Baló Concentric Sclerosis Variant Presenting as an Acute MS Flare

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Case Presentation

38-year-old woman with known multiple sclerosis

Progressive right-sided weakness × 1 week
- Right hand weakness
- Right leg weakness resulting in a fall

Associated speech difficulties

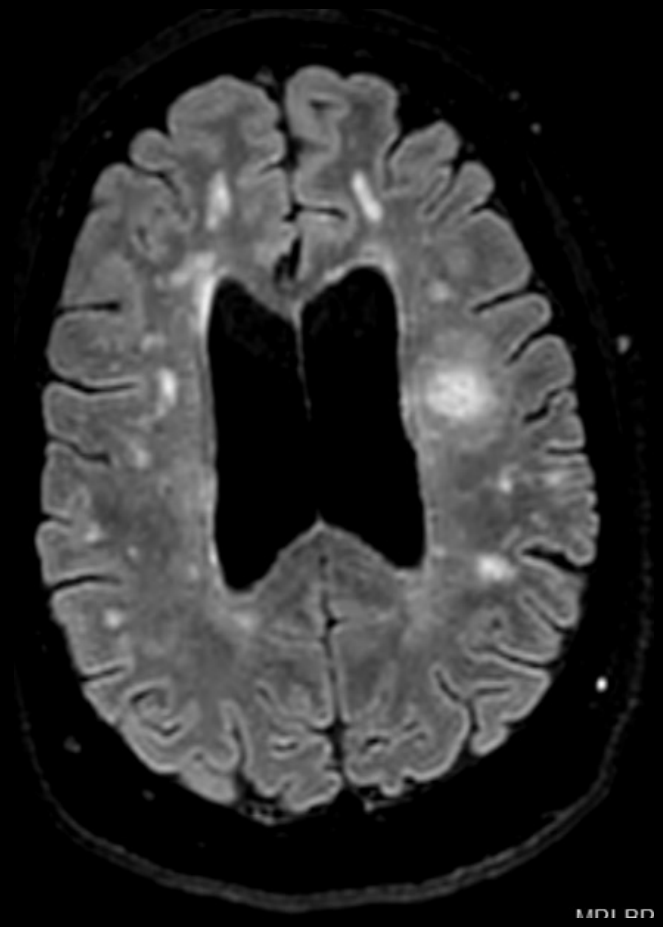
Not taking disease-modifying therapy

Laboratory studies unremarkable

Neurology recommended brain MRI

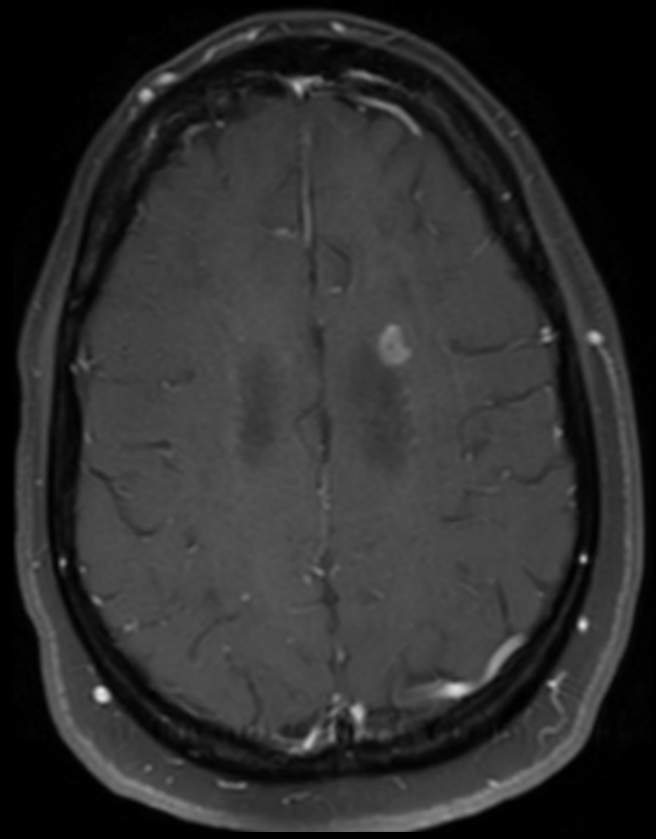
Right-sided Weakness | Speech Difficulty | Off DMT

