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CASE REPORT: ACUTE PSYCHOSIS AS THE PRIMARY PRESENTATION OF NEUROCYSTICERCOSIS IN AN ELDERLY PATIENT

Psychiatry

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ABSTRACT

Background: Neurocysticercosis (NCC), a central nervous system infection caused by the larval stage of Taenia solium, is highly endemic in the Indian subcontinent. While it predominantly presents with neurological symptoms such as seizures and headaches, primary psychiatric manifestations like acute psychosis are exceedingly rare. **Case Presentation:** We report the unusual case of a 60-year-old male presenting with a recent onset of acute psychosis characterized by vivid visual and auditory hallucinations, persecutory delusions, progressive confusion, and persistent headache. The patient had a clear dietary history of undercooked pork consumption, linking his exposure to T. solium. He demonstrated an excellent clinical response to a multidisciplinary pharmacological approach comprising antiparasitic therapy, corticosteroids, an atypical antipsychotic, an antidepressant, and prophylactic antiepileptics.**Conclusion:** This case highlights the critical need for clinicians in endemic regions to consider infectious etiologies, specifically NCC, in the differential diagnosis of late-onset acute organic psychosis, especially when a history of high-risk dietary practices is present.

KEYWORDS

Neurocysticercosis, Organic Psychosis, Neuropsychiatry, Secondary Depression, Taenia Solium, Late-onset Psychosis

INTRODUCTION

Neurocysticercosis is a central nervous system infection caused by the encysted larvae of the pork tapeworm, *Taenia solium*. Transmitted via the fecal-oral ingestion of tapeworm eggs—a cycle frequently sustained by the consumption of undercooked pork—NCC is a major public health challenge in endemic regions like the Indian subcontinent and Latin America, affecting up to 8.3 million people globally.

While its clinical presentation is pleomorphic, roughly 50% of patients present with acquired epilepsy or structural headaches. Conversely, primary psychiatric manifestations occur in only about 5% of cases. Because these isolated psychiatric presentations are highly atypical, they risk misdiagnosis and delayed antiparasitic treatment. This report details a rare case of acute, new-onset psychosis secondary to NCC in an older adult, highlighting the diagnostic trajectory and successful therapeutic management.

Case Presentation

A 60-year-old male was brought to the General Medicine Outpatient Department by his distressed family members with a three-week history of progressively worsening neurobehavioral symptoms.

At the time of clinical presentation, the patient exhibited a complex array of progressive neurobehavioral symptoms. He reported a persistent, diffuse, and throbbing headache that remained continuous and refractory to standard over-the-counter analgesics. This was accompanied by progressive confusion, characterized by frequent episodes of spatial disorientation and notable short-term memory deficits.

In addition to these cognitive shifts, his clinical state was dominated by acute psychiatric features, including distressing auditory hallucinations consisting of unidentified voices providing a running commentary on his actions, alongside spontaneous visual hallucinations where he vividly perceived unfamiliar faces belonging to deceased individuals was also having persecutory delusions.

History of Presenting Illness

The patient was in his usual state of good mental and physical health until approximately 21 days prior to admission. The onset of his illness was insidious, initially presenting as a persistent, diffuse, and throbbing headache. The headache was relentless, lacking diurnal variation or vascular features, and showed virtually no response to standard over-the-counter analgesics, significantly disrupting his sleep architecture.

Approximately one week after the onset of the headache, the family noted a marked decline in his cognitive baseline. He began exhibiting episodes of spatial disorientation, frequently wandering aimlessly in his own home and misidentifying rooms. These confusional states were noticeably exacerbated during the late afternoon and evening hours, presenting as a sundowning-like phenomenon. He also demonstrated prominent short-term memory lapses, frequently forgetting recent conversations or whether he had eaten.

By the beginning of the third week, the clinical picture rapidly deteriorated into a state of florid psychosis. He developed active auditory hallucinations, describing multiple unfamiliar, whispering voices that would offer a continuous, derogatory commentary on his actions and occasionally issue direct commands to hide. Concurrently, he experienced terrifying visual hallucinations, reporting the sudden appearance of the faces of deceased individuals looming in the shadows of his room or in reflective surfaces.

