

## Learning objective

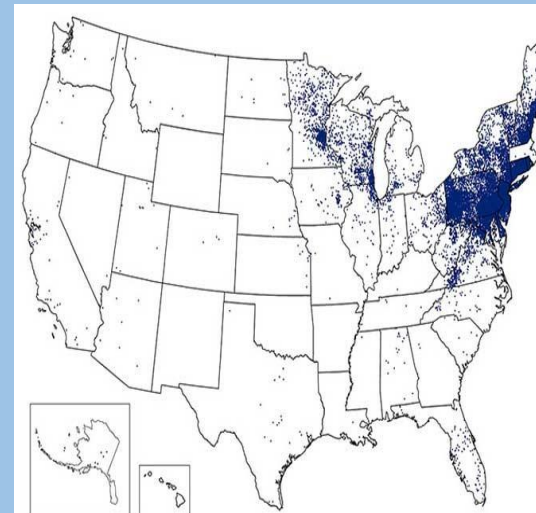
Lyme disease is an uncommon cause of Guillain-Barre syndrome (GBS) but is an important differential to consider for patients presenting with symptoms, particularly in the Northeast US.

## Case

- 75F with recent h/o of Lyme disease s/p doxycycline with acute onset, progressive numbness of b/l hands & feet with gait instability for 6 days.
- Started w/ cold sensation in the feet that progressed to numbness which slowly ascended to above the knees over 6 days. Day 3: developed progressive gait instability, described as “losing her balance,” requiring the patient to use a cane to walk.
- **PMH:** 3 weeks before symptom onset, she developed erythema migrans on her right thigh, and was treated with a two-week course of doxycycline.
- **Neurological exam:** ↓ pressure sensation & proprioception in b/l lower extremities below the knees, absent ankle and knee reflexes b/l, and gait instability with (+) Romberg’s sign
- **Labs\*:** CSF analysis shows ↑ CSF protein (155) with normal WBC, consistent with GBS. CSF glucose, cytology, gram stain and culture were unremarkable. Lyme total antibody by EIA (+) but Lyme IgG and IgM western blot (-). *\*Of note: Lyme antibody not tested in CSF.*
- **Imaging:** NC-CT head unremarkable. MRI of the spine showed changes consistent with multilevel, multifactorial central stenosis, but no acute abnormalities.
- **Treatment:** Received 5 cycles of plasmapheresis with gradual improvement of symptoms and return of reflexes, but she continued to have gait imbalance and was discharged to an acute rehabilitation center for physical therapy.

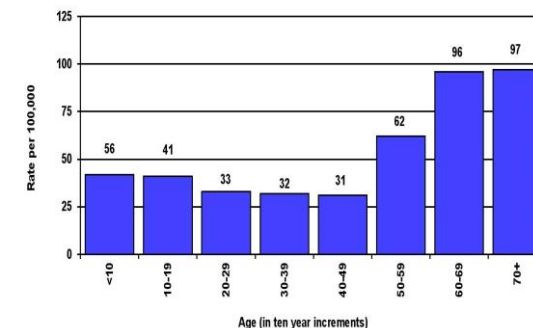
## References

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- Horneff G, Huppertz HI, Müller K, Voit T, Karch H. Demonstration of Borrelia burgdorferi infection in a child with Guillain-Barré syndrome. Eur J Pediatr. 1993;152:810–2.
- Cusick MF, Libbey JE, Fujinami RS. Molecular mimicry as a mechanism of autoimmune disease. Clin Rev Allergy Immunol. 2012;42:102–11.



Lyme endemic areas in the USA

## Lyme Disease Incidence by Ten Year Age Groups, Connecticut, 2018\*



Lyme disease by age group in CT, 2018

## Discussion

- Early disseminated Lyme disease can present weeks or months after the initial tick bite and can cause neurological involvement such as mononeuritis multiplex, radiculopathies, and cranial nerve palsies, collectively known as neuroborreliosis.
- Components of the spirochete associated with Lyme disease may act as antigens or immune complexes, which facilitate production of antiganglioside antibodies implicated in the development of GBS in susceptible individuals.
- There are reports in favor of Lyme disease triggering GBS, neuroborreliosis mimicking GBS, and cases where it was not possible to distinguish between these two entities.
- Lyme disease should be considered in anyone who presents with symptoms and signs suggestive of GBS. These patients should be questioned about possible tick bites in the preceding few months, especially in areas with high prevalence, such as NE USA.