



When the Obvious Isn't Enough

A Case-Based Review of Cerebral Toxoplasmosis in Advanced HIV Infection

Introduction

Neurological manifestations in advanced HIV infection present major diagnostic challenges because multiple overlapping etiologies may coexist. Progressive motor weakness with mixed upper and lower motor neuron signs requires careful evaluation to exclude opportunistic infections, spinal cord pathology, metabolic causes, and alcohol-related neurological disorders.

This presentation highlights a complex case of cerebral toxoplasmosis in advanced HIV infection associated with alcoholic peripheral neuropathy and proximal myopathy, emphasizing diagnostic reasoning, multidisciplinary management, and rehabilitation.

Case Presentation

Patient Information

An adult patient with known retroviral infection (RVI) presented with progressive neurological symptoms.

(All identifying information including name, age, sex, and residence has been removed to maintain confidentiality.)

History

Chief Complaint

- Progressive weakness of both lower limbs for 2 months
- Unable to walk independently for 1 month

History of Present Illness

The patient developed gradually progressive symmetrical weakness of both lower limbs over 2 months.

Initially:

- Difficulty rising from a seated position
- Sensation of heaviness in lower limbs

Progression:

- Required support for walking
- Subsequently became bedbound

During the week prior to admission:

- Weakness progressed to involve upper limbs

Associated symptoms:

- Mild distal numbness
- Occasional altered sensorium
- Intermittent headache

No history of:

- Vomiting
- Seizures
- Syncope
- Bladder or bowel incontinence
- Head injury
- Dysphagia
- Visual or hearing impairment
- Speech disturbance

Systemic Review

Cardiovascular

- No chest pain
- No palpitations
- No edema or syncope

Respiratory

- No cough
- No hemoptysis
- No breathlessness

Gastrointestinal & Hepatic

- Loss of appetite present
- No jaundice
- No abdominal pain
- No altered bowel habits

Rheumatological

- No joint swelling
- No photosensitive rash
- No oral ulcers

Genitourinary

- No dysuria
- No hematuria
- No urinary retention

Endocrine

- No osmotic symptoms
- No thyroid swelling
- No major weight changes

Past History

Medical History

- Known retroviral infection (RVI) for several years
- Interruption of antiretroviral therapy (ART) since 2023
- Previous anti-tuberculosis treatment completed several years earlier

No previous hospital admissions.

Drug History

- No known drug allergies
- No regular medications prior to admission
- No traditional medicine use

Personal & Social History

- Chronic smoker
- Chronic heavy alcohol consumption
- Functional dependence in activities of daily living
- Significant caregiver burden present

Examination

General Examination

- Conscious and oriented
- Glasgow Coma Scale: 15/15
- Body mass index: 18.9 kg/m²
- Afebrile
- Blood pressure: 140/90 mmHg
- Pulse rate: 72/min
- Oxygen saturation: 96% on room air

Additional findings:

- Glossitis present
- No pallor
- No jaundice
- No oral candidiasis
- Generalized tremor present
- Truncal ataxia present
- No meningeal signs

Dermatological findings:

- Seborrheic dermatitis
- Plane warts over upper and lower limbs

Neurological Examination

Lower Limbs

Inspection

- Muscle wasting present
- No fasciculations

Tone

- Increased bilaterally

Power (MRC Grading)

Movement	Right	Left
Hip flexion	3/5	3/5
Hip extension	3/5	3/5
Knee flexion	3/5	3/5
Knee extension	3/5	3/5
Ankle dorsiflexion	3/5	3/5
Ankle plantar flexion	3/5	3/5

Reflexes

Reflex	Right	Left
Knee jerk	+++	++
Ankle jerk	+	+
Plantar reflex	Withdrawal	Withdrawal

Sensation

- Impaired sharp-blunt discrimination in stocking distribution
- Light touch preserved
- Proprioception intact

Upper Limbs

Inspection

- No muscle wasting
- No fasciculations

Tone

- Increased bilaterally

Power (MRC Grading)

Movement	Right	Left
Shoulder abduction	4+/5	4-/5
Elbow flexion	4+/5	4-/5
Elbow extension	4+/5	4-/5
Wrist flexion	4+/5	4-/5
Wrist extension	4+/5	4-/5
Hand grip	5/5	4/5

