SERIAL LUNG FUNCTION IN E-CIGARETTE, OR VAPING, PRODUCT USE ASSOCIATED LUNG INJURY (EVALI) IN ADOLESCENTS TREATED WITH CORTICOSTEROIDS: A SINGLE-CENTER CASE SERIES

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Background: Vaping, a method of inhaling aerosolized chemicals including tetrahydrocannabinol (THC) and nicotine, has been recently associated with acute lung injuries ranging in severity from mild respiratory distress to fulminant respiratory failure. An alarming number of cases, coined as e-cigarette, or vaping, product use associated lung injury (EVALI) with limited published data describe respiratory, gastrointenstinal and constitutional symptoms. Characteristic CT findings describe bilateral diffuse ground-glass opacities with effusion.

Materials/Methods: We describe a case-series of 8 patients who presented to our institution with a long history of vaping and characteristic clinical and radiologic findings consistent with EVALI. We included patients that fit the criteria of a confirmed or probable case based on patient interviews, radiographic findings and clinical presentations. Pulmonary function testing was performed prior to discharge from the hospital and during outpatient follow-up. A paired t-test was used to compare serial PFT data between visits.

Results: Eight patients with a diagnosis of EVALI and a longstanding history of vaping THC oil were admitted to our institution with respiratory failure. Patients were evaluated and were found to have an absence of infectious or other predisposing etiologies. Two patients required intubation with mechanical ventilation, two patients required bilevel positive airway pressure (BPAP) and four patients required oxygen supplementation. One patient did not receive steroids nor underwent a chest CT. Chest CT findings were abnormal in all 7 patients with bilateral lower lobe opacities (7/7) and ground-glass changes (6/7). Two patients received high-dose pulse corticosteroid treatment (30 mg/kg/day x 3 days; max 1g) intravenously, while 5 patients received regular dose corticosteroids (1-7.5 mg/kg/day). Pulmonary function testing (PFT) revealed restrictive and obstructive patterns of mild to moderate severity. Repeat PFT in 5 patients during outpatient follow up showed clinical and statistically significant improvement in both FEV1 and FVC

Conclusions: All patients have improved and were safe to discharge with either high-dose pulse or regular-dose corticosteroid treatment. We observed that there was no difference or appreciable side effects between the dosing regimens. Serial PFT revealed that EVALI appears to be an acute process with substantial clinical and statistical improvement of lung function, after initiation of corticosteroid treatment.