

Mojtaba Mirzaei¹, MD, MPH; Michael Bowe², BS, Sherley Demetrius¹, MD, Katelyn Norman¹ MD

¹ Yale Waterbury Internal Medicine Residency Program, Waterbury, CT

² University of Connecticut, CT

Introduction

- Dyspnea is among the common complaints in emergency department visits with more than 2 millions emergency department visits annually.
- Obtaining a good history is critical for diagnosis but it can be difficult in a patient with dyspnea.
- Given the current pandemic of COVID 19 and frequent presentation of shortness of breath and fever in young adults, other differential diagnoses may not be initially considered.

Case Presentation

A 29 year-old woman with history of mild intermittent asthma, depression, and opiate use disorder (maintained on Suboxone) who presented with acute onset of fever, chills, shortness of breath and nonproductive cough for 4 days. She had previously visited two other emergency departments where she tested negative for COVID-19, and was treated for presumed bronchitis with azithromycin, without improvement.

Social history : Prior tobacco smoking, which she quit in favor of electronic cigarettes in 2011. She admitted to using e-cigarettes nearly constantly throughout the day, every day, as well as Tetrahydrocannabinol (THC) vape pen which she recently began using daily due to increased life stressors.

Physical exam: hypoxia requiring non-rebreather mask, tachypnea and increased work of breathing, tachycardia, and clear lungs sounds

* **EKG :** Sinus tachycardia

* WBC : 9.1 (gran: 93%, lymph:5.7%), HGB: 9.6, Plt: 410

* BMP: Na: 137, K:3.5, Cl:100, Bicarb:27, BUN:5, Cr:0.41

* ESR:111, Ferritin:161, D-Dimer: 288, Fibrinogen: 722, Procalcitonin: 7.55, CRP>270

* Urine legionella: Negative, MRSA swab: Negative

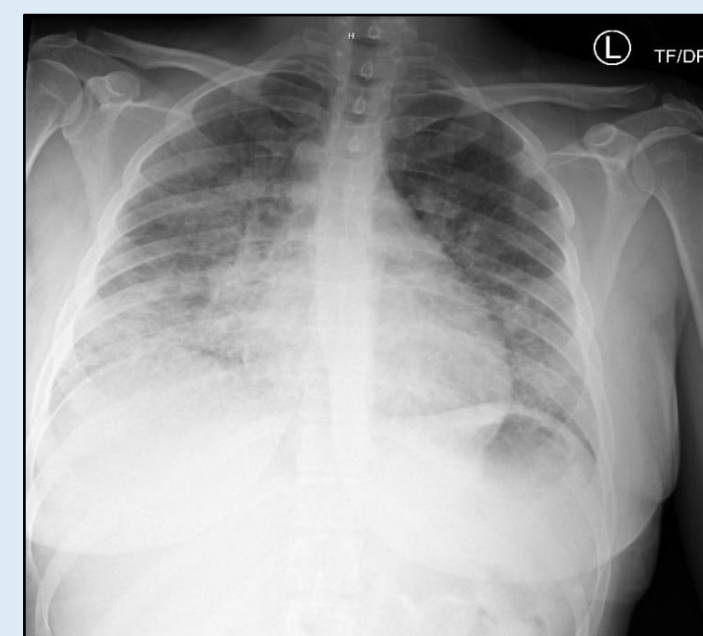
* Comprehensive respiratory viral panel

(including SARS-CoV2 and influenza A&B): Negative

* ABG demonstrated compensated mild hypercarbia.

* She was started on levofloxacin for possible pneumonia.

* Following taking the detailed social history and presumed diagnosis of EVALI (e- cigarette or vaping associated lung injury), IV methylprednisolone was started and she precipitously improved.