Reflexes

Reflex	Right	Left
Biceps	++	++
Supinator	++	++
Triceps	++	++

Cranial Nerve Examination

- Visual acuity normal
- Fundoscopy:
 - Bilateral optic disc swelling
 - Blurred disc margins
 - Loss of venous pulsations

No Facial asymmetry, Tongue deviation & Dysphagia

Case Summary

Differential Diagnosis

- Cerebral toxoplasmosis
- HIV-associated myelopathy
- Distal symmetric polyneuropathy
- Primary CNS lymphoma
- Tuberculoma
- Alcoholic peripheral neuropathy
- Alcoholic proximal myopathy
- Subacute combined degeneration
- Motor neuron disease

Investigations

Hematological & Biochemical Investigations

Investigation	Result
Hemoglobin	14.7 g/dL
White blood cells	$5.55 \times 10^9/L$
Platelets	$185 \times 10^9/L$
Electrolytes	Normal
Urea	4.7 mmol/L
Creatinine	Normal
Creatine kinase	Normal
Liver function tests	Normal

Infectious Disease Workup

- HBsAg: Negative
- HCV antibody: Non-reactive
- VDRL: Non-reactive
- HIV antibody screening: Reactive
- HIV confirmatory test: Reactive

HIV Viral Load

- HIV RNA detected
- Viral load markedly elevated

Neuroimaging

Contrast-Enhanced CT Brain

Findings suggestive of:

- Multiple cerebral space-occupying lesions
- Features compatible with cerebral toxoplasmosis

Opportunistic Infection Surveillance

- Toxoplasma IgG antibody: Positive
- Chest X-ray: No active pulmonary disease
- Urinary LAM: Negative
- Cryptococcal antigen: Negative

Ultrasound Abdomen

- Early chronic liver changes
- Severe fatty liver changes

Final Diagnosis

- Cerebral toxoplasmosis
- WHO stage IV retroviral infection (ART defaulter)
- Alcoholic peripheral neuropathy
- Alcoholic proximal myopathy
- Alcohol withdrawal syndrome

Management

Treatment of Cerebral Toxoplasmosis

- Cotrimoxazole-based therapy
- Corticosteroids for cerebral edema
- Mannitol for mass effect management

Alcohol Withdrawal & Nutritional Management

- Diazepam tapering regimen
- Vitamin B1 supplementation
- Vitamin B12 and folic acid supplementation
- High-calorie high-protein diet

Rehabilitation

- Physiotherapy
- Strengthening exercises
- Balance and gait training
- Occupational therapy

Clinical Outcome

Gradual improvement noted:

- Reduced tremor
- Improved truncal ataxia
- Recovery of muscle strength
- Able to walk with assistance during follow-up

Subsequently:

- ART restarted after exclusion of active tuberculosis

Discussion

Clinical Importance

Cerebral toxoplasmosis remains one of the most common opportunistic CNS infections in advanced HIV disease, particularly in ART-defaulters with severe immunosuppression.

Key Diagnostic Clues

- Mixed upper and lower motor neuron signs
- Progressive focal neurological deficits
- Positive Toxoplasma IgG
- Imaging findings compatible with toxoplasmosis
- Advanced untreated HIV infection

Important Clinical Considerations

- Alcohol-related neuropathy and myopathy may coexist and complicate diagnosis
- Early neuroimaging is essential
- Delay in ART re-initiation may worsen prognosis

Key Learning Points

- Advanced HIV can present with multiple overlapping neurological syndromes
- Cerebral toxoplasmosis should be suspected in focal neurological deficits with advanced immunosuppression
- Comprehensive neurological examination remains essential
- Rehabilitation and social support are important components of care
- ART adherence is critical to prevent opportunistic infections

Conclusion

This case highlights the complexity of neurological presentations in advanced HIV infection. Careful clinical assessment, timely neuroimaging, and multidisciplinary management enabled successful diagnosis and treatment of cerebral toxoplasmosis complicated by alcohol-related neurological disease.

References

- WHO Guidelines (2021)
- NIH/HIVMA/IDSA Opportunistic Infection Guidelines
- Davidson's Principles and Practice of Medicine
- Oxford Handbook of Clinical Medicine