An Unusual Case of Lipoid Pneumonia by Shant Shirvanian MD, George Chaux, MD. Pulmonary and Critical Care, Cedars-Sinai Medical Center

- Electronic cigarettes are gaining tremendous popularity, especially in the younger adult population; adverse effects of electronic cigarettes are being recognized.
- Lipoid pneumonia, a known complication of exogenous lipid aspiration, may also be caused by electronic cigarette use due to contents in the vaporized liquid.
- We describe a case of lipoid pneumonia in a 24 year old attributed to electronic cigarettes.

Case Presentation

24-year-old female with history of anxiety, bacterial meningitis, benign ovarian tumor excision and breast augmentation presented with a two week history of non-productive cough, fevers and pleuritic chest pain after returning from a vacation to Cabo San Lucas, Mexico. She also had self-limited diarrhea after her trip treated with ciprofloxacin.

Vital signs included temperature (98.5°F–103°F), heart rate (100-130bpm), blood pressure (100-120mmHg/60-70mmHg), and oxygen saturation (90-96% on RA). On physical exam she was well developed, well nourished and non-toxic appearing. She was tachycardic without murmurs. Respirations were even and unlabored, with right greater than left expiratory crackles, without wheezes.

Notable laboratory data included a WBC count of 5.2 (27% bands), CRP of 22.88mg/Dl (normal <0.05 mg/dL) and transaminase elevation (ALT: 75, AST: 117). She tested negative for HIV, coccidioidomycosis, cryptococcus and histoplasmosis. She was initially treated with ceftriaxone and azithromycin, which was broadened to vancomycin, azithromycin and pipericillin-tazobactam for persistent fevers. Imaging (Figures 1a,1b, 2) revealed diffuse, right greater than left ground glass opacities and centrilobular nodules, without significant mediastinal adenopathy.

Bronchoscopy revealed normal airways. BAL showed macrophage predominant, hazy, non-bloody fluid. Gram stain, KOH, bacterial (including legionella / mycoplasma PCR), fungal and AFB cultures, viral PCR as well as cytology were negative. Transbronchial biopsies from the right upper and lower lobe revealed focal lipoid pneumonia (Figure 3).

Further history revealed the patient’s daily use of electronic cigarettes during her trip. Two weeks later, she did not obtain follow-up imaging but reported complete resolution of her symptoms.
Figure 1a & 1b: AP Chest Radiograph demonstrating bilateral nodular opacities.

Figure 2: Chest CT demonstrating right greater than left ground glass and nodular opacities.

Figure 3: Hematoxylin and eosin stain; transbronchial biopsy of the right upper lobe. Pulmonary macrophages surrounding areas of lipid deposition.
Discussion
Electronic cigarettes contain a liquid base of propylene glycol and/or vegetable glycerin. Vegetable glycerin is a sweet, colorless, odorless, backbone of lipids. It is used as an antifreeze, preservative and humectant in consumer products including foods, pharmaceuticals and cosmetics. It has been thought to be of a low toxicity in humans. This patient did not have an alternative etiology for exogenous lipoid pneumonia or her respiratory illness. Her transaminase elevation was transient and was felt to be unrelated to her pulmonary process. This case is important as it identifies a potentially under-recognized adverse effect of electronic cigarettes, namely those containing vegetable glycerin. One prior case report of electronic cigarette related lipoid pneumonia has been described in 2012\(^1\). Clinicians should query electronic cigarette use in patients with unexplained lipoid pneumonia. Our patient was advised to abstain from electronic cigarettes.

References
