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VARIED MANIFESTATIONS OF NEUROCYSTICERCOSIS AT A TERTIARY CARE CENTRE IN BANGALORE RURAL

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ABSTRACT

Background and Objectives

Neurocysticercosis (NCC) is the most common parasitic infection of the central nervous system caused by the larval form of *Taenia solium*. It remains endemic in many parts of rural India due to poor sanitation, open defecation, and traditional pig-rearing practices. NCC presents with a broad spectrum of neurological manifestations, posing diagnostic and therapeutic challenges. This study aimed to characterize the varied clinical presentations of NCC and correlate neuroimaging findings with disease manifestations.

Materials and Methods

A retrospective observational case series was conducted from February 2025 to February 2026 at a tertiary care hospital in Bangalore Rural. Six patients diagnosed with NCC based on clinical presentation and neuroimaging findings were included. Demographic characteristics, clinical manifestations, comorbidities, neuroimaging findings, and outcomes were analyzed.

Results

Among six patients, three were older adults with diabetes mellitus who predominantly presented with headache, giddiness, and seizures. Neuroimaging revealed calcified, reactivated, mixed-stage, or degenerating lesions. Younger patients mainly presented with generalized tonic-clonic seizures and focal neurological symptoms. One patient had disseminated intracranial NCC, while another developed encephalomalacia and gliosis secondary to poor treatment compliance. Neuroimaging findings closely correlated with symptom severity and disease stage.

Conclusion

Neurocysticercosis demonstrates diverse clinical and radiological manifestations influenced by age, comorbidities, disease stage, and treatment adherence. Early diagnosis, individualized treatment strategies, improved sanitation, and enhanced public awareness are essential for reducing disease burden in endemic rural regions.

Keywords: Neurocysticercosis, Taenia solium, Seizures, Neuroimaging, Calcified Lesions, Disseminated Neurocysticercosis.

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INTRODUCTION

Neurocysticercosis (NCC) is a parasitic infection of the central nervous system caused by the larval stage of *Taenia solium*. It is recognized as one of the leading causes of acquired epilepsy in developing countries and contributes significantly to neurological morbidity worldwide.

The disease remains highly prevalent in rural India, where poor sanitation, consumption of contaminated food and water, and traditional pig-rearing practices facilitate transmission of the parasite. Clinical manifestations vary according to the number, location, and stage of cysticerci and may range from asymptomatic lesions to seizures, chronic headaches, focal neurological deficits, cognitive impairment, and raised intracranial pressure.

Neuroimaging plays a crucial role in diagnosis and helps determine disease stage, including vesicular, colloid vesicular, granular nodular, and calcified stages. Understanding the correlation between clinical manifestations and neuroimaging findings is essential for appropriate management.

This case series highlights the varied presentations of NCC encountered at a tertiary care centre in Bangalore Rural and emphasizes the importance of individualized patient management.

OBJECTIVES

1. To characterize the clinical presentations of neurocysticercosis across different age groups and genders.
2. To correlate neuroimaging findings with clinical manifestations and disease progression.

MATERIALS AND METHODS

Study Design

Prospective observational case series.

Study Period

February 2025 to February 2026.

Study Setting

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Tertiary Care Teaching Hospital, Bangalore Rural, Karnataka.

Inclusion Criteria

1. Patients diagnosed with neurocysticercosis based on clinical presentation and neuroimaging findings (CT/MRI).
2. Patients of all age groups and both genders.

Exclusion Criteria

1. Patients with alternative CNS pathologies.
2. Incomplete clinical records or neuroimaging data.

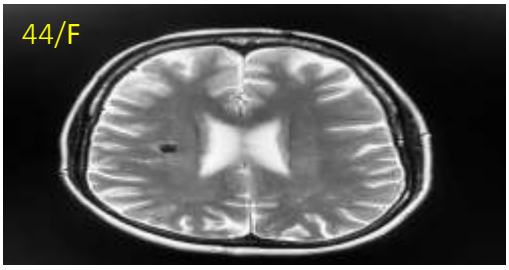
Methodology

Clinical records of six patients diagnosed with NCC were reviewed. Data regarding demographics, comorbidities, presenting symptoms, neuroimaging findings(CT/MRI), treatment history, and clinical outcomes were collected and analyzed descriptively.

CASE SERIES (Analysis)

Case 1

A 44-year-old female, known case of Type 2 Diabetes Mellitus, presented with giddiness for one month and holocranial dull aching headache. MRI brain revealed nodular calcified neurocysticercosis with perilesional edema suggestive of lesion reactivation.



Case 2

A 56-year-old male, known case of Type 2 Diabetes Mellitus, presented with one episode of generalized tonic-clonic seizure associated with a post-ictal phase lasting ten minutes. He had been diagnosed with NCC one month earlier and was on regular medications. Twenty days later, he developed severe frontal headache. NCCT brain demonstrated lesions in varying stages of neurocysticercosis.

