

Take a Bite out of this: Ehrlichiosis in the ICU

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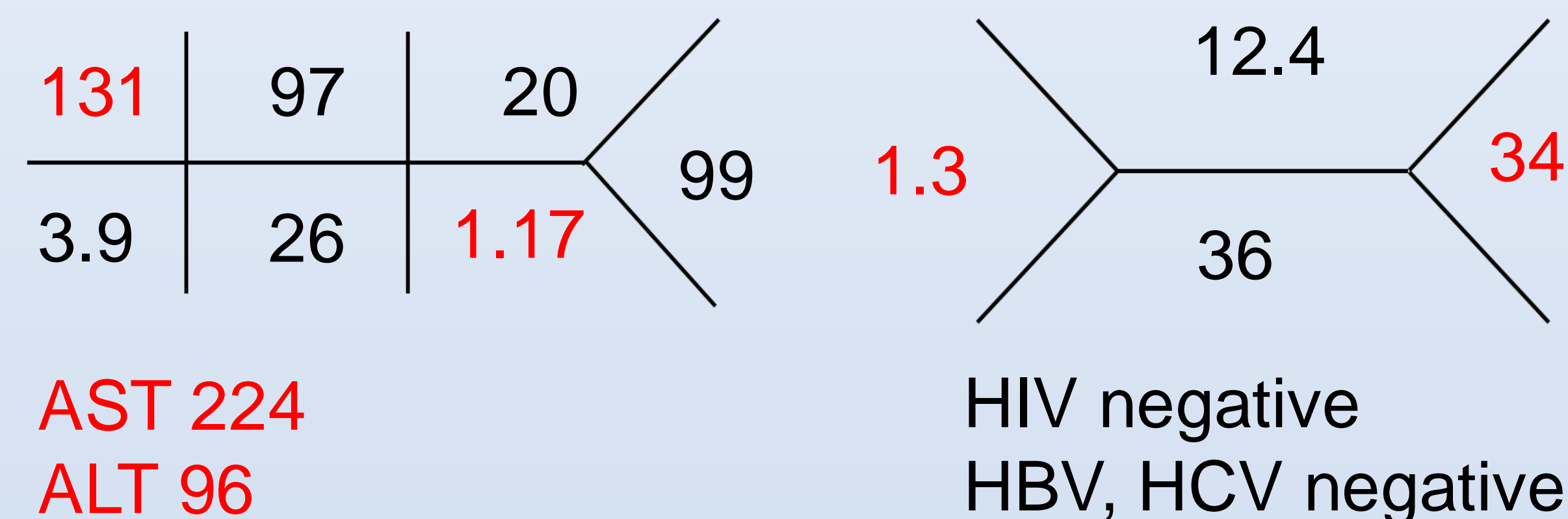


Introduction

- Ehrlichiosis is a tickborne illness endemic to the Mid-Atlantic and Southern United States, similar to a related infection, Anaplasmosis
- Though most cases are self-limited, Ehrlichiosis can be fatal if treatment is not initiated promptly
- We present a case of a patient presenting with septic shock requiring ICU admission, secondary to Ehrlichiosis infection

Case Presentation

- A 59-year-old woman with a history of fibromyalgia presented to the emergency department in May with 3 days of fever, headaches, myalgias, and vomiting
- Vitals significant for temperature 38.5C and blood pressure 98/65



Case Presentation Cont.

- Admitted to the floors with presumed sepsis of unknown source
- The next day, a rapid response was called due to hypotension, and the patient was transferred to the ICU for vasopressor support
- Further history revealed the patient frequently runs through a state park in Delaware, and had recently found a tick on herself
- She was started on doxycycline empirically
- A tick PCR panel returned positive for *Ehrlichia chaffeensis*

Discussion

- Ehrlichiosis compasses a group of illnesses caused by *Ehrlichia chaffeensis*, *E. ewingii*, and *E. muris eauclairensis*
- E. chaffeensis* is transmitted by the lone star tick, which is endemic to the Mid-Atlantic and Southern US states
- Ehrlichiosis can cause severe disease, with 41-63% of patients requiring hospitalization
 - 1.0 - 2.7% case fatality rate

Complication	Percentage
Renal failure	8%
Meningitis	5%
ARDS	3%
DIC	2%
Sepsis	1%
Pneumonia	1%

Discussion Cont.

- Common presenting symptoms include fever, headache, myalgia
- Septic shock, respiratory failure, meningoencephalitis, and multiorgan failure can occur in severe cases
 - Increased risk among immunocompromised patients
- Lab abnormalities include leukopenia, thrombocytopenia, transaminitis, and hyponatremia
- The diagnosis can be made with blood smear, PCR, or serology
- The treatment of choice is doxycycline and should not be delayed if Ehrlichiosis is suspected
 - Delay in treatment may increase risk of severe disease and requiring ICU level of care

Conclusions

- Tickborne illnesses often present with nonspecific symptoms, requiring a high suspicion to correctly diagnose them
- Ehrlichiosis, and other tickborne illnesses, can present with severe symptoms and should be considered in the differential diagnosis in patients with septic shock
- Swift initiation of antibiotics is required to prevent excess mortality in these cases

References

- Walker DH, Ismail N, Olano JP, McBride JW, Yu XJ, Feng HM. Ehrlichia chaffeensis: a prevalent, life-threatening, emerging pathogen. *Trans Am Clin Climatol Assoc.* 2004;115:375-384.
- Heitman KN, Dahlgren FS, Drexler NA, Massung RF, Behravesh CB. Increasing Incidence of Ehrlichiosis in the United States: A Summary of National Surveillance of Ehrlichia chaffeensis and Ehrlichia ewingii Infections in the United States, 2008–2012. *Am J Trop Med Hyg.* 2016;94(1):52-60. doi:10.4269/ajtmh.15-0540
- Kuriakose K, Pettit AC, Schmitz J, Moncayo A, Bloch KC. Assessment of Risk Factors and Outcomes of Severe Ehrlichiosis Infection. *JAMA Network Open.* 2020;3(11):e2025577. doi:10.1001/jamanetworkopen.2020.25577



Figure 1. Chest CT showing right middle and lower lobe ground glass opacities.