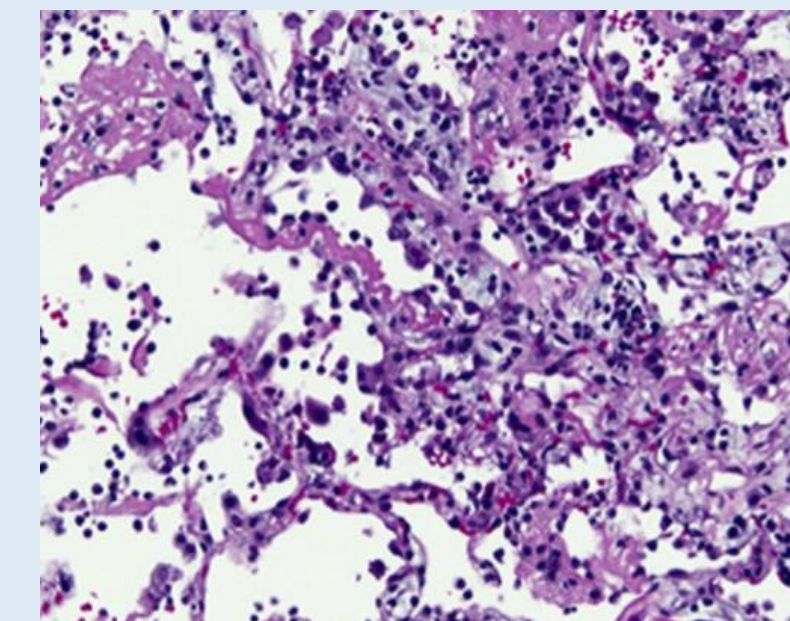
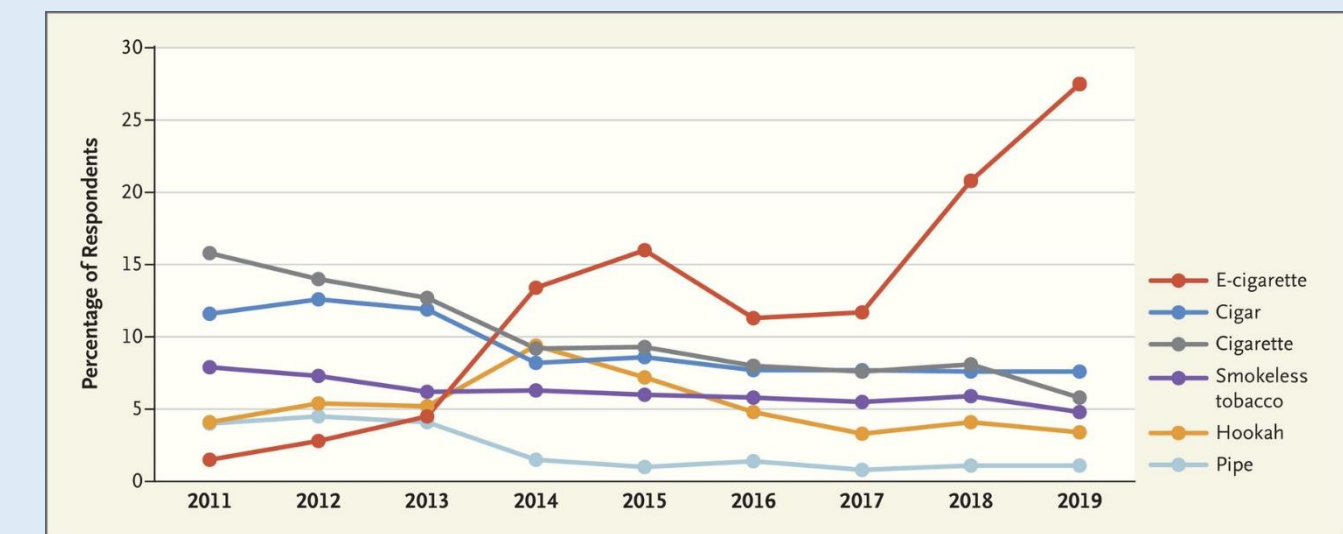
Discussion

E-cigarettes entered US market in 2006 and is becoming more popular every day with an alarming increase in high school students

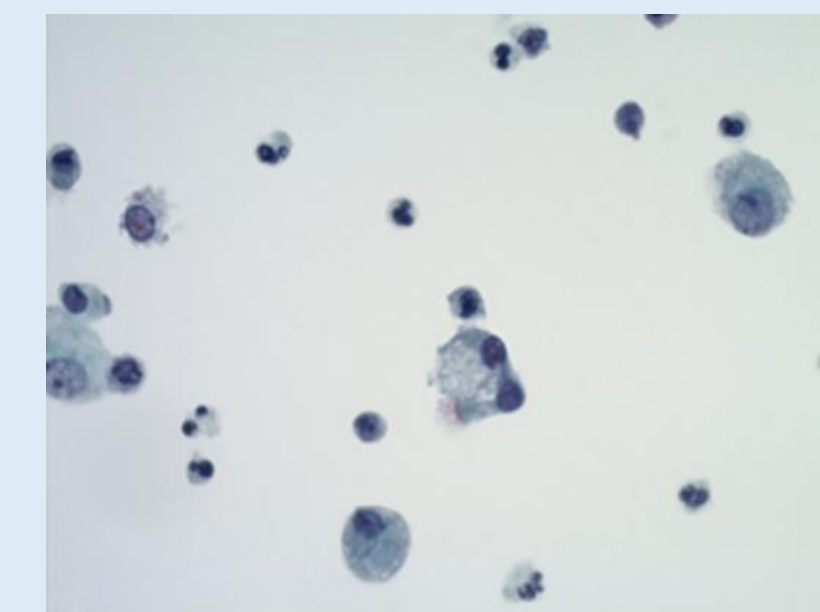
EVALI (e-cigarette or vaping use-associated lung injury) has been recognized in the literature since 2019.

THC, nicotine, vitamin E have been found in bronchoalveolar lavage samples. Hard to determine roles given the frequent concurrent use and non-disclosure of full ingredients.

Pathophysiology of EVALI is not determined. It may represent a form of acute lung injury.



Diffuse alveolar damage in the acute and organizing stages (detaching hyaline membranes, thickened interstitium, and prominent reactive type II pneumocytes.) {McMurdo et al, 2020}



Scant acute inflammatory cells and associated pulmonary macrophages {McMurdo et al, 2020}

- EVALI is diagnosis of exclusion. Proposed criteria for a confirmed case include history of vaping or dabbing in previous 90 days, long opacities in imaging, exclusion of lung infections and absence of a plausible alternative cause.
- Treatment include: 1- initiation of Empiric antibiotics for most of patients with EVALI, to cover likely pathogens of CAP, pending further evaluation 2- systemic glucocorticoids for patients with progressively worsening symptoms and hypoxemia.
- EVALI has emerged as new category among the differential for the dyspneic patient, with a diagnosis that is all the more challenging to make in this era of COVID-19. Asking questions about vaping history can help establish a timely diagnosis.

References

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