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A Rare Co-Infection of Ehrlichiosis and Rocky Mountain Spotted Fever in South Florida

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A Rare Co-Infection of Ehrlichiosis and Rocky Mountain Spotted Fever in South Florida

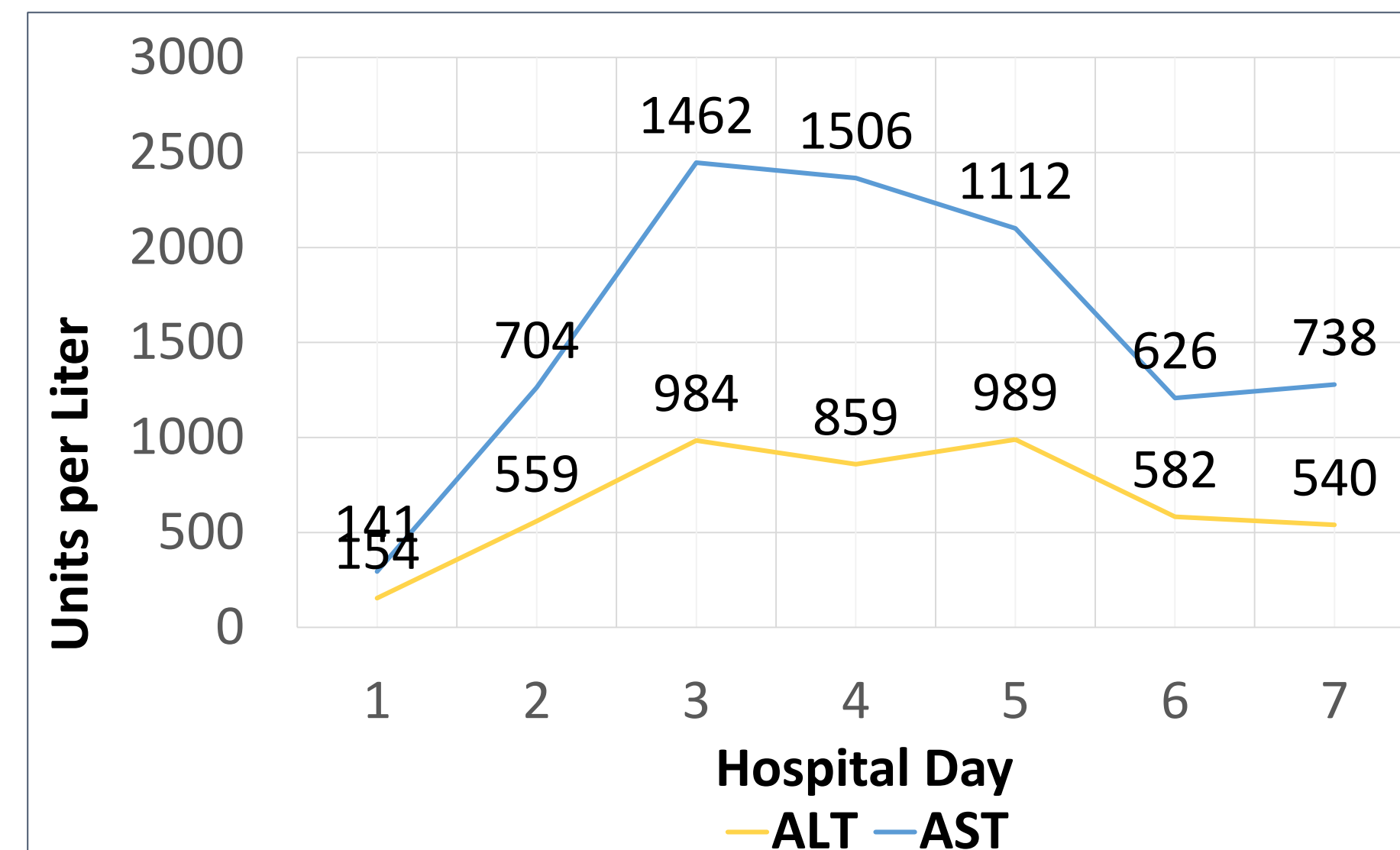
Purpose

Tick-borne rickettsial diseases (TBRD) are a group of geographically distinct infectious diseases that share a common molecular structure and clinical presentation. TBRDs include Rocky Mountain spotted fever, human monocytic ehrlichiosis, and human granulocytic anaplasmosis. These rickettsial diseases are caused by a group of gram-negative obligate intracellular coccobacilli that present with acute-onset fever, headache, generalized muscle pain, and a characteristic rash. As these symptoms mimic viral illness, they are often misdiagnosed early on in the disease course, delaying the onset of proper antimicrobial treatment. A high index of suspicion is necessary for clinical diagnosis; thus, it is imperative to perform a proper epidemiologic and social history to assess for exposure to tick bites, wildlife, and recent travel, especially in endemic areas. Upon literature review, it is rare to encounter patients who contract multiple TBRDs given the varying geographic distribution and species of their vectors.

