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.

Table 1
Patient Satisfaction Questions

Statement	No. (%) of responses					
	Overall response	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Overall, I was satisfied with my telemedicine encounter		0	2 (1.1)	4 (2.3)	27 (15.3)	144 (81.4)
My telemedicine encounter was as satisfactory as an in-person evaluation would have been		0	13 (12.8)	27 (15.2)	46 (26.0)	91 (51.4)
What is the most important reason you would prefer an in-person evaluation? (n = 95)						
I prefer a more personal interaction	43 (45.3)					
I wanted a physical examination	22 (23.2)					
I wanted skin testing	17 (17.9)					
I wanted lung function assessment	9 (9.5)					
I experienced technical difficulties	4 (4.2)					

encounters still resulted in high patient satisfaction. Although certain diagnoses in the field, such as chronic urticaria, would seem better suited to a telemedicine evaluation, patients also reported satisfaction with their evaluations for allergic rhinitis, food allergy, and asthma. These findings could potentially be explained by patients accepting physician decision making without customary testing (ie, spirometry for patients with asthma or skin testing for evaluation of food allergy) or expecting such testing at future visits. The high patient satisfaction also supports that clinical history remains the most important part of a medical evaluation, whether it occurs in person or by means of telemedicine.

We acknowledge that our cohort may be more accepting of telemedicine during the COVID-19 pandemic, and their responses may have been skewed by a desire to positively review their personal physicians. One-third of patients could not be reached for a FU, and they may represent a subgroup who had a less positive experience with telemedicine. We also acknowledge that our data are reflective solely of patient satisfaction and not patient outcomes. However, previous data have indicated that patient care outcomes are comparable with telemedicine vs in-person visits[7,8] and that telemedicine can result in cost savings.[6] Comparing video visits with telephone and in-person visits would have also strengthened our study. Nevertheless, our data on telemedicine mirror the high level of patient satisfaction that has been previously reported. We urge AI physicians to continue to educate themselves on evolving telemedicine regulations and reimbursements unique to their practice settings.[9] The use of telemedicine was hastened by the COVID-19 pandemic, but it is likely to be an important part of AI practices in the postpandemic era.

S. Shahzad Mustafa, MD[*,†]
Luanna Yang, MD[*]
Mahta Mortezavi, MD[*,†]
Karthik Vadamalai, MD[‡]
Allison Ramsey, MD[*,†]
[*]*Division of Allergy Immunology and Rheumatology*
Rochester Regional Health
Rochester, New York
[†]*Department of Medicine*
University of Rochester
Rochester, New York
[‡]*Department of Medicine*
Mercy Hospital
Springfield, Missouri
shahzad.mustafa@rochesterregional.org

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Atopy is predictive of a decreased need for hospitalization for coronavirus disease 2019

The coronavirus disease 2019 (COVID-19) pandemic has caused high utilization of health care resources, including hospitalization and intensive care unit treatment. There has been considerable interest in determining which clinical factors stratify patients into high or low risk for severe COVID-19 illness to aid with clinical decision making. Advanced age, cardiovascular disease, and diabetes have been associated with increased COVID-19 severity.[1] Asthma seems to be underrepresented as a COVID-19 comorbidity compared with the global prevalence of the disease.[1,2] To date, the effect of atopic conditions on the disease course of COVID-19 has yet to be fully elucidated. This study is a large, 2-site cohort of patients positive for

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COVID-19 designed to understand the association between atopic conditions and COVID-19 disease severity.

The study was approved by the institutional review boards of both the participating universities. An electronic medical record database search was performed to identify patients tested for COVID-19. All encounters of these patients were carefully reviewed and only cases who were active patients at the health systems, with a detailed medical history available before the diagnosis of COVID-19, were included in the study. Through extensive chart review, demographic and clinical factors related to allergy evaluations, including active or historical diagnoses of asthma, allergic rhinitis (AR), eczema, and food allergy, and variables related to COVID-19 infection severity were retrieved from the electronic medical records. To confirm these allergy-related variables, charts were initially reviewed by trained researchers for codes of the *International Classification of Diseases, Tenth Revision*, and the diagnoses were subsequently verified by clinical history and evidence of allergic sensitization by means of skin prick or serum immunoglobulin E testing by board-certified allergists.

Logistic regressions were used to compare COVID-19–related outcomes in association with preexisting AR, asthma, eczema, and food allergy while adjusting for age, sex, body mass index, and race. Patients with a history of 1 or more of the following: AR, eczema, or food allergy were labeled as having atopy. Similar regression analysis was performed to compare individuals with and without atopy. Patients with asthma were first analyzed as a single group compared with those without asthma. Next, patients with asthma were divided into allergic asthma, defined as patients who received a diagnosis of both AR and asthma, and nonallergic asthma for subgroup analysis.

The combined series included 2013 patients with positive nasopharyngeal polymerase chain reaction test results for severe acute respiratory syndrome coronavirus 2. Complete data on demographic variables, confirmed allergy diagnoses, and COVID-19 management variables were available for 1043 patients who were used for our analysis. A total of 970 patients were excluded because they were not active patients in the medical center's electronic medical records before their COVID-19 diagnosis. The mean (SD) age was 50.16 (16.77) years, 43.3% were men, and 58.1% were African Americans. There was no difference in the demographics between the groups with and without atopy. Among the 1043 cases, 257 (24.6%) had atopy. Atopy was associated with significantly lower odds of hospitalization for COVID-19 (Table 1); 27.6% of those with atopy and 37.8% of those without atopy but diagnosed as having COVID-19 were hospitalized (adjusted $P = .004$). Furthermore, atopy was associated with a decreased duration of hospitalization for COVID-19. When analyzing AR, eczema, and food allergy separately, both AR and eczema were associated with lower odds of COVID-19–related hospitalization (Table 1). AR was also associated with a decreased duration of hospitalization and intubation for COVID-19. Asthma was associated with increased intubation time; mean intubation time was 13.4 vs 8.1 days in those with asthma vs those without asthma (adjusted $P = .016$). When the patients with asthma were grouped into those with allergy and those without allergy, only the patients without allergic asthma were associated with prolonged intubation time (Table 1). There was no difference in mortality between the groups with and without atopy. Furthermore, the treatment regimens for COVID-19 were not notably different between these 2 groups, with minimal use of systemic corticosteroids in this cohort.

In our series, AR and eczema were associated with a lower rate of hospitalizations, and AR was associated with a lower duration of hospitalization and intubation for COVID-19 infections. This adds greater credence to an earlier report from China, in which respiratory allergies were not identified as risk factors for severe COVID-19 illness.[1] In a recent study, Jackson et al[3] found that expression of angiotensin-converting enzyme 2, the cell receptor utilized by severe acute respiratory syndrome coronavirus 2 for cell entry, was decreased in individuals with atopy. Interestingly, reductions in

Table 1
Characteristics and Outcomes of COVID-19 Patients in Association With Atopic Conditions in 1043 COVID-19 Positive Patients in a 2-Center Study From the United States

COVID-19 outcomes	Conditions											
	Atopy[a]		Allergic rhinitis		Eczema		Food allergy		Allergic asthma[b]			Nonallergic asthma
	n = 257		n = 171		n = 58		n = 80		n = 86			n = 179
	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]	Odds ratio (95% CI) or beta (95% CI)	*P* value[c]
Hospitalized	**0.62 (0.44-0.86)**	**.004**	**0.64 (0.43-0.92)**	**.02**	**0.51 (0.25-0.90)**	**.045**	0.97 (0.57-1.62)	.90	0.77 (0.57-1.03)	.08	1.03 (0.75-1.41)	.85
Duration of hospitalization, mean (SD)	**−1.67 (−2.9 to −0.4)**	**.008**	**−2.33 (−3.6 to 0.9)**	**.001**	−2.2 (−4.5 to 0.2)	.07	1.79 (−0.57 to 4.17)	.13	−0.68 (1.81-0.45)	.24	1.00 (0.26-2.27)	.12
Admitted to ICU	0.75 (0.46-1.17)	.21	0.71 (0.40-1.19)	.21	0.65 (0.22-1.55)	.37	0.97 (0.41-2.01)	.93	1.02 (0.69-1.51)	.90	1.31 (0.85-1.99)	.22
Intubated	0.61 (0.33-1.07)	.10	0.75 (0.38-1.37)	.37	0.18 (0.01-0.87)	.09	0.71 (0.21-1.83)	.53	1.06 (0.66-1.68)	.81	1.45 (0.87-2.36)	.14
Duration of intubation, mean (SD)	−1.1 (−2.3 to +0.2)	.10	**−1.4 (2.80 to −0.07)**	**.039**	−0.93 (−3.4 to 1.5)	.46	1.08 (−2.08-4.25)	.50	0.21 (−1.00-1.44)	.72	**1.18 (0.41-3.21)**	**.011**

Abbreviations: BMI, body mass index; CI, confidence interval; COVID-19, coronavirus disease 2019; ICU, intensive care unit.
NOTE: Bold font indicates statistical significance.
[a]Atopy is defined as presence of allergic rhinitis and/or eczema and/or food allergy.
[b]Allergic asthma is defined by asthma diagnosed based on the Global Initiative for Asthma guidelines and evidence of inhalant allergen sensitization, and nonallergic asthma are individuals with asthma without inhalant allergen sensitization. In this article, those with comorbid asthma and allergic rhinitis are grouped under allergic asthma and those with asthma without allergic rhinitis are grouped under nonallergic asthma.
[c]*P* values for categorical variables are calculated by logistic regression comparing categorical variables adjusted for age, race, sex, and BMI, or analysis of covariance comparing the adjusted means of continuous variables adjusting for age, race, sex, and BMI. Odds ratio (95% CI) are reported for categorical variables and beta is reported for continuous variables.

angiotensin-converting enzyme 2 expression levels correlate with allergic sensitization, higher levels of total immunoglobulin E, and type 2 inflammatory cytokines.[3-5] Interleukin 13, a major type 2 inflammatory cytokine, is found to significantly reduce angiotensin-converting enzyme 2 expression in airway epithelial cells.[5] Our findings of the association of AR and eczema with decreased need of hospitalization for COVID-19 provide robust clinical data to support these mechanistic findings.

The role of asthma and its association with COVID-19 severity is more complicated.[6,7] Asthma was not reported in previously published cohorts of COVID-19 from China[1,2]; although data from the Centers for Disease Control indicate that asthma is present in as high as 27% of hospitalized COVID-19 patients in the United States in the 20 to 49 year age range.[6] This could be explained by the lower rates of asthma in China (2%-4%) than those in the United States (8%-11%).[8,9] In the current report, allergic asthma was not associated with any COVID-19 outcome variable despite AR being protective against hospitalization. Furthermore, nonallergic asthma was associated with a prolonged intubation time which confirms an earlier study.[10] It is possible that asthma, as a chronic pulmonary disease susceptible to viral-induced exacerbations, places those with more severe COVID-19 illness at risk for more prolonged lung involvement. However, a coexisting atopic background may mitigate the severe inflammatory response syndrome of COVID-19 in those with allergic asthma, leading to the absence of the prolonged intubation time reported in individuals with nonallergic asthma.

The knowledge that atopy is associated with less severe COVID-19 outcomes can be instructive in clinical risk stratification. Further studies are needed to understand the underlying mechanism of these apparent protective physiological factors that may prove advantageous in future prevention and treatment strategies.

Anjeni Keswani, MD, MSCI[*]
Klodian Dhana, MD, PhD[†]
Jamie A. Rosenthal, MD[*]
Donyea Moore, BSc[†]
Mahboobeh Mahdavinia, MD, PhD[†]
[*]*Division of Allergy and Immunology*
Department of Medicine
George Washington University School of Medicine and Health Sciences
Washington, DC
[†]*Division of Allergy and Immunology*
Department of Internal Medicine Rush University Medical Center
Chicago, Illinois
akeswani@mfa.gwu.edu

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Smell loss is a prognostic factor for lower severity of coronavirus disease 2019

Check for updates

Coronavirus disease 2019 (COVID-19) can present with a myriad of symptoms.[1] Guidelines from the People's Republic of China, the United Kingdom, and Italy had focused screening efforts on patients with fever and cough, excluding anosmia from similar scrutiny.[1] However, the screening of individuals with reported anosmia and dysgeusia has been associated with a greater likelihood of a positive COVID-19 result than other indicators of an upper respiratory tract infection.[2-4] The relative predictive value of presenting COVID-19 symptoms is under current investigation.[3-6] This study seeks to ascertain the role of smell loss in risk stratification and predicting COVID-19 patients' prognosis.

Adult patients with COVID-19 who were evaluated at a university medical center between February 1, 2020 and April 3, 2020 were identified by an electronic medical records query and included in our initial series. Complete data on demographic variables, clinical characteristics, COVID-19 symptoms, COVID-19 treatments, and clinical evaluations were retrieved. Through a predesigned screening questionnaire for COVID-19, the patients were evaluated through telemedicine, in-person, or at the emergency department and were asked about their symptoms during the history taking, including whether they had acute smell loss. Patients with incomplete clinical data or whose smell loss was not recorded were excluded.

The retrieved information included the following: (1) demographics; (2) body mass index (BMI); (3) comorbid conditions (asthma, allergic rhinitis, chronic rhinosinusitis, eczema, food allergy); (4) preexisting smell dysfunction; (5) COVID-19–related inflammatory laboratory values (complete blood cell counts, C-reactive protein, albumin, creatinine, ferritin, and erythrocyte subdimension rate); (6) COVID-19 outcomes (need for hospitalization, intensive care unit admission, intubation); and (7) development of acute respiratory disease syndrome. To identify and confirm comorbidities and other clinical variables, all charts were reviewed by 2 independent trained

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