

Fever and Shortness of Breath

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Chief Complaint

"Fever and shortness of breath"

History of Present Illness

The patient is a 17-year-old female with history of vaping who presented to the emergency department (ED) with shortness of breath, fever, and vomiting for the past 5 days. Initially, she reported vomiting associated with intermittent abdominal cramping. She stated the vomiting had since resolved, but that she had been having fevers with a temperature of 101°F associated with shortness of breath, palpitations, and difficulty taking deep breaths. No sick contacts.

Pertinent physical exam

BP 134/80 (supine) | Pulse 155 | Temp 98.8 °F (Oral) | Resp 16 | SpO2 87%

Cardiovascular: Tachycardic. Normal S1/S2. No murmurs, gallops, or rubs.

Pulmonary: Respiratory effort normal. No wheezes, rales or rhonchi noted. Decreased breath sounds bilaterally at bases.

Abdomen: Soft, non-tender, non-distended.

Pertinent laboratory data:

COVID PCR (-), RVP (-)
CRP > 357 mg/L, Ferritin 413 ug/L, D-dimer 1.23 ug/mL, LDH 498 U/L
Troponin I < 0.015 ng/mL
Procalcitonin 3.92 ng/mL

Imaging

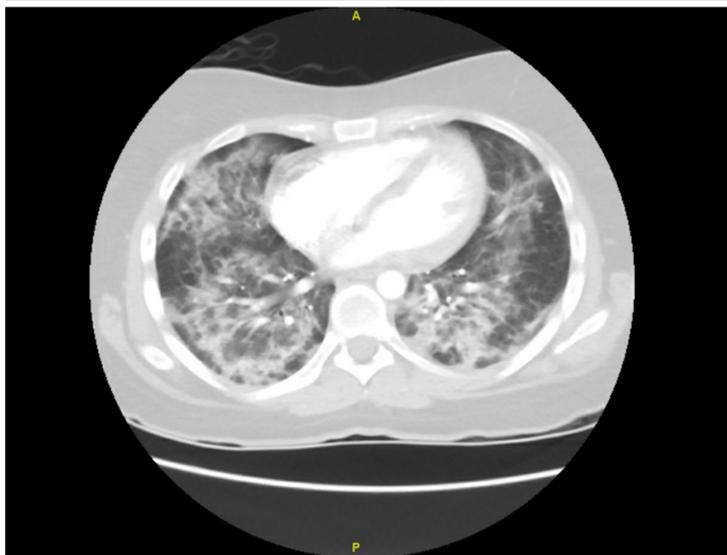


Figure 1.

Discussion

The patient was evaluated at bedside and was noted to be saturating 87% on room air and placed on 2L nasal cannula. Labs, CXR and EKG were ordered. Due to an elevated D-dimer and concern for pulmonary embolism, CT angiography of the chest was obtained. IV fluids and antibiotics were initiated.

Upon further questioning, the patient stated that she had a prolonged history of vaping nicotine, flavored nicotine, and THC "cartridges". While in the ED, the patient was noted to become more tachypneic with increased work of breathing and oxygen requirement, eventually requiring non-rebreather with nasal cannula. The patient was then admitted to the PICU. She was treated with a course of steroids and empiric antibiotics, with presumed diagnosis of EVALI. COVID testing, which was repeated two more times, remained negative. She responded rapidly to steroids, was weaned off oxygen and discharged home.

Pearls

- EVALI is an acute or subacute respiratory illness with histological findings suggestive of chemical pneumonitis presumably caused by inhaled toxic substances found in vapes, with Vitamin E acetate being the agent most strongly linked.¹
- Patients may present with fever, dyspnea, cough, abdominal pain, and diarrhea, which are symptoms that overlap with those of many respiratory illnesses including COVID-19. The COVID-19 pandemic has made diagnosis of EVALI more difficult due to the higher rate of COVID-19 in e-cigarette smokers (5 times more likely among daily users).²
- A thorough history is crucial to establishing the diagnosis of EVALI; specifically, patients should be asked about e-cigarette or vaping product use.
- The presence of significant subpleural or lobular sparing on CT imaging should prompt consideration for EVALI over COVID-19 pneumonia, but EVALI is largely a diagnosis of exclusion.³

Contact

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References

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3. Ansari-Gilani, Kianoush et al. "COVID-19 pneumonia versus EVALI, distinguishing the overlapping CT features in the COVID-19 era." *Heart & lung : the journal of critical care* vol. 49,6 (2020): 885-886. doi:10.1016/j.hrtlng.2020.06.008