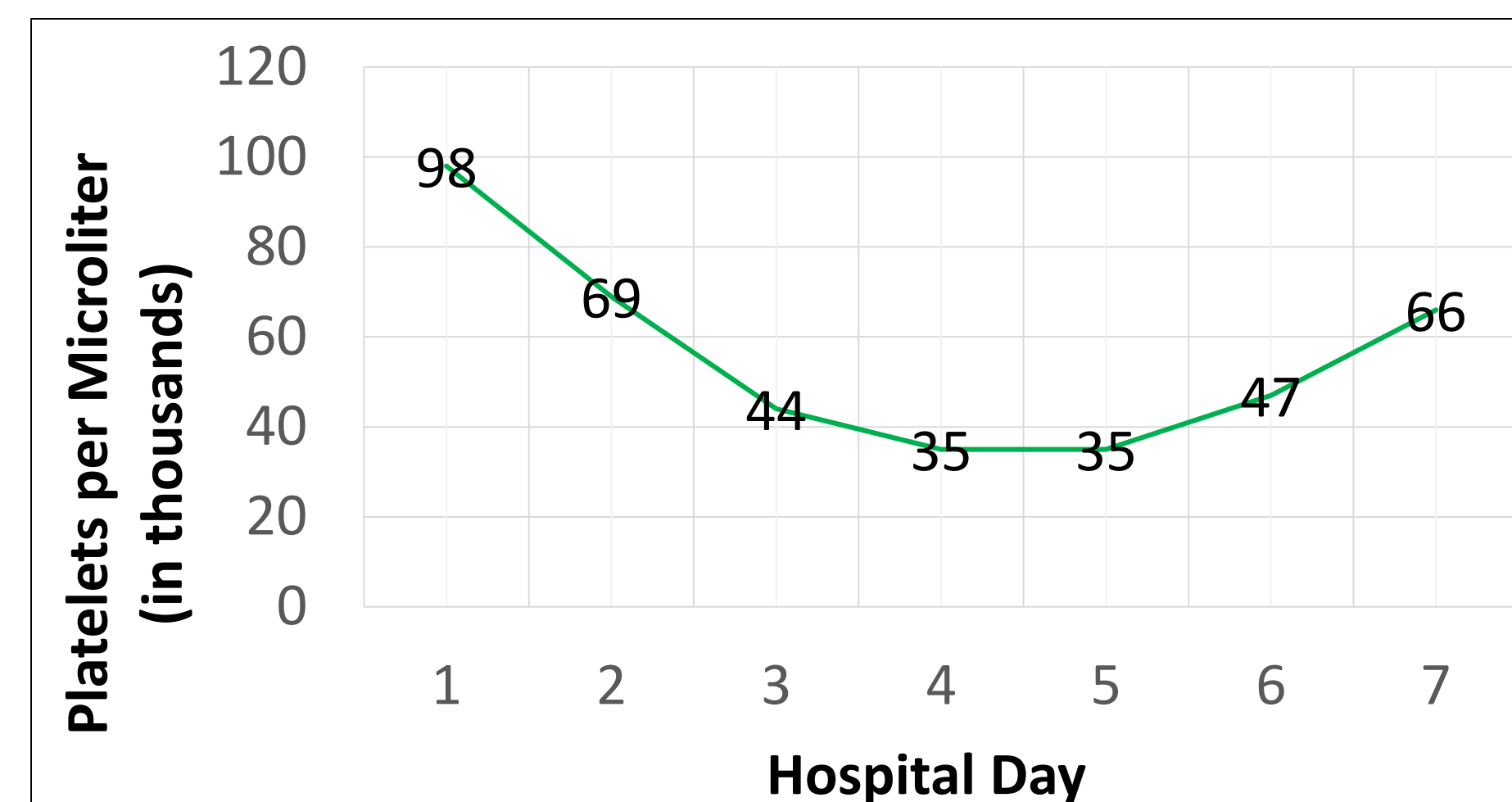
Methods

A 22 year old male presented to Urgent Care with a 3 day history of persistent fever, abdominal pain, nausea, non-bloody vomitus, and generalized body aches. He was sent to the ED due to combination of non-specific symptoms and was admitted for a suspected acute viral illness despite negative respiratory viral panel. Throughout admission, the patient's fevers persisted and he developed a progressively worsening pancytopenia and transaminitis. Upon further questioning, the patient reported frequent tick exposure and has frequent exposure to wildlife. Epidemiologic history was suspicious for possible TBRD; infectious Diseases (ID) was consulted and a full workup for infectious species was performed. The patient was started on empiric doxycycline for presumptive rickettsial disease. After 48 hours of treatment, the patient's symptoms began to improve and his labs began to return to baseline.

