



Case Presentation

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## A Rare Neurological Presentation of Microscopic Polyangiitis: Central and Peripheral Nervous System Involvement

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### Abstract

**Background:** Microscopic polyangiitis (MPA) is an antineutrophil cytoplasmic antibody-associated small-vessel vasculitis that may affect the kidneys, lungs, skin, peripheral nerves, and, less commonly, the central nervous system.

**Case Presentation:** A 58-year-old woman presented with progressive distal weakness and sensory symptoms followed by an acute focal neurologic episode. Laboratory evaluation demonstrated inflammatory activity and myeloperoxidase-ANCA positivity. Neuroimaging showed multifocal ischemic lesions, while electrodiagnostic testing demonstrated an axonal peripheral neuropathy. The overall findings supported MPA with concurrent central and peripheral nervous system involvement.

**Conclusion:** Neurologic manifestations of MPA may span central and peripheral nervous system compartments. Recognition of this uncommon combination can facilitate earlier diagnosis and coordinated immunosuppressive management.

**Keywords:** microscopic polyangiitis; ANCA-associated vasculitis; peripheral neuropathy; central nervous system; mononeuritis multiplex; stroke

### Introduction

Microscopic polyangiitis is a necrotizing small-vessel vasculitis commonly associated with myeloperoxidase-ANCA. Renal and pulmonary disease are well recognized, while neurologic manifestations may include mononeuritis multiplex and other peripheral neuropathies. Central nervous system involvement is less frequent and may present with ischemic or inflammatory neurologic syndromes.

This case report illustrates an adult patient with evidence of both peripheral and central nervous system involvement. Author identities and clinical details are intentionally information for manuscript-template use.

### Case Presentation

A 58-year-old woman with no established systemic autoimmune diagnosis developed several weeks of progressive numbness and burning pain in both feet, followed by asymmetric hand weakness. Neurologic examination demonstrated distal sensory loss and reduced ankle reflexes. Over the following days she developed a brief episode of expressive language difficulty and right facial weakness that resolved spontaneously.

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Laboratory testing demonstrated elevated inflammatory markers and a strongly positive MPO-ANCA. Renal function showed a mild inflammatory pattern without severe renal failure. Chest imaging demonstrated scattered inflammatory pulmonary opacities. Brain MRI demonstrated small acute ischemic lesions in more than one vascular territory. Electromyography and nerve-conduction studies showed an axonal sensorimotor neuropathy with asymmetric involvement, compatible with a vasculitic neuropathic process.

After multidisciplinary review, the overall clinical pattern was considered compatible with MPA involving both peripheral and central nervous systems. The patient received induction immunosuppression in this scenario, followed by clinical and laboratory monitoring. At six-month follow-up, neurologic symptoms had stabilized and no new focal cerebral event was reported.

## Discussion

Peripheral neuropathy, particularly mononeuritis multiplex, is a recognized neurologic manifestation of systemic small-vessel vasculitis. The peripheral nervous system is vulnerable to ischemic injury of the vasa nervorum. Central nervous system manifestations are less common but may include ischemic stroke, encephalopathy, seizures, headache, or inflammatory lesions.

The simultaneous presence of a vasculitic peripheral neuropathy and multifocal central ischemic abnormalities should prompt consideration of a systemic inflammatory mechanism when supported by serology and other organ involvement. Diagnosis requires integration of clinical findings, laboratory studies, imaging, and, when appropriate, tissue pathology.

Treatment of active organ-threatening ANCA-associated vasculitis generally requires prompt immunosuppressive therapy. Management should be individualized according to disease severity and affected organs and coordinated among rheumatology, neurology, nephrology, and other relevant specialties.

## Conclusion

MPA can rarely produce clinically important involvement of both the central and peripheral nervous systems. A combined neurologic phenotype should encourage clinicians to investigate systemic vasculitis when imaging, electrodiagnostic testing, serology, and clinical findings converge.

## References

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