MRI Brain Demonstrates Progressive Demyelinating Disease



Flair

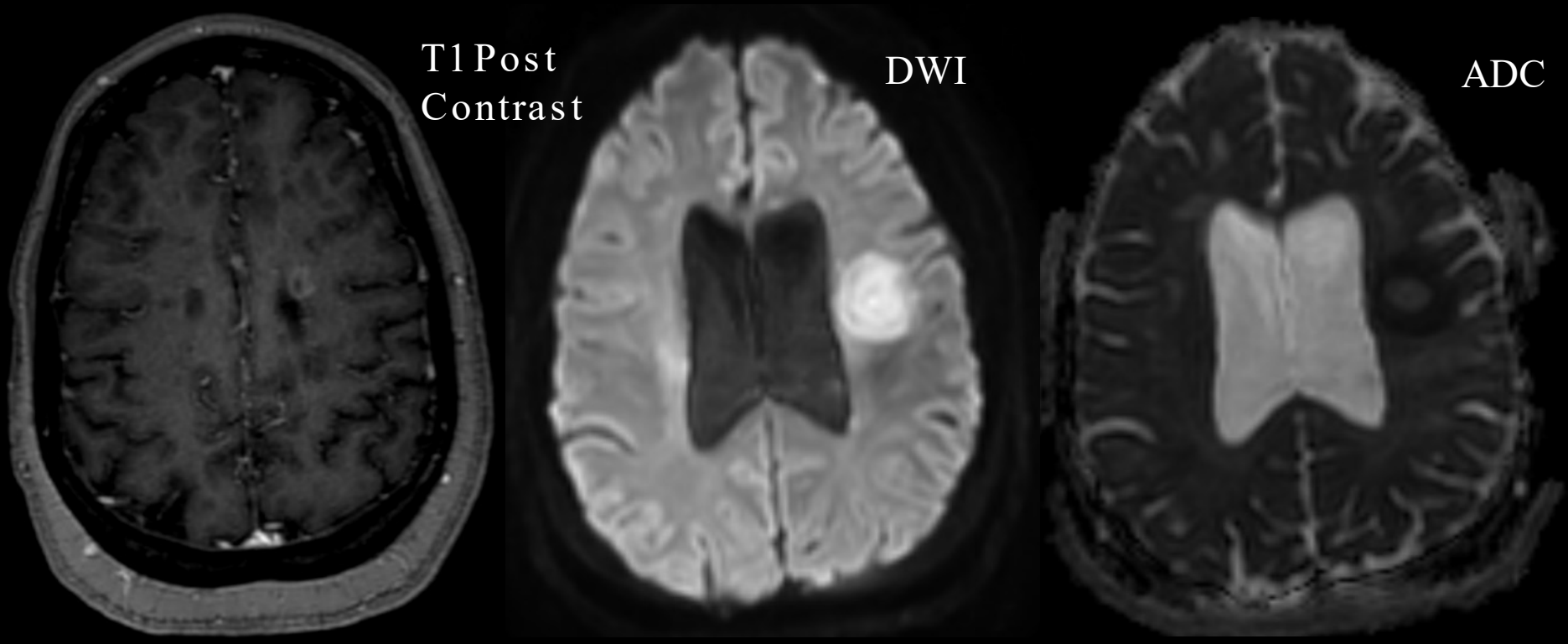
- New/enlarging supratentorial white matter lesions
- Increased T2/FLAIR plaque burden
- New 2.8 × 2.2 cm left corona radiata lesion
- Multiple additional periventricular lesions
- Enhancing lesions consistent with active demyelination



