Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

We present a unique case of a patient with no prominent GI symptoms before OIT, who developed daily vomiting for 10 days after 3 weeks of starting OIT and had macro and microscopic features consistent with EoE, in addition to an esophageal stricture just after the vomiting had resolved.

Typically, it is felt that it takes a substancial amount of time (months to years) to develop an esophageal stricture[7] even among those with known EoE, but with this case, the vomiting was only present for 10 days and stopped 7 days after discontinuing OIT.

Allergists, pediatricians, and gastroenterologists need to be increasingly aware that patients undergoing OIT are at risk of not just developing but potentially "unmasking" preexisting EoE. It is also important to be able to differentiate the acute symptoms (within a couple of hours of OIT dose) that frequently occur with OIT which can include vomiting and certainly overlap with EoE symptoms. This case highlights that chronicity of symptoms cannot be a simple differentiator.

More research is needed to better understand whether screening by symptom questionnaire using a validated tool, such as the Pediatric Eosinophilic Esophagitis Symptom Severity Score version 2.0,[6] may be helpful before beginning OIT to detect those with unrecognized chronic symptoms. Repeat validation for this purpose may be required and identification of ideal cutoff scores. In this case, the retrospective symptoms of the patient were subtle and nonspecific at best and would not likely have been enough to pursue a diagnosis. A baseline endoscopy before OIT in this patient was not performed but is consistent with current standard of care. It seems quite impractical to endoscopically screen all patients before OIT initiation particularly in children. A less invasive screen, such as the esophageal string test, may play a role in this patient population.[8]

The relevance of esophageal eosinophilia without symptoms before OIT is unknown, but an adult study before peanut OIT revealed that at baseline 14% (3/21) had esophageal eosinophilia (>15 eos/hpf) without GI symptoms.[9]. These patients revealed that the esophageal eosinophilia is a transient effect especially when followed to the maintenance phase (at 2 years) vs the end of an escalation phase (at 1 year).[9] Our patient has persistence of the esophageal eosinophilia despite discontinuing OIT 2 years earlier, which supports the notion by Hamant et al[10] that EoE may persist despite OIT discontinuation.

More work needs to be done related to screening for EoE and esophageal eosinophilia in children and adults pre-OIT, including understanding the natural history and outcomes of these patients, with or without intervention.

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National decline in asthma exacerbations in United States during coronavirus disease 2019 pandemic

Infection with coronavirus disease 2019 (COVID-19) has led to more than 4 million deaths worldwide, challenging our health care systems. At the same time, it has led to an increased use of nonpharmaceutical interventions (NPIs) to minimize disease spread. COVID-era NPIs such as physical distancing are associated with an unprecedented decrease of non–COVID-19 viral respiratory diseases.[1-3]

Viral respiratory infections are a common cause for asthma exacerbations that lead to emergency department (ED) and hospital use. There are now several reports suggesting the rates of asthma hospitalizations and ED visits have decreased during COVID-19.[4-6] In this letter, we present the trends of ED and hospital use for asthma exacerbations in a sample of people from across the United States.

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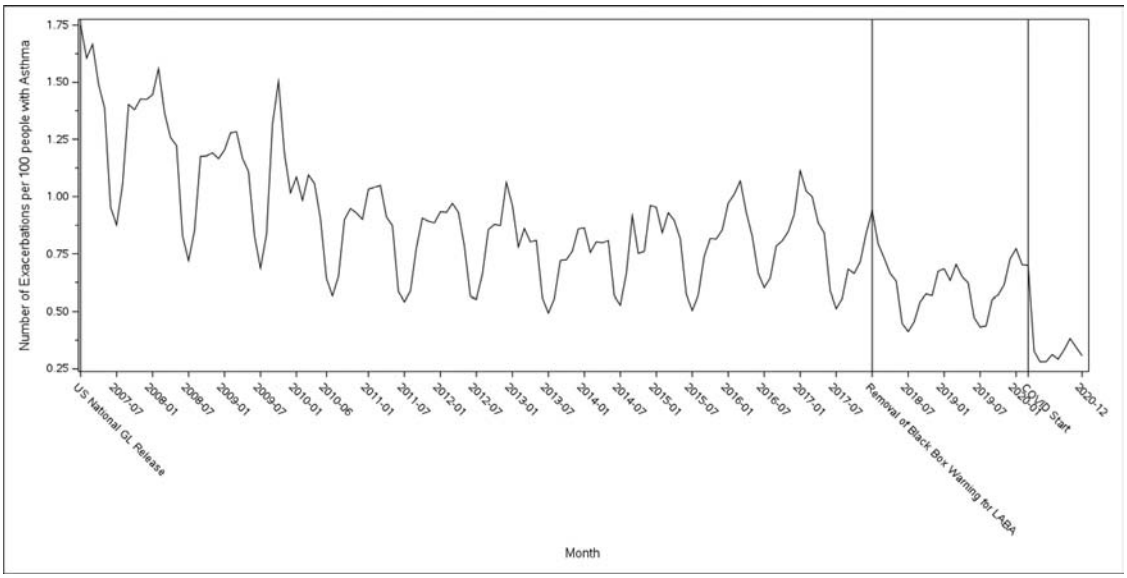

