RESEARCH PAPER

# Eosinophilic Granulomatosis With Polyangiitis Presenting With Peripheral Neuropathy in a Patient With Obstructive Airway Disease: A Case Report

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**Abstract**

Background: Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare systemic vasculitis characterized by obstructive airway disease, peripheral and tissue eosinophilia, and small- to medium-vessel vasculitis. Peripheral neuropathy, particularly mononeuritis multiplex, is an important neurological manifestation that may cause significant functional disability.

Case presentation: We describe a 49-year-old man admitted to the Department of General Medicine with an acute exacerbation of obstructive airway disease. The available clinical records document a history of bronchial asthma/obstructive airway disease, peripheral neurological involvement with foot drop, and eosinophil-predominant findings. ANCA positivity is also suggested in the handwritten documentation, although the specific antibody and laboratory result require verification. The patient underwent neurological and pulmonary evaluation and received systemic glucocorticoids and supportive treatment. Further investigation is required to establish the extent of vasculitic involvement and confirm the diagnosis of EGPA.

Conclusion: This case highlights the importance of considering systemic eosinophilic vasculitis in patients with obstructive airway disease and otherwise unexplained peripheral neuropathy. Early recognition and appropriate evaluation are essential to establish the diagnosis and guide treatment.

Keywords: Eosinophilic granulomatosis with polyangiitis; EGPA; mononeuritis multiplex; foot drop; eosinophilia; ANCA-associated vasculitis.

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## Introduction

Eosinophilic granulomatosis with polyangiitis (EGPA), formerly known as Churg–Strauss syndrome, is a rare multisystem disorder characterized by asthma or other obstructive airway disease, eosinophilic inflammation, and necrotizing vasculitis involving small- and medium-sized blood vessels.

The clinical presentation is heterogeneous and may involve the respiratory tract, skin, peripheral nervous system, gastrointestinal tract, kidneys, and cardiovascular system. Peripheral neuropathy, including mononeuritis multiplex, is a clinically important manifestation and may present with asymmetric limb weakness or foot drop.

Diagnosis requires integration of the clinical presentation, eosinophil count, ANCA testing, organ assessment, and, where appropriate, histopathological findings. The 2022 American College of Rheumatology/European Alliance of Associations for Rheumatology classification criteria can support classification after a diagnosis of vasculitis has been established and mimicking conditions have been excluded.

We present this case to emphasize the diagnostic importance of recognizing peripheral neurological deficits in a patient with obstructive airway disease and suspected systemic eosinophilic inflammation.

## Case Presentation

### Clinical history

A 49-year-old man was admitted to the Department of General Medicine with an acute exacerbation of obstructive airway disease. The discharge documentation records a diagnosis of asthma–COPD overlap and describes associated peripheral neurological symptoms, including foot drop. The available records also suggest eosinophil-predominant findings and possible ANCA positivity.

The patient was evaluated for respiratory symptoms and peripheral neurological involvement. The available notes document foot drop and a neurological assessment for possible mononeuritis multiplex. Details regarding the duration of asthma, previous exacerbations, chronic rhinosinusitis, nasal polyps, allergic manifestations, constitutional symptoms, and the temporal progression of weakness require confirmation from the original case records.

### Clinical examination

The discharge notes document peripheral neurological involvement with foot drop. A complete neurological examination, including the distribution of weakness, muscle power, sensory abnormalities, deep tendon reflexes, and cranial nerve findings, should be added from the original examination records.

The respiratory examination findings, oxygen requirement, hemodynamic parameters, skin examination, and assessment for other systemic manifestations should also be documented.

### Investigations

The available discharge summary appears to mention eosinophil-predominant findings and possible ANCA positivity. However, the absolute eosinophil count, total

leukocyte count, ANCA subtype and titre, inflammatory markers, renal function, urinalysis, and relevant imaging results are not sufficiently clear to report accurately.