These perceptual disturbances quickly crystalized into structured persecutory delusions. The patient became profoundly hypervigilant and suspicious of his immediate family. He developed a fixed, unshakeable belief that neighbors had installed surveillance equipment in his home and were actively conspiring to poison or harm him. Consequently, he began barricading himself in his bedroom, refusing to eat meals prepared by his family, and exhibiting severe psychomotor agitation. This acute behavioral decompensation and total inability to perform basic activities of daily living prompted the family to seek urgent medical intervention.

Upon detailed questioning, the family denied any history of high-grade fever, neck stiffness, photophobia, projectile vomiting, focal weakness, new-onset seizures, or recent minor or major head trauma. He had no recent domestic or international travel history. Crucially, the patient had an absolute absence of any prior personal or family history of psychiatric illness, mood disorders, or substance abuse, making a primary psychiatric disorder at this late age highly atypical.

A thorough lifestyle and dietary history revealed a critical epidemiological risk factor. The family reported that the patient regularly consumed pork, which was frequently procured from informal, unregulated local vendors and was often prepared undercooked.

Following his initial assessment in the male medical ward, the patient was urgently referred to the Psychiatry department for specialized evaluation and stabilization of his acute psychosis.

Clinical Examination

Mental State Examination (MSE)

- During the initial psychiatric consultation, the patient appeared disheveled and unkempt, wearing stained, poorly fitting clothes

that suggested a significant decline in basic self-care and personal hygiene.

- **Speech:** Fluent and coherent, though thematic content was heavily dominated by his delusions and hallucinatory experiences.
- **Thought Process:** Formally logical, but thoroughly preoccupied with persecutory ideation.
- **Perception:** Active, vivid, and distressing auditory and visual hallucinations were confirmed.
- **Cognition:** The Mini-Mental State Examination (MMSE) score was initially 27/30 on the medical ward but rapidly declined to 22/30 upon psychiatric review three days later. He exhibited intact orientation to time and person, but severe disorientation to place.
- **Insight and Judgment:** Markedly impaired (Grade 1 insight). The patient firmly believed his psychotic experiences were reality-based.

Physical and Neurological Examination

Assessment Category	Clinical Parameter / Modality	Specific Findings & Results
Physical Examination	Vitals & General Physical	Afebrile, hemodynamically stable. Poor personal hygiene; anxious appearance. No palpable subcutaneous nodules.
Neurological Exam	Cranial Nerves, Motor, Sensory, & Reflexes	Fully intact. Power 5/5 bilaterally. No meningeal signs (Kernig/Brudzinski negative). Normal fundoscopy (no papilledema).
Routine Blood Panel	CBC, LFT, KFT, TFT, & Metabolic Profile	All parameters within normal reference ranges.
Infectious Screening	HIV, VDRL, HBsAg, Anti-HCV	Negative across all viral and bacterial screening panels.
CSF Analysis	Lumbar Puncture	Normal opening pressure. Mild lymphocytic pleocytosis. Normal glucose. Protein mildly elevated (52 mg/dL).
Immunological Assay	Serum ELISA / EITB	Highly Positive for anti-cysticercal IgG antibodies.
Neuroimaging	Magnetic Resonance Imaging (MRI) Brain	Multiple hypodense, ring-enhancing cystic lesions with extensive surrounding vasogenic edema in frontotemporal regions.

Table 0-1Comprehensive summary of the patient's clinical examination, laboratory investigations, and neuroimaging results. The stark contrast between the completely unremarkable neurological baseline and the highly abnormal neuroimaging/immunological findings highlights the diagnostic challenge of isolated psychiatric presentations in parenchymal neurocysticercosis.