Figure 1.

We used the Optum Labs Data Warehouse, a database of health care claims for more than 200 million privately insured and Medicare Advantage enrollees, to build the cohort, starting with all enrollees who had a diagnosis of asthma using diagnostic codes from 2007 to 2020.[7] We defined ED and hospitalization events owing to asthma as those in which asthma was in the first diagnostic position for the claim or secondary position if the first diagnosis was respiratory infection. We reported asthma exacerbation rates per 100 people with asthma and analyzed them in 2007 to 2017, 2018 to March 2020, and March 2020 to December 2020 to correspond to 2007 release of National Heart, Lung, and Blood Institute updated asthma guideline, 2018 long acting β-agonist black box removal, and the March 2020 onset of the COVID-19 pandemic in the United States. We conducted a simple general linear model to compare the mean number of exacerbations between each time period and checked with Poisson regression using a spline for time and knots at guideline release, black box warning removal, and COVID-19 pandemic start.

We observed a general decline in the number of claims-computable asthma exacerbations (ED or hospitalization) from 2007 to 2020, with the largest decline occurring after March 2020. The mean exacerbation rates per 100 people with asthma were 0.92 (95% confidence interval [CI], 0.87-0.97), 0.62 (95% CI, 0.56-0.67), and 0.36 (95% CI, 0.27-0.44) for 2007 to 2017, 2018 to March 2020, and March 2020 to December 2020 ($P < .001$), respectively. Hospitalization rates per 100 people with asthma were 0.48 (95% CI, 0.22-0.74), 0.21 (95% CI, 0.19-0.22), and 0.12 (95% CI, 0.10-0.14) for 2007 to 2017, 2018 to March 2020, and March 2020 to December 2020 ($P = .003$), respectively. The results from the Poisson regression confirmed a statistically significant decline in asthma exacerbations ($P < .001$) after the COVID-19 pandemic onset, and the pseudo R-squared values for the regression of 0.85 suggested that the model matches the data well.

Our findings suggest that the decline in asthma exacerbations during the COVID-19 pandemic is not unique to specific hospital systems or geographic locations. A study in Philadelphia, Pennsylvania, found an 84% decrease in the emergency and inpatient settings, a study in Orange County, California, found a 78% decrease in hospitalization and 90% decrease in emergency visits, and a prospective study in multiple US locations found a 41% reduction in asthma exacerbations using composite, patient-informed definition.[8–10]

The significant decline in asthma exacerbations during the COVID-19 pandemic suggests, but does not prove, a causal relationship between physical distancing practices and reduced asthma exacerbations. Our results do not exclude the possibility that patients and families chose to avoid ED and hospital care for asthma during the COVID-19 pandemic. Nevertheless, Salciccioli et al[10] describe a similar trend in a prospective study that captured both remote and in-person asthma exacerbations, making it less likely for the result to be influenced by health care system avoidance. Moreover, when they controlled for medication use and air quality values, the decrease in asthma exacerbation rates was still observed.[10] Similarly, another study found that increased asthma medication adherence during the COVID-19 pandemic was not observed, at least in that population.[8] Although we cannot exclude the possible influence of health care avoidance, air quality, or medication-taking behavior, these other studies suggest that these factors are unlikely to be primary drivers of the decrease in asthma exacerbations rates. Our data, finding this trend in a large sample in the United States, are consistent with previous studies revealing this trend and further extend previous observations by comparing rates to 13 previous years and by using participants who were not enrolled in research studies.

Our findings, together with other related studies, call for further research to better understand which NPIs may be most effective at reducing asthma exacerbations. Prospective trials of different NPI approaches (eg, wearing facemasks during fall-winter respiratory infection season) could isolate interventional effects and potentially provide new management options for our patients with asthma.

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Non–immunoglobulin E-mediated allergy associated with Pfizer-BioNTech coronavirus disease 2019 vaccine excipient polyethylene glycol

The development of safe and efficacious coronavirus disease 2019 (COVID-19) vaccines has been pivotal in nanomedicine research, helping to curtail further spread of the severe acute respiratory syndrome coronavirus 2 virus. Although severe immunologic reactions to the vaccine are rare, fear of allergic reactions impedes global vaccination efforts. Understanding the mechanism of these allergic reactions is important for informing guidelines, including contraindications, to COVID-19 vaccines and for the development of next-generation vaccines with improved safety. We introduce a severe case of a non–immunoglobulin E (IgE)-mediated hypersensitivity resulting in an immediate-type reaction to the Pfizer-BioNTech COVID-19 vaccine.

A 56-year-old woman received her first dose of the Pfizer-BioNTech messenger RNA (mRNA) vaccine (BNT162b2). Approximately 5 minutes after administration, she felt dizzy, lightheaded, dyspneic, throat tightening, and abdominal pain. Initial blood pressure was 145/94 mm Hg; a repeat reading minutes was later done with a blood pressure of 70/42 mm Hg and a pulse rate of 150 beats/minute. Her physical examination was notable for faint end-expiratory wheezes. Her systolic blood pressure further fell to the 50s and a code blue was called for additional resources. Intramuscular epinephrine was administered immediately after code blue team arrival and after 2 minutes, her blood pressure recovered to 176/77 mm Hg. Although her symptoms transiently improved, she continued to have waves of chest tightness and dyspnea requiring 2 subsequent doses of 0.3 mg of intramuscular epinephrine followed by a 20-μg bolus of epinephrine intravenously, and initiation of an epinephrine infusion at 0.1 μg/kg/min. In addition, she received lactated ringer's solution, racemic epinephrine and albuterol nebulizer, famotidine, diphenhydramine, and methylprednisolone (Methylprednisolone, Pfizer, New York, New York), and was admitted to the intensive care unit. In the intensive care unit, her vital signs improved, and she was weaned off of the epinephrine infusion 3 hours later. She did not require supplemental oxygen and her wheezing resolved. Tryptase level was collected approximately 90 minutes after the index event, which was 6 ng/mL (reference range < 11.5 ng/mL). There were no further objective signs of a biphasic or protracted anaphylactic reaction, and she was ultimately discharged from the hospital after 5 days with epinephrine injector pens. The patient was instructed not to receive the second dose of the Pfizer-BioNTech vaccine and was enrolled in the national vaccine adverse event reporting system. Allergy testing was pursued on a follow-up clinic visit after 21 days.

The patient received skin prick testing (SPT) to undiluted BNT162b2 vaccine, polyethylene glycol (PEG) (a small lipophilic excipient in both Pfizer-BioNTech and Moderna vaccines), and polysorbate 80 (a known cross-reactant to PEG). Histamine and normal saline were used as positive and negative controls, respectively.

Whole blood was obtained from the patient, and activation markers, which are up-regulated on basophils during a hypersensitivity reaction, were measured in vitro using flow cytometry. Blood was heparinized, stored in a 4°C cold room on a rocker, and aliquoted and analyzed within the same day. Dilutions of dimyristoyl glycerol-polyethylene glycol (DMG-PEG) 2000 (Avanti Polar Lipids, Alabaster, Alabama) were prepared and then stored at 4°C. Using sterile tubes, 100 μL of heparinized blood was stimulated with 100 μl of saline, a DMG-PEG dilutant (0.002 μg/μl), or with 1 μL of BNT162b2. Cells were stained with a viability dye (Zombie NIR Fixable Viability Kit, BioLegend, San Diego, California) and an antibody panel consisting of anti–CD63-FITC, anti–HLA-DR-PR, and anti–CD123-PerCP/Cy5.5 (Becton Dickinson, Franklin, New Jersey) using standardized published procedures.[1] Cells were counted by means of flow cytometry with the BD FACSCanto II Cell Analyzer (Becton Dickinson Immunocytometry Systems, San Jose, California) and analyzed with FlowJo Software (FlowJo LLC, Ashland, Oregon).

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