Neurological evaluation was documented, but the exact nerve conduction study and electromyography findings require verification. These findings would help distinguish mononeuritis multiplex from radiculopathy or another peripheral neuropathy.

**Diagnostic considerations**

The combination of obstructive airway disease, suspected eosinophilia, and peripheral neurological involvement raises suspicion for EGPA. However, the available documentation is insufficient to establish the diagnosis conclusively. The final diagnosis should be supported by verified laboratory findings, appropriate assessment for systemic vasculitis, exclusion of alternative causes, and histopathological evidence where available and clinically indicated.

**Treatment and clinical course**

The discharge summary documents treatment with systemic glucocorticoids and supportive management during hospitalization. The precise drug doses, duration, additional immunosuppressive treatment if any, and response of respiratory and neurological manifestations should be verified from the medication chart and inpatient progress notes.

The documented discharge condition and subsequent neurological outcome should be added once follow-up records are available.

**Discussion**

EGPA is an important differential diagnosis in patients presenting with obstructive airway disease, eosinophilia, and manifestations suggestive of systemic vasculitis. Its clinical course is variable, and neurological involvement may be a major source of morbidity.

**Peripheral neuropathy as a diagnostic clue**

Mononeuritis multiplex is a recognized neurological manifestation of EGPA and may produce asymmetric motor deficits, sensory abnormalities, and foot drop. Electrodiagnostic testing can help establish the pattern of nerve involvement and distinguish multifocal neuropathy from radiculopathy or other neurological disorders.

In a patient with obstructive airway disease, the development of otherwise unexplained peripheral neuropathy should prompt evaluation for systemic inflammatory and vasculitic disorders, particularly when accompanied by eosinophilia or other organ involvement.

**Diagnostic approach**

The 2022 ACR/EULAR classification criteria assign points for obstructive airway disease, elevated eosinophil counts, nasal polyps, eosinophil-predominant extravascular inflammation, and mononeuritis multiplex or motor neuropathy not attributable to radiculopathy. These criteria are intended for classification in patients with an established diagnosis of small- or medium-vessel vasculitis after relevant mimics have been excluded; they should not be used as a standalone diagnostic test.

ANCA testing can provide supportive information, but a positive result alone does not establish EGPA. The specific antibody, such as MPO-ANCA or PR3-ANCA, should be documented, together with the clinical and laboratory context.

Evaluation should assess potential renal, cardiac, pulmonary, cutaneous, gastrointestinal, and neurological involvement. Histopathology, when available and appropriate, may provide additional diagnostic support.

**Management considerations**

Treatment depends on disease severity and the organs involved. Glucocorticoids are commonly used, while patients with severe organ-threatening disease may require additional remission-induction therapy, such as cyclophosphamide or rituximab, under specialist supervision. Mepolizumab and other steroid-sparing approaches may be appropriate in selected patients, particularly those with nonsevere disease or relapsing manifestations.

Cardiac assessment is important in newly diagnosed EGPA because cardiac involvement may be clinically significant even when symptoms are limited. Treatment selection should follow a comprehensive severity assessment and multidisciplinary review.

In the present case, the documented combination of obstructive airway disease and peripheral neurological involvement is clinically suggestive. However, the final interpretation depends on verification of the eosinophil count, ANCA results, electrodiagnostic findings, and evidence of systemic vasculitis.

**Conclusion**

This case highlights the need to consider EGPA in patients with obstructive airway disease who develop unexplained peripheral neurological deficits. Recognition of the combination of airway disease, eosinophilic inflammation, and possible vasculitic neuropathy may facilitate earlier diagnostic evaluation. Confirmation of the diagnosis requires a systematic assessment of laboratory findings, organ involvement, and relevant alternative diagnoses.

**Patient Consent and Ethics**

Written informed consent for publication of the clinical details and any accompanying images must be obtained from the patient. Identifying information should be removed from all submitted material. Institutional ethics requirements and the target journal's case-report policies should be followed.

**References**

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