An Unusual Presentation of Anaplasmosis and Lyme Disease within Diabetes Mellitus type 2 and Hypertension.

Since February 2020, COVID-19 has become increasingly concerning as an etiology for patients presenting with sepsis and lymphopenia in the United States.

- Recognize that tick-borne illnesses which include human granulocytic anaplasmosis (HGA) and Lyme disease are occurring with increasing prevalence.
- Have a high suspicion for HGA and Lyme disease in a patient presenting with lymphopenia, thrombocytopenia and sepsis, especially in the northeastern United States.

CASE REPORT

An 82-year-old retired man presented to the emergency department for evaluation of altered mental status.

**History:** Five days prior to presentation, the patient developed lethargy, confusion, loss of appetite and anosmia. His history was also significant for sore throat with associated high fevers. He had had no sick contacts, and he had returned to the United States from Nigeria four months prior to presentation.

**PMH:** Diabetes Mellitus type 2 and Hypertension.

**Physical Examination:** He presented with an elevated heart rate of 124 b/min, tachypnea of 40 breaths/min and hypoxia with 93% oxygen saturation in room air. He was lethargic with altered mental status and cardiopulmonary exam was unremarkable.

**Laboratory Data:**
- White blood cell count of 4.6 x 10^9/L with 71% neutrophils and 21% lymphocytes, Absolute lymphocyte cell count of 1.0, platelet count of 61 x 10^9/L, with the presence of bands, toxic granules and Döhle bodies.
- D-dimer was elevated to 19,000 ng/mL, LDH of 617 units/L, Ferritin of >2600 ng/ml and CRP of 14.3 mg/dL.
- Metabolic profile was significant for a lactic acid level of 3.4 mmol/L and serum creatinine of 1.7 mg/dL.
- Liver function test: ALT of 99 units/L, AST of 140 units/L and ALP of 161 units/L. Bilirubin was 4.1 mg/dL with a direct of 3.2 mg/dL.

**Imaging:** Initial chest radiography was unremarkable, but 24 hours later, he developed a subtle left base opacity.

HOSPITAL COURSE

The patient was diagnosed with sepsis and admitted as a person under investigation for COVID-19 infection. He received fluid resuscitation with ringer’s lactate and began vancomycin, cefepime and metronidazole after blood cultures were obtained. His COVID-19 PCR test, HIV P24, HIV 1.2 antibody test and HAV IgM, HBV core IgM as well as HCV Qnt were negative. *Anaplasma phagocytophilum* and *B. burgdorferi* antibodies, IgM and IgG were both positive. A review of his peripheral blood smear showed neutrophils with intracytoplasmic morulae, consistent with HGA. He rapidly improved on doxycycline, and he was discharged home, fully resolved, alert and oriented within the week.

CONCLUSION

- The full spectrum of tick-borne disease manifestations can very easily be mistaken for COVID-19 and has the potential to lead to significant delays in diagnosis and appropriate care. Physicians will benefit their patients by early recognition of potential mimics of COVID-19 and avoidance of premature closure. Early diagnosis and treatment limits complications and prevents mortality.

REFERENCES

- United States Centers for Disease Control. Ehrlichiosis and Anaplasmosis.