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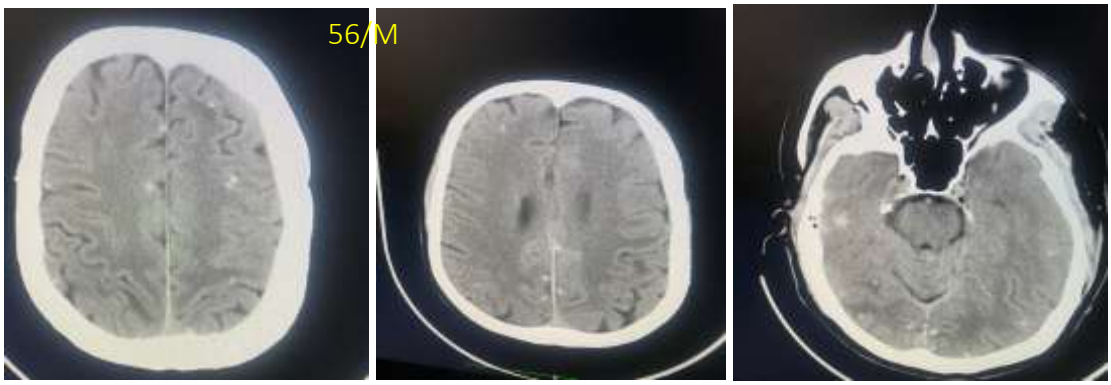
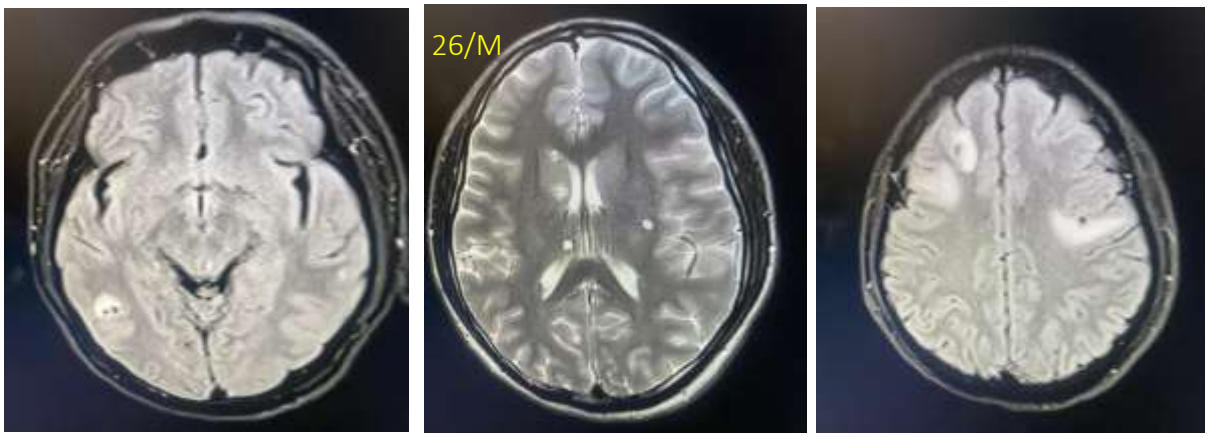


Case 3

A 26-year-old male with a history of chronic alcohol consumption and smoking presented with generalized tonic-clonic seizure associated with frothing of saliva and up-rolling of eyeballs. MRI brain revealed disseminated intracranial neurocysticercosis.



Case 4

An 85-year-old female with Type 2 Diabetes Mellitus and hypertension presented with multiple seizure episodes associated with stiffening of limbs and clenching of teeth, followed by a post-ictal phase lasting five minutes. MRI brain showed Stage III/IV neurocysticercosis in the right frontal lobe with minimal perilesional edema.

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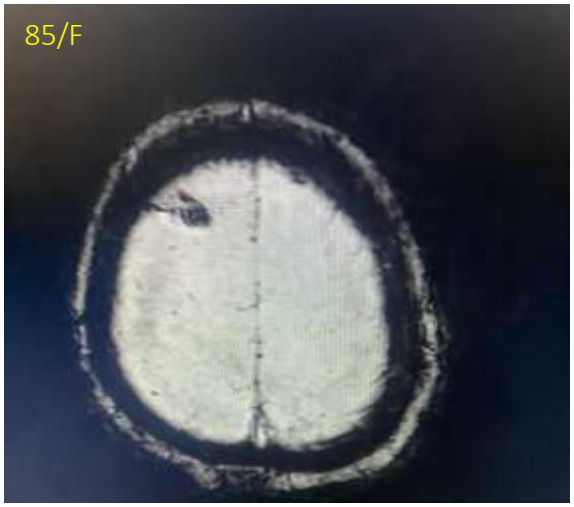
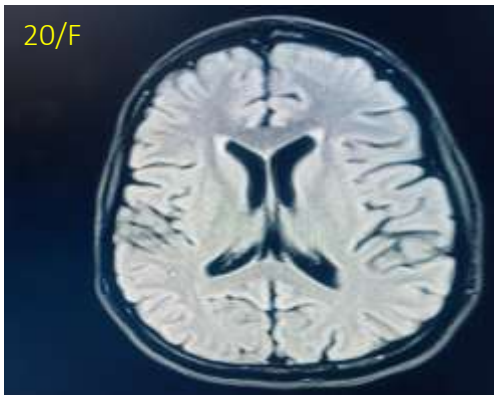