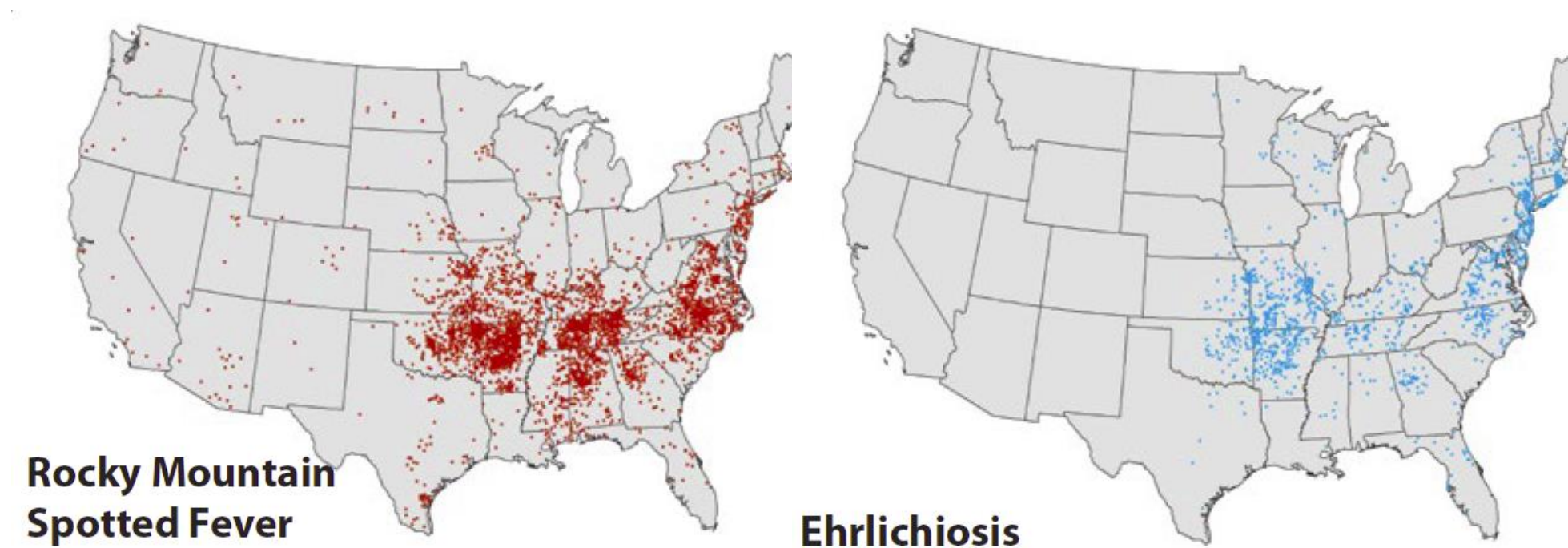
Liver Enzyme Trends Throughout Hospital Stay



Platelet Count Trend Throughout Hospital Stay



Select TBRD Distribution in the United States²



Images from CDC (2017). *Tickborne Diseases of the United States: A Reference Manual for Health Care Providers*.

Findings

A full workup for infectious species was performed due to high clinical suspicion given patient's history and physical exam. PCR identified *Ehrlichia chaffeensis* organism which causes human Ehrlichiosis in addition to RMSF IgG AB (1:256) reflecting co-infection with Rocky Mountain spotted fever.

Discussion

Although this patient was not geographically at risk for TBRDs, he displayed an acute viral syndrome consistent with these diseases and was subsequently started on proper empiric antibiotic therapy. He was discharged after 7 days and completed at 10 day course of doxycycline. The patient followed up as an outpatient at the Family Medicine clinic with resolution of acute symptoms and laboratory abnormalities.

Implications for Practice

Even in an uncharacteristic region, physicians should include Rickettsial disease in the differential as well as explore tick exposure and other risk factors. While unusual, physicians should maintain high clinical suspicion for multiple etiologies of infection.

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