

Introduction

Tick-borne illnesses can be fatal if not treated early. We describe a severe case of Ehrlichiosis with a Babesia co-infection (from the uncommon *Babesia Duncani*) with excellent clinical outcome from early empiric treatment with Doxycycline

Case Presentation

- A 44-year-old Delawarean presented with a one-day history of fever (Tmax 103°F), lethargy and hypotension.
- **Labs:** Pancytopenia with a WBC count of 1.3 K/ μ L, Hb 9.9 g/dL, Hct 29%, Platelet count of 36 K/ μ L, Neutropenia with an ANC of 0.6. K/ μ L, elevated aminotransferases with an AST of 376 U/L and ALT of 133 U/L, with negative blood cultures, urinalysis, viral respiratory and GI PCR's.
- CT chest, abdomen and pelvis unremarkable for a septic source.
- **Rx:** Empiric with Vancomycin, Piperacillin-Tazobactam and Meropenem.
- After 48 hours without clinical improvement, the patient was questioned about tick exposure and confirmed a recent tick bite.
- Addition of empiric doxycycline resulted in complete resolution of symptoms and lab abnormalities within 48 hours of initiation.
- After discharging home, a comprehensive tickborne panel resulted positive for *Ehrlichia Chaffeensis* DNA PCR and *Babesia Duncani* WA1 IgG >1:256.



Fig 1: Adult male winter tick (*Dermacentor albipictus*) (Image: Cooperative extension: Tick lab. University of Maine)

Discussion

- The CDC¹ describes Babesiosis and Ehrlichiosis to range from flu-like symptoms to being fatal.
- Common findings include thrombocytopenia, elevated aminotransferases and a low hematocrit.
- *Babesia Duncani* is commonly spread by the winter tick (*Dermacentor Albipictus*)², which is a one-host species usually affecting moose, found more commonly in Canada.
- The IDSA guidelines recommend Quinine or atovaquone with Clindamycin or Azithromycin for Babesiosis.
- Though this patient did not receive the recommended treatment for Babesiosis, the complete resolution of her illness questions whether *Babesia Duncani* was an incidental finding in a case of Ehrlichiosis or that it demonstrates a good clinical response of *Babesia Duncani* to Doxycycline.
- There is currently limited data in treating *Babesia Duncani* WA1 with insufficient evidence for use of Doxycycline monotherapy.
- **Early suspicion of tick-borne illnesses and empiric treatment with doxycycline** has demonstrated a 49% decrease in ICU admission rates, decrease in ARDS and multiorgan failure and a 43% reduction in need for mechanical ventilation³.

Conclusions

With the increasing incidence of tick-borne illnesses worldwide⁴, we emphasize:

1. Consideration of tick-borne illnesses as a differential diagnosis for septic patients in endemic areas.
 2. The need for thorough history-taking of septic patients
 3. The need for further research on the use of doxycycline monotherapy for babesia species.
- The patient described here presented with typical symptoms and labs for ehrlichiosis with a relatively uncommon tickborne co-infection, *Babesia Duncani* WA1, but by identifying her symptoms and lab derangements early in the disease course, early empiric treatment with doxycycline resulted in an excellent clinical outcome.

References

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BABESIOSIS



EHRlichiosis

Fig 2: Babesia and Ehrlichia Cases reported to the CDC in 2018 showing endemic areas for the two tick-borne illnesses. (Image source: CDC, NCEZID, DVBD)