Case 5

A 20-year-old female, diagnosed with NCC one year earlier, presented with recurrent generalized tonic-clonic seizures and severe headache. She reported poor compliance with antiparasitic therapy. MRI brain showed healing NCC in the right high parietal region with focal encephalomalacia, gliosis, and adjacent cerebral atrophy.



Case 6

A 21-year-old female with no significant comorbidities presented with giddiness and left temporal headache. MRI brain revealed NCC involving the left temporal lobe in colloid vesicular and nodular calcified stages.

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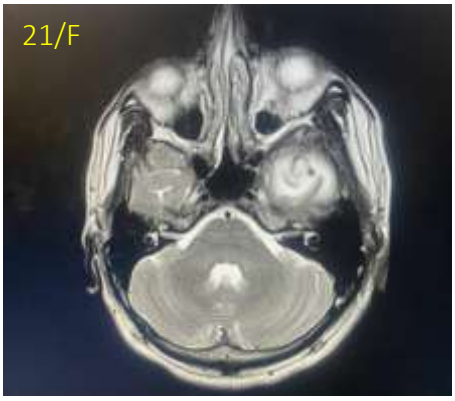

RESULTS

A total of six patients were included in the study. The age ranged from 20 to 85 years, with a mean age of 42 years. Three patients were female and three were male.

Seizures were the most common presenting symptom and were observed in four patients (66.7%). Headache was present in five patients (83.3%), while giddiness occurred in three patients (50%).

Older patients frequently exhibited calcified or reactivated lesions and had associated comorbidities such as diabetes mellitus and hypertension. Younger patients predominantly presented with active seizure disorders and focal neurological manifestations.

One patient demonstrated disseminated intracranial NCC, representing extensive disease involvement. Another patient with poor medication adherence showed imaging evidence of chronic sequelae including encephalomalacia, gliosis, and cerebral atrophy.

TABLE 1: DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

Case	Age/Sex	Comorbidities	Presentation	Neuroimaging Findings
1	44/F	Type 2 DM	Giddiness, Headache	Calcified NCC with Perilesional Edema
2	56/M	Type 2 DM	GTCS, Headache	NCC in Various Stages
3	26/M	Nil	GTCS	Disseminated Intracranial NCC
4	85/F	DM, HTN	Multiple Seizures	Stage III/IV NCC
5	20/F	Poor Drug Compliance	GTCS, Headache	Healing NCC with Gliosis
6	21/F	Nil	Giddiness, Headache	Colloid Vesicular and Calcified NCC

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DISCUSSION

Neurocysticercosis remains one of the most important causes of acquired epilepsy in endemic regions. The present case series demonstrates the heterogeneous nature of the disease, both clinically and radiologically.

Seizures were the predominant manifestation, consistent with previous studies identifying NCC as a major cause of new-onset seizures in developing countries. Headache and giddiness were also common symptoms, particularly among older patients with calcified or reactivated lesions.

Neuroimaging revealed lesions in multiple stages of evolution, emphasizing the dynamic nature of the disease process. Calcified lesions, previously considered inactive, may undergo episodic reactivation associated with perilesional edema and recurrent symptoms, as demonstrated in Case 1.

Disseminated neurocysticercosis observed in Case 3 represents a relatively uncommon but severe form of disease associated with extensive parasite burden. Poor treatment adherence contributed to disease progression and structural brain changes in Case 5, underscoring the importance of long-term follow-up and patient education.

The study further highlights the value of MRI and CT imaging in determining disease stage, guiding therapy, and predicting prognosis.

CONCLUSION

Neurocysticercosis exhibits diverse clinical presentations ranging from headache and giddiness to recurrent seizures and disseminated disease. Clinical manifestations are influenced by lesion location, stage of disease, patient age, comorbidities, and treatment adherence. Neuroimaging remains indispensable for diagnosis and management. Strengthening public health measures, improving sanitation, enhancing awareness, and ensuring early diagnosis are critical for reducing the burden of NCC in rural communities.

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ISSN: 0975-3583,0976-2833 VOL 17, ISSUE 6, 2026

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