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Diabetes & its Complications

Evidence Supporting the Hypothesis that the 2019 Epidemic of E-vaping Acute Lung Injury (EVALI) was Caused in Part by COVID-19

J. Bart Classen, MD*

Classen Immunotherapies, Inc., 3637 Rockdale Road, Manchester, MD 21102.

***Correspondence:**
J. Bart Classen, Classen Immunotherapies, Inc., 3637 Rockdale Road, Manchester, MD 21102, E-mail: Classen@vaccines.net.

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ABSTRACT

Diabetics are more likely to suffer from severe cases of COVID-19 than non diabetics. Understanding the origins of COVID-19 is likely to help stop the pandemic. Stating in April of 2019 an epidemic of severe E-Vaping Acute Lung Injury (EVALI) occurred primarily in people vaping the cannabis extract THC and living in the USA. The etiology of this epidemic was never fully explained nor why the epidemic was focused in the USA. A literature review was conducted to compare cases of EVALI to patients with COVID-19. Many of those suffering from EVALI in 2019 had an clinical syndrome indistinguishable from COVID-19. There is a significant possibility that some of patients suffering from EVALI in 2019 were actually infected with COVID-19. Antibody studies to COVID-19 in patients who were stricken by EVALI should be done of further investigate this association.

Keywords

Diabetics, COVID-19, E-vaping Acute Lung Injury.

Introduction

The epidemic of COVID-19 has been particular severe in many diabetics. Diabetes is a widely acknowledged risk factor for having a more severe case of COVID-19. Efforts are underway to stop the COVID-19 pandemic. One line of research is to determine the origin of the COVID-19 outbreak in order to learn how the infection spreads. Wuhan China has been scrutinized because it was the source of the first recognized large metropolitan outbreak. How the disease came to infect people in Wuhan is the topic of debate.

One theory on the outbreak in Wuhan is that COVID-19 was brought to China by Americans participating in the Military World Games held in Wuhan from 18 to 27 October. There are reports that many Americans participating in the games were sick and others from competing teams fell ill while competing or after returning home [1]. It is possible some Americans were ill before going to Wuhan. There was an epidemic of severe E-Vaping Acute Lung Injury (EVALI) in THC vapers that occurred primarily in the USA starting in April of 2019 and peaked in September of 2019. The CDC reports as of February 18, 2020 there were 2,807 cases and 68 deaths [2]. The timing of this vaping related epidemic prior to the pandemic of COVID-19 sparked curiosity about whether the disease could be the same. A literature review was started to compare these two diseases.

Methods

Google Scholar as well as a general internet scan with Google were searched for scientific papers or government websites on COVID-19 and cases of EVALI. Key words used in the search for COVID-19 included “COVID-19”. Key words used in the search for vaping disorder included “2019", “vaping”, “acute”, “severe", “respiratory", "lung", "disease”, "disorder", "USA", “EVALI".

Results

The literature search found many case reports, case series and review papers on both EVALI and COVID-19. Approximately 50 or more papers were found for each. Many cases of EVALI are clinically indistinguishable from COVID-19 as summarized in Table 1 [3,4]. Symptoms can develop acutely or over several weeks. As expected, patients in both groups suffered from respiratory symptoms including cough, shortness of breath, and chest pain. Some patients in both groups required oxygen and at times

ventilation. Chest CT scans show ground-glass opacities in both groups [3,4]. Patients in both groups shared many non pulmonary complications. Fever, elevated heart rate, and elevated white blood cell count, was observed in both groups [2-4]. Gastrointestinal symptoms including nausea, vomiting and diarrhea were also observed in both [2-4]. Blood clots have been reported in both.

	Reference	[3]	[4,5]	[4,6]
		EVALI	COVID 19	COVID 19
Symptoms	Dyspnea	83%	55%	31%
	Cough	59%	76%	59%
	Chest pain	22%		
Acute Cardiac Injury	Hemoptysis	9%	5%	
	Fever	40%	98%	99%
	Respiratory Arrest	5%		
Acute respiratory distress	GI symptoms	26%		
	diarhea		3%	10%
	nausea			10%
	vomiting			4%

Discussion

COVID-19 infections have had a devastating effect on many with diabetes [7]. Diabetes is a comorbidity in about 20% of patients with severe COVID-19. An investigation into the etiology of the first cases of COVID-19 was initiated in hopes the results will help stop the pandemic. Data reviewed for this paper indicated that there is a striking similarity between symptoms in patients suffering from COVID-19 and those cases in the epidemic of severe E-vaping acute lung injury (EVALI). The vaping related disorder shares many of the signs of an infectious disease common with COVID-19.

The onset and characteristics of the EVALI epidemic is consistent with an infectious cause. Gastrointestinal symptoms such as diarrhea were reported to predate respiratory symptoms by weeks in patients suffering from both diseases. A pure respiratory chemical pneumonitis or lipoid pneumonia would not be expected to have gastrointestinal symptoms especially in the absence of any pulmonary symptoms. The epidemic occurred suddenly starting in April of 2019 even though vaping had preceded this by years. While the practice of vaping is global, the EVALI epidemic was essentially limited to North America, primarily the US but with a few cases in Canada. The EVALI epidemic seemed to vanish almost as quickly as it developed. No definitive chemical agent or vaping additive was conclusively determined to cause the vaping disorder. However, there was an association with vitamin E [8].

There are several reasons why a novel infectious disease (i.e. COVID-19) in vapers could have been missed. One possible reason is that vapers would be an ideal target for a bioweapon attack, especially one from a domestic group [9]. The FDA commisioner had been warning society about an upcoming epidemic of vaping related disease for almost two years prior to the epidemic in 2019. The FDA commissioner who lead this warning left the FDA just weeks before the EVALI epidemic. Those remaining at the FDA would likely have assumed the EVALI epidemic was the vaping related epidemic that the former FDA commissioner had warned about.

Antibody testing of those recovered from EVALI for indications of a previous COVID-19 infection is warranted. If those who have recovered from EVALI have an increased frequency of IgG antibodies to COVID-19 as compared to controls there will be a high suspicion for COVID-19 as the cause of EVALI. Even more helpful would be to test for antibodies to COVID-19 in the serum of those who died from EVALI. If the serum of some patients contains IgM antibodies to COVID-19 then there will be little doubt as to the cause of some cases of EVALI.

References

1. https://doi.org/10.1101/2020.05.10.20097147doi
2. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html.
3. Tzortzi A, Kapetanstrataki M, Evangelopoulou V, et al. A systematic Literature Review of E-Cigarette-Related Illness and Injury Not Just for the Respirologist. Int. J. Environ. Res. Public Health. 2020; 17: 2248.
4. Jiang F, Deng L, Zhang L, et al. Review of the Clinical Characteristics of Coronavirus Disease 2019 COVID-19. J Gen Intern Med. 2020; 35: 1545-1549.
5. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan China. Lancet. 2020.
6. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan China. JAMA. 2020.
7. Fang L, Karakiulakis G, Rotha M. Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection. Lancet Respir Med. 2020; 8: e21.
8. Blount BC, Karwowski MP, Shields PG, et al. Vitamin E Acetate in Bronchoalveolar-Lavage Fluid Associated with EVALI. N. Engl. J. Med. 2019; 382: 697-705.
9. Classen JB. COVID-19 MMR Vaccine and Bioweapons. Diabetes Complications. 2020; 4: 1-8.