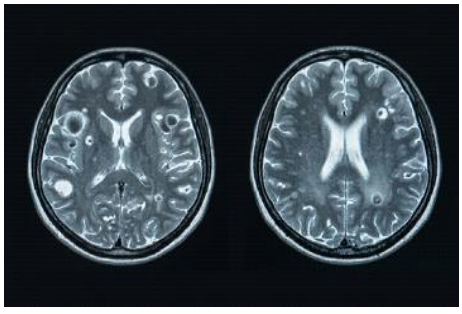

Figure 0.1MRI finding of patient showing multiple ring enhancing lesions supporting diagnosis of neurocysticercosis

Treatment and Management

A comprehensive, multidisciplinary pharmacological regimen was initiated to address the parasitic infection, control neuroinflammation, and stabilize the patient's acute psychiatric symptoms. For the primary parasitic infection, albendazole was administered at 15 mg/kg/day for a standard 14-day course. To mitigate cerebral edema and suppress the severe inflammatory response triggered by cyst degeneration, intravenous dexamethasone was given concurrently with the antiparasitic therapy, which was later transitioned to an oral prednisolone taper at 30 mg/day. Because antiparasitic medications induce parasite death and exacerbate local neuroinflammation, sodium valproate was initiated prophylactically at 500 mg orally twice daily to significantly lower the risk of treatment-induced seizures.

Concurrently, targeted psychiatric stabilization was required to manage his acute behavioral decompensation. Oral risperidone was initiated at 2 mg/day to directly target the active hallucinations and persecutory delusions, and this dosage was carefully titrated up to 4 mg/day by the time of his discharge. During the initial phase of admission, this was supported by lorazepam at 2 mg orally three times daily for the short-term management of his severe anxiety and acute psychomotor agitation. Additionally, oral escitalopram was introduced at 5 mg once daily to treat emerging secondary depressive features, which were likely driven by the underlying neuroinflammatory state. Finally, a Vitamin B complex was added to the regimen as a supportive nutritional supplement to optimize his general health during recovery.

Outcome and Follow-Up

The combined medical and psychiatric intervention yielded a highly favorable response. The patient's auditory and visual hallucinations, along with his persecutory delusions, diminished significantly over the course of the hospital stay. Cognitive parameters also stabilized, with the MMSE score rebounding to 24/30 prior to discharge.

At the one-month post-discharge outpatient follow-up, the patient remained behaviorally stable, fully compliant with his maintenance medications, and free of active psychotic symptoms. Scheduled long-term follow-ups were established to monitor both neurological imaging resolution and psychiatric stability.

DISCUSSION

This case highlights the diagnostic complexity of neurocysticercosis in endemic regions like India. While structural neurological issues are common, an initial presentation of late-onset, acute psychosis without prior seizures is exceptionally rare, particularly in elderly patients. Epidemiologically, the patient's consumption of undercooked pork likely caused intestinal taeniasis, which set the stage for subsequent systemic NCC via fecal-oral autoinfection with *T. solium* eggs.

Unlike previously reported cases featuring chronic or recurrent psychiatric symptoms, this patient experienced a rapid-onset psychotic break with dual-modality hallucinations and fixed persecutory delusions. Pathophysiologically, this is driven by cyst localization within the frontal, parietal, and limbic networks, combined with localized neuroinflammation that disrupts reality-testing circuits. This same host immune response and oxidative stress likely precipitated his secondary depressive features, which responded robustly to low-dose escitalopram.

Definitive diagnosis requires early neuroimaging corroborated by specific antibody testing. Successful management hinges on treating the underlying infection under strict corticosteroid cover to prevent catastrophic cerebral edema, alongside symptomatic psychiatric care. While some literature recommends high-dose antipsychotics, our patient achieved full remission on a moderate dose of risperidone. Given the localized structural damage and recurrence risks, extended maintenance on prophylactic antiepileptic drugs and antipsychotics is clinically advisable.

CONCLUSION

This report documents an atypical, acute psychiatric presentation of parenchymal neurocysticercosis in an older adult. It highlights the absolute necessity for physicians and psychiatrists in endemic areas to maintain a high index of suspicion for infectious and organic etiologies when evaluating late-onset acute psychosis, particularly when a dietary history of undercooked pork consumption is present. Timely neuroimaging, accurate serological diagnosis, and a collaborative medical-psychiatric treatment approach are essential to ensure full cognitive and behavioral recovery.

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