A Rare Case of Anaplasmosis-Induced Cardiomyopathy

Lekha Yadukumar, MBBS[1]; Shila Simkhada, MBBS[1]; Ayushi Jain, MBBS[1]; Kristina Tanovic, MD[1]
1. The Wright Center for Graduate Medical Education, Scranton, PA

Introduction

- Anaplasmosis or human granulocytic anaplasmosis (HGA), is a tick-borne disease caused by Anaplasma phagocytophilum[1]
- Common symptoms are malaise, fever, headache, leukopenia, thrombocytopenia, transaminitis, and elevated inflammatory markers

Case Presentation

- 77-year-old female with past medical history of hypertension, hypothyroidism, diabetes mellitus, and anxiety presented with four days of diffuse abdominal pain, nausea, decreased appetite, and episodes of confusion
- Vitals: HR 108 bpm, BP 90/60, SpO2: 91%
- Physical examination: disoriented, somnolent
- Labs: platelets 26000 cells/mm^3, Se. Cr 4 mg/dL, Se. Na 125 meq/L, ALP >350 IU/L, lactate 3 mmol/L, troponin 90 ng/ml
- CT head and abdomen was unremarkable
- Treated with IV fluids and broad-spectrum antibiotics
- Patient became hypoxic. Chest X-ray: pulmonary edema. Initiated BiPAP and diuretics.
- Peripheral smear showed intracytoplasmic inclusions in neutrophils suspicious for anaplasmosis or ehrlichiosis. Antibiotics de-escalated to doxycycline, azithromycin, and atovaquone (Figure 1).
- PCR test confirmed anaplasmosis, and antibiotics were de-escalated to doxycycline
- Her mentation improved and she denied exposure to animal/tick bites or rashes
- Elevated troponin was initially attributed to infection, continued to trend up to >1700 ng/ml, pro-BNP >7000 pg/mL. Echocardiogram: showed left ventricular ejection fraction of 20% to 24% (compared to 60% 10 months back), and severe diffuse hypokinetic and akinetic left ventricular apex.
- Differential diagnoses were cardiomyopathy secondary to infection versus multivessel coronary artery disease. She was started on aspirin, statin, and carvedilol.
- After completion of antibiotic course, her symptoms resolved and she was discharged
- Outpatient cardiac catheterization revealed mild coronary artery disease, confirming cardiac stress caused by anaplasmosis

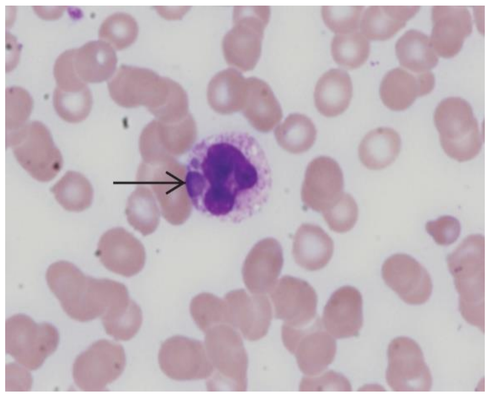

Figure 1: Intracytoplasmic inclusions in neutrophils suspicious for anaplasmosis or ehrlichiosis [2]

Discussion

- HGA is challenging to diagnose due to a wide spectrum of clinical presentations and nonspecific symptoms
- Delayed treatment and immunocompromised states can lead to life threatening complications
- PCR is the gold standard for diagnosis. However, it is not widely accessible.
- Peripheral smear, despite low sensitivity, is easily available and not time consuming
- Case fatality rate of HGA is < 1%
- Delay in treatment can lead to fatal outcomes

Conclusion

- HGA presents with vague symptoms and can present with fatal complications. While PCR is diagnostic, peripheral smear can be used as an initial investigation.
- Early recognition of HGA and it's complications is important for timely initiation of treatment, as it is associated with better outcomes
- In patients with HGA, it is essential to consider cardiac involvement as a differential diagnosis and treat it promptly

References

1. Dumic I, Jevtic D, Veselinovic M, Nordstrom CW, Jovanovic M, Mogulla V, Veselinovic EM, Hudson A, Simeunovic G, Petcu E, Ramanan P. Human Granulocytic Anaplasmosis—A Systematic Review of Published Cases. Microorganisms. 2022; 10(7):1433.
2. Patnaik MM. Inclusion bodies in tick-borne diseases diagnosed in patients from northern Wisconsin. Clin Med Res. 2009 Jun;7(1-2):45-7.

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of awards totaling $17,038,990 with 63% percent financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government. For more information, please visit HRSA.gov.