Hospital Course

- Patient was admitted for sepsis secondary to CAP.
- The patient was started on IV levofloxacin 750 mg, continued seven days.
- She received nebulized albuterol with a Q2HR dose as needed.
- Leukocytosis resolved soon after admission.
- Continued to spike daily high fevers up to 102-103°F and had a persistent non-productive cough despite treatment.
- Infectious disease and pulmonology were consulted.
- Antibiotic therapy was switched to PO doxycycline 100 mg BID after one week of levofloxacin without clinical improvement.
- On serial physicals, pulmonary exam revealed continued to be overall normal with clear lung sounds accompanied by a dry cough.
- Completed multiple repeat chest x-rays during hospital stay that showed worsening infiltrates (Images 1 and 2).
- Underwent a bronchoscopy with bronchoalveolar lavage (BAL); cultures grew normal flora.
- BAL cytology revealed foamy macrophages with scattered small lymphocytes consistent with EV ALI.
- A final chest x-ray showed partial clearing of lung infiltrates (Image 3), however she continued to spike fevers until she was restarted on PO prednisone a few days prior to discharge.
- She was discharged on a PO prednisone taper to complete two weeks of therapy and PO doxycycline to complete two weeks of treatment.
- She was strongly urged to avoid use of vapor products or e-cigarettes in the future to prevent recurrence of EV ALI.

Conclusions

- EV ALI is a clinical syndrome characterized by respiratory, gastrointestinal, and systemic symptoms, diffuse basilar infiltrates on chest radiography, and foamy macrophages with scattered small lymphocytes on pathology.
- EV ALI should be considered in individuals with a clinical picture consistent with pneumonia in the setting of a negative laboratory workup and a history of e-cigarette use.
- Parenteral steroid therapy until clinical improvement followed by PO steroids is the current recommendation for treatment of EV ALI. As it applies to this case, the patient began improving clinically with the use of steroids, however improvement may have been seen earlier had she received more than an initial one-time dose of IV methylprednisolone.
- Vitamin E acetate has implications in this disease process, however further studies are required to determine the exact mechanism of damage and in turn determine the best treatment regime.

References

[4] Q fever secondary to Coxiella species
Vital signs: Alert, awake, in mild distress, no change in speech.
Pulse: 85 bpm
Respiratory: Diminished respiratory effort, clear lung sounds in all fields with no wheezes/rales/rhonchi. Patient coughs with inspiration.
GI: Abdomen mildly distended, normoactive bowel sounds, bilateral adnexal tenderness.
Neurologic: Alert and oriented to person, place, time, and situation. Normal motor and sensory function.
Psychiatric: Anxious mood, normal speech and thought content.
VITALS:
- BP: 156/88 mmHg
- HR: 120 bpm
- RR: 18 breaths/min

Diagnostic Results

- General: Aler, awake, in mild distress, moving around in discomfort.
- HEENT: EOM intact, PERRL, oral mucosa pink and moist, conjunctiva purple.
- Skin: No cyanosis or pallor, normal capillary refill.
- Respiratory: Diminished inspiratory effort, clear lung sounds in all fields with no wheezes/rales/rhonchi. Patient coughs with inspiration.
- GI: Abdomen mildly distended, normoactive bowel sounds, bilateral adnexal tenderness.
- Neurologic: Alert and oriented to person, place, time, and situation. Normal motor and sensory function.
- Psychiatric: Anxious mood, normal speech and thought content.
- VITALS:

- BP: 156/88 mmHg
- HR: 120 bpm
- RR: 18 breaths/min
- SaO2: 97% on RA
- Temp: 101.4°F

Further Workup:
- Negative tests: influenza PCR, Legionella urine antigen, Histoplasma, VZV.
- UA: specific gravity 1.022, pH 5.5, protein 30, ketones 40, trace blood, moderate epithelial cells, few bacteria, few mucous crystals
- Urine pregnancy test negative
- EKG: normal sinus rhythm

Further Workup:
- Negative tests: influenza PCR, Legionella urine antigen, respiratory viral panel, Cryptococcal antigen, Aspergillus galactomannan, ANA, Q fever antibody, HIV antibody, Leptospira, Coccidioides, Histoplasma, VZV.
- Blood cultures negative, sputum cultures grew normal flora.
- Bronchoalveolar lavage culture grew normal flora. Acid-fast bacilli and fungal cultures were negative.

EV ALI is a clinical syndrome characterized by respiratory, gastrointestinal, and systemic symptoms, diffuse basilar infiltrates on chest radiography, and foamy macrophages with scattered small lymphocytes on pathology. EV ALI should be considered in individuals with a clinical picture consistent with pneumonia in the setting of a negative laboratory workup and a history of e-cigarette use. This case highlights the potential for exacerbation of respiratory disease, such as pneumonia, in patients with a history of e-cigarette use. The patient's presentation of fever, cough, and worsening respiratory symptoms, along with the absence of other common causes of pneumonia, led to the consideration of EV ALI. The patient's history of e-cigarette use, along with the presence of foamy macrophages on bronchoalveolar lavage culture, supports the diagnosis of EV ALI. This case underscores the need for healthcare providers to consider EV ALI in patients with respiratory symptoms and a history of e-cigarette use, even in the absence of other known risk factors for pneumonia. Additionally, this case highlights the importance of continued surveillance and research into the long-term health effects of e-cigarette use.