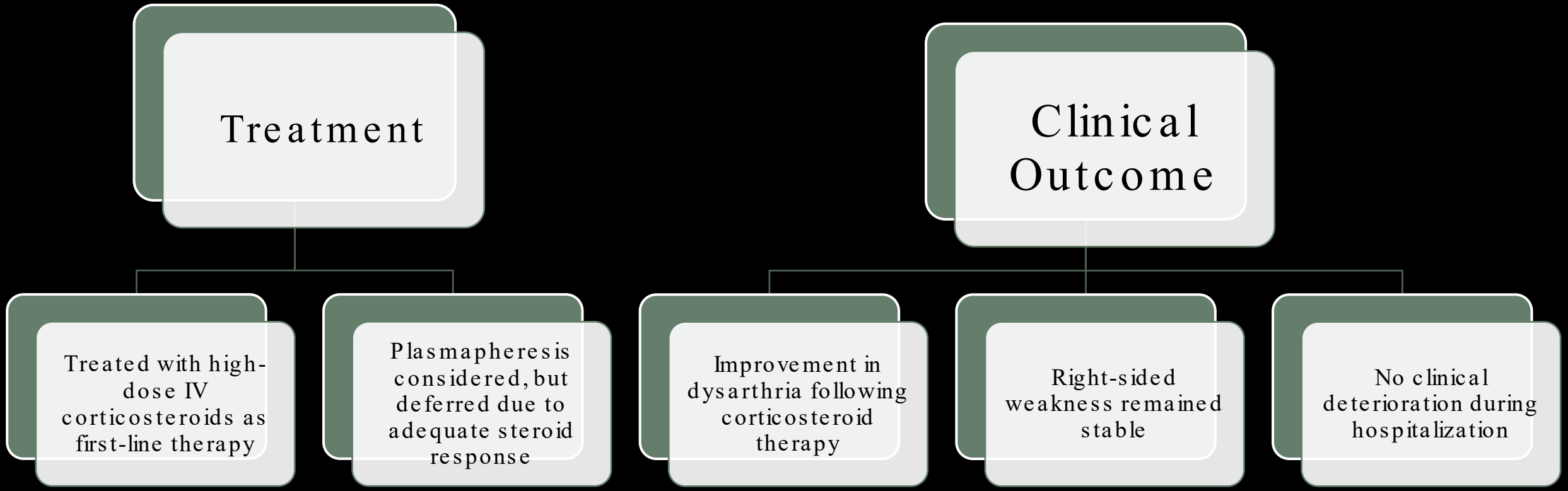
T1 Post Contrast

Characteristic Imaging Features of Baló Concentric Sclerosis

- Concentric layered morphology
- Alternating DWI hyper/hypointense rings
- Faint enhancement of dominant lesion
- Additional incomplete (open-ring) enhancement
- Findings compatible with Baló Concentric Sclerosis



Management and Outcome



Discussion

Pathophysiology

- BCS is associated with Pattern III demyelinating immunopathology.
- Proposed mechanisms resemble hypoxic-ischemic tissue injury rather than antibody-complement mediated injury.
- This may account for differences in treatment response compared with other demyelinating disorders.

Treatment Considerations

- IV corticosteroids are first-line therapy for acute BCS.
- Plasmapheresis is generally reserved for steroid-refractory cases.

Clinical Evidence

- In the largest reported BCS cohort:
  - 46% of patients demonstrated a moderate-to-marked response to corticosteroids.
  - 79% of incomplete steroid responders improved with plasmapheresis.

Relevance to the Present Case

- Clinical improvement occurred following corticosteroid therapy alone.
- Follow-up MRI demonstrated resolution of lesion enhancement.
- Plasmapheresis was not required, supporting successful first-line steroid treatment.

Key Take-Home Points



Recognition

Rare demyelinating disorder with characteristic concentric ring morphology

May mimic a high-grade glioma or other tumefactive lesions



Imaging Clues

Coexisting multiple sclerosis plaques

Open-ring enhancement

Alternating concentric rings on MRI



Ongoing Questions

Whether BCS represents a distinct disease entity or a variant of MS remains uncertain

The mechanism underlying the concentric ring pattern remains incompletely understood

References

1. Jolliffe, E. A., Guo, Y ., Hardy, T. A., et al. (2021). Clinical and radiologic features, pathology,
and treatment of Baló concentric sclerosis. Neurology, 97(13), e1272–e1282.

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3. Cortese, I., Chaudhry, V ., So, Y . T., et al. (2011). Evidence-based guideline update: Plasmapheresis in neurologic disorders. Neurology, 76(3), 294–300.

4. Suh, C. H., Kim, H. S., Jung, S. C., et al. (2018). MRI findings in tumefactive demyelinating lesions: A systematic review and meta-analysis. AJNR Am J Neuroradiol, 39(9), 1573–1580.

Thank You