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.

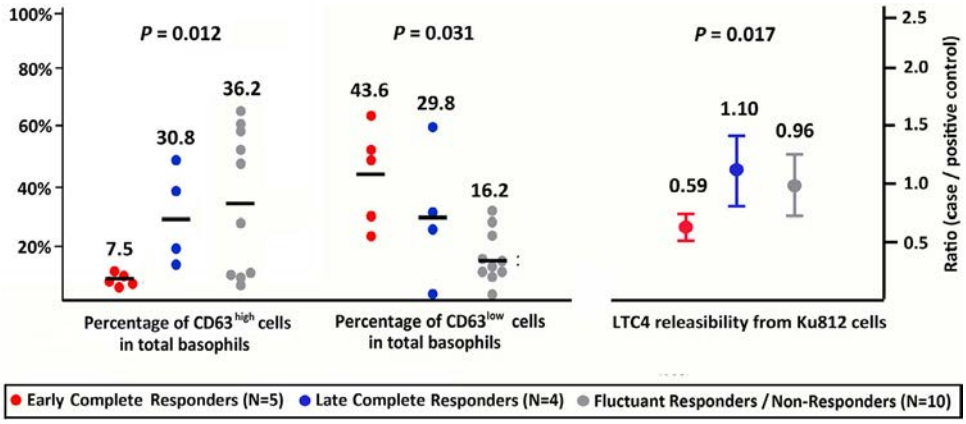

Figure 1. Characteristics of early omalizumab complete responders at the baseline. The early complete responders had fewer CD63^{high} (MFI > 3 × 10^3) basophils and more CD63^{low} (MFI < 1 × 10^3) basophils. Sera of early complete responders had significantly lower releasibility in modified CU-BAT. All comparisons were performed with Kruskal-Wallis test. CU-BAT, chronic urticaria basophil activation test.

sera before and after omalizumab treatment. Notably, sera of the early complete responders had significantly lower ability to cause Ku812 cells releasing LTC4 (Fig 1, *P* value = .01). This probably meant that sera of the early complete responders might have fewer or absence of certain serum factors which may activate Ku812 cells.

One previous study has revealed that basophil CD63 expression was significantly higher in patient with CSU, especially in those with positive results of autologous serum skin test.[7] Patients with CSU with positive results of autologous serum skin test, basophil histamine release assay, or CU-BAT have slower responses to omalizumab in previous studies.[8,9] Sera of these patients may have certain serum factors, such as IgG anti-IgE or anti-FcεRI antibodies, which cause higher activation status of basophils and larger amount of mediators released. All these data support our findings on the characteristics of early complete responders. We also evaluated serum levels of IgE, D-dimer, C-reactive protein, tryptase, substance P, and interleukin-17 before and after omalizumab treatment. Levels of all these biomarkers were unremarkable to characterize our patients with CSU.

Our study had some limitations. The number of patients was too small and the treatment duration was too short, which might weaken the strength of the findings.

In conclusion, we found the characteristics of early complete omalizumab responders in CSU. These patients reveal lowest basophil FcεRI expressions after omalizumab treatment. They have less activated basophils and less serum releasibility on Ku812 cells at the baseline. These findings may help identify patients who may benefit most from omalizumab.

Yung-Tsu Cho, MD*
Ko-Ting Fu, MS*
Che-Wen Yang, MD, MS†
Chia-Yu Chu, MD, PhD*

* *Department of Dermatology*
National Taiwan University Hospital
National Taiwan University College of Medicine
Taipei, Taiwan
† *Department of Dermatology*
Cathay General Hospital
Taipei, Taiwan
chiayu@ntu.edu.tw

References

1. Zuberbier T, Aberer W, Asero R, et al. The EAACI/GA2LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. *Allergy*. 2018;73(7):1393–1414.
2. Chang TW, Chen C, Lin CJ, Mets M, Church MK, Maurer M. The potential pharmacologic mechanisms of omalizumab in patients with chronic spontaneous urticaria. *J Allergy Clin Immunol*. 2015;135(2):337–342.
3. Jorg L, Pecaric-Petkovic T, Reichenback S, et al. Double-blind placebo-controlled trial of the effect of omalizumab on basophils in chronic urticaria patients. *Clin Exp Allergy*. 2018;48(2):196–204.
4. Metz M, Staubach P, Bauer A, et al. Clinical efficacy of omalizumab in chronic spontaneous urticaria is associated with a reduction of FcεRI-positive cells in the skin. *Theranostics*. 2017;7(5):1266–1276.
5. Deza G, Bertolin-Colilla M, Pujol RM, et al. Basophil FcεRI expression in chronic spontaneous urticria: a potential immunological predictor of response to omalizumab therapy. *Acta Derm Venereol*. 2017;97(6):698–704.
6. Melynek A, Zalewska-Janowska A, Martus P, Staubach P, Zuberbier T, Maurer M. How to assess disease activity in patients with chronic urticaria? *Allergy*. 2008;63(6):777–780.
7. Chen Q, Zhai Z, Xu J, et al. Basophil CD63 expression in chronic spontaneous urticaria: correlation with allergic sensitization, serum autoreactivity and basophil reactivity. *J Eur Acad Dermatol Venereol*. 2017;31(3):463–468.
8. Gericke J, Metz M, Ohanyan T, et al. Serum autoreactivity predicts time to response to omalizumab therapy in chronic spontaneous urticaria. *J Allergy Clin Immunol*. 2017;139(3):1059–1061.e1.
9. Schoepke N, Asero R, Ellrich A, et al. Biomarkers and clinical characteristics of autoimmune chronic spontaneous urticaria: results of the PURIST study. *Allergy*. 2019;74(12):2427–2436.

Telemedicine during the coronavirus disease 2019 pandemic for pediatric patients with eosinophilic esophagitis

Eosinophilic esophagitis (EoE) is a chronic disease in which patients require long-term therapy and management by gastroenterologists and allergists.[1,2] The coronavirus disease 2019 (COVID-19) pandemic led to a shift in how physicians treat patients with increasing reliance on telemedicine (TM). As cases of COVID-19 surged in the United States and worldwide, TM became a mainstay of care. Even with declines in cases and medical practices having in-person (IP) visits, recommendations were made to continue TM, especially for those with lower acuity diseases, such as EoE.[3] We are unaware of any

Disclosures: The authors have no conflicts of interest to report.
Funding: The authors have no funding sources to report.

published studies evaluating TM in the care of patients with EoE. We evaluated the utility of TM in the care of pediatric patients with EoE during the COVID-19 pandemic.

We conducted a retrospective chart review of patients with EoE evaluated at the University of Maryland Children's Hospital Eosinophilic Gastrointestinal Disease Program's (EGDP) clinic by TM or seen IP from June 2020 to November 2020. All TM patients interacted with a pediatric gastroenterologist and an allergist at the same time through Zoom (Zoom Video Communications, San Jose, California). All encounters were documented in the electronic medical record (EMR) application Epic (Epic Systems Corporation, Verona, Wisconsin). In June 2020, only TM visits were offered, but starting in July, patients were offered either TM or an IP visit. There are 2 EGDP clinics in the state of Maryland. IP patients were seen in the location closer to their house, whereas TM patients could choose a date they preferred at either clinic.

We investigated adherence to visits based on the visit type. We collected data from the EMR on age, sex, and insurance type in addition to documenting atopic comorbidities. Clinical outcomes, such as scheduling an EGD, initiating or changing therapy, ordering laboratory or other gastrointestinal (GI) imaging (ultