]. The patient's presentation with persecutory delusions and disorientation highlights the challenge of distinguishing NCC from primary psychiatric disorders, such as schizophrenia or delirium, especially when psychiatric symptoms predominate.

Diagnostic delays in NCC are common due to its varied presentations. In this case, the patient's psychiatric symptoms could have been misattributed to a primary psychotic disorder without the seizure history prompting neuroimaging. Clinicians can differentiate NCC from primary psychiatric conditions by considering red flags, such as acute onset, seizure history, or residence in endemic areas. Neuroimaging, particularly CT or MRI, is indispensable for confirming NCC, as demonstrated by the identification of miliary cysts in this case. Treatment strategies must address both the parasitic infection and symptomatic management of psychiatric symptoms. While anti-parasitic therapy with albendazole often resolves cyst-related inflammation, persistent psychiatric symptoms may require antipsychotics, as seen with olanzapine use in this patient. The decision to use antipsychotics should be guided by symptom severity and patient-specific factors, such as age and comorbidities, with careful monitoring for side effects.

## Conclusion

This case emphasizes the importance of including neurocysticercosis in the differential diagnosis of patients presenting with neuropsychiatric symptoms and a history of seizures. Early neuroimaging is critical to identify treatable neurological conditions like NCC, preventing misdiagnosis as primary psychiatric disorders. The patient's treatment with anti-epileptic, anti-parasitic, and antipsychotic medications resulted in significant improvement, underscoring the efficacy of a multidisciplinary approach combining neurological and psychiatric care.

**Consent:** Informed consent was obtained from the patient's family for publication, with anonymity and confidentiality preserved.

**Conflicts of Interest:** The authors declare no conflicts of interest.

**Author contribution:** DS contributed to the study conception, data collection, and manuscript preparation. A was responsible for the study design, data analysis and interpretation, and manuscript preparation. AP contributed to data collection and data analysis and interpretation. SB contributed to the study design and manuscript preparation. All authors have read and approved the final manuscript.

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