JoTH Journal of Tropical Health

Case Report

Pseudo-Peripheral Nerve Palsy as a Stroke Chameleon: A Rare Case of Parietal Lobe Infarction

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Abstract

Cortical strokes can mimic peripheral neuropathies, particularly when the hand motor cortex is affected. This phenomenon, termed pseudo-peripheral nerve palsy, may lead to diagnostic confusion. A 60-year-old man presented with sudden onset of left-sided wrist drop. Examination revealed wrist and finger drop with reduced upper limb tone and impaired fine movements of fingers. A Non-Contrast CT brain scan showed an acute infarction in the right parietal lobe, posterior to the postcentral gyrus, correlating clinically. The patient was treated accordingly. This case highlights a rare presentation of parietal lobe infarction presenting as wrist drop. Central nervous system lesions, particularly cortical strokes, should be considered in cases of acute monoparesis, especially in patients with vascular risk factors. Early recognition of stroke is crucial for timely management, particularly when patient present within the thrombolytic window. Pseudo-peripheral neuropathy can mask underlying cortical strokes, and thorough clinical evaluation is of paramount importance.

Keywords: pseudo-peripheral nerve palsy, parietal lobe lesions, supplementary motor cortex

Funding: None
Competing interests: None

Cite this article as: Risly M et al. Pseudo-peripheral nerve palsy as a stroke chameleon: A rare case of parietal lobe infarction. Journal of Tropical Health 2025;1 (4): 39-42. DOI: https://doi.org/10.4038/joth.v1i4.34

Received: 19 October 2025 **Accepted:** 11 February 2026 **Published:** 28 February 2026

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Introduction

Cortical strokes can present as pseudo-peripheral neuropathies, particularly when lesions affect the hand motor cortex. This phenomenon is often termed pseudo-peripheral palsy and leads to misdiagnosis as peripheral neuropathies due to similar semiology.

Patients may exhibit isolated upper-limb motor weakness, mimicking conditions such as pseudo-median or pseudo-radial nerve palsy [1]. Etiologies vary, including atherosclerosis, embolism, hyperhomocysteinemia, cerebral metastasis, etc., and should be evaluated based on clinical grounds. Accurate diagnosis requires thorough examination, as initial CT scans may appear normal. MRI findings often reveal restricted diffusion in the pre- and post-central gyrus, indicating central lesions [1,2].

In Sri Lanka, a case of post-percutaneous coronary intervention (PCI) hand knob infarction presenting as pseudo-radial nerve palsy has been reported [3], but no cases of parietal lobe infarction presenting as pseudo-peripheral nerve palsy have been reported.

Case Presentation

A 60-year-old, previously unevaluated, right-handed labourer, reported a sudden onset of left-sided finger and wrist drop for the last 4 days. He had upper limb weakness, primarily involving impaired wrist extension, grip weakness and weak fine movements of the left hand. Initially, stroke or mononeuritis multiplex secondary to type 2 diabetes was considered. His systemic inquiry was otherwise unremarkable. He is a heavy smoker (20 pack years) with occasional alcohol drink (2 standard drinks once per month).

On examination, he was conscious and rational with a Glasgow Coma Scale of 15/15 and normal vitals. He exhibited left-sided pronator drift, wrist and finger drop, and impaired fine movements, with weak abduction and adduction of the thumb, with positive froment's and okay signs with handgrip weakness. [Figure 1] Upper limb tone was reduced with flaccidity. Left-sided proximal muscle strength was 4+/5 (Medical Research Council scale), while distal muscle strength was 3/5 with spared proximal (shoulder and elbow) movements. Reflexes in the triceps, biceps, and brachioradialis were reduced. All sensory modalities were intact, with absent cortical (two-point discrimination, stereognosis, graphesthesia, visual field defects and visual neglect) or cerebellar signs (finger-nose test and dysdiadokokinesia). The other limbs and cranial nerves were normal except for subtle left facial asymmetry. The NIHSS score was 2. There was a right-sided carotid bruit, while the rest of the cardio-respiratory examination was unremarkable.

On initial evaluation, capillary blood sugar was very high (478 mg/dl), with normal blood gas analysis and other basic investigations. Non-contrast CT of the brain demonstrated an infarct corresponding to the patient's clinical presentation [Figure 2]. Carotid duplex revealed 65% occlusion of the right common carotid artery and 45% occlusion of the left carotid artery. He was started on antiplatelet therapy and statins along with risk factor control and physiotherapy.

Discussion

Our patient presented with acute monoparesis with distal upper limb weakness similar to peripheral nerve palsies, mimicking a stroke involving an uncommon parietal lobe involvement confirmed by neuroimaging.

Patients with central lesions clinically present with wrist drop, with a semiology similar to that produced by peripheral lesions of the radial, median, and ulnar nerves at different topographical levels [4]. Cortical hand infarctions are usually reported following infarction in the precentral hand knob area of the brain [3,5].

When the presentation is sudden-onset, unilateral, and affecting the distal muscles, the diagnosis of a central lesion should always be considered [6]. Cortical hand strokes are a rare but important differential that should be considered for wrist drop [7], especially in a relatively old patient with vascular risk factors, and to avoid diagnostic delay when the patient presents within the thrombolytic window [4].

Figure 1: Neurological examination shows left-sided wrist and finger drop, impaired fine movements, and subtle left-sided facial asymmetry.

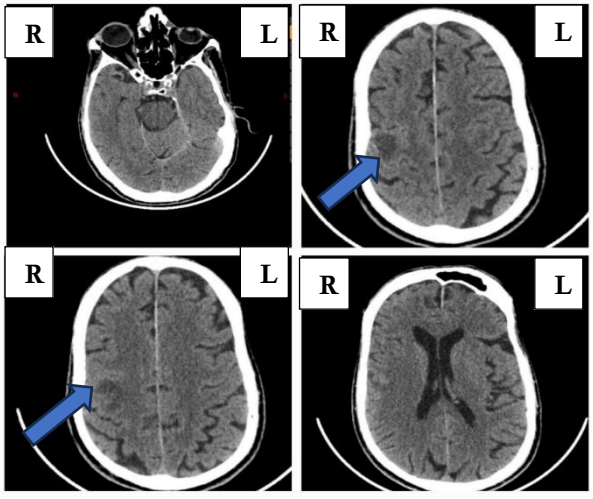

Figure 2: NCCT Brain: An acute infarction with a hypodensity measuring 2.4 cm x 1.5 cm x 3.1 cm along with perilesional oedema, located posterior to the postcentral gyrus in the right parietal region (Indicated by the arrow)

Parietal lobe infarctions primarily affect sensory and motor functions. These infarctions often result in conditions such as Gerstmann's syndrome, characterised by finger agnosia, agraphia, acalculia, and

right-left disorientation, particularly in elderly patients [8]. Additionally, bilateral infarcts can cause visual critical convergence zone for multimodal sensory integration, receiving inputs from the visual, auditory,and somatosensory systems, and maintaining reciprocal connections with the premotor and lateral prefrontal cortices. [9]. Patients may also experience sensory loss and hemi-anaesthesia. Parietal lobe lesions cause severe disturbances in complex hand function and purposive behaviour [10]. Parietal lobe behind the postcentral gyrus, sometimes works as the supplementary motor cortex [11]. In our case, the patient presented outside the thrombolytic window. Further imaging with MRI was not performed (which is a limitation of the study) due to unavailability and because the patient was lost to follow-up.

Patient's perspective: "I experienced sudden weakness in my left hand, which affected my ability to perform daily activities and work. Following medical evaluation and treatment, I felt reassured and remain hopeful for improvement with continued therapy."

Conclusion

Pseudo-peripheral nerve palsy can pose as a stroke chameleon, and every acute peripheral nerve palsy should be evaluated for a possible central cause, especially when the patient presents within the thrombolytic window. Parietal lobe involvemen neglect, optic ataxia, and impairments in visually guided eye movements. The parietal cortex serves as a causing motor weakness is quite rare, given its topographical representation in the brain. But our case is unique, in which the patient presented with a typical pseudo-peripheral nerve palsy and parietal infarction.

Acknowledgement

The authors would like to thank the medical, radiology, nursing, and support staff involved in the patient's care, whose efforts were invaluable in managing this complex case. Special thanks also to the patient's family for their support and cooperation during the clinical course and recovery.

Author Contribution Roles

Conceptualisation: Dr Risly NMM, Case Management: Dr Risly NMM, Dr ACB Gunawardhana, Dr N Athauda, Manuscript Drafting: Dr Risly NMM, Dr Sahana JF, Critical Review and Final Approval: Dr HMS Senanayake, Dr N Athauda, Dr Jayasinghe IK

Consent and Ethical Consideration Statement

Informed consent was obtained from the patient for the publication of this case report and any accompanying images. All ethical considerations were adhered to in accordance with institutional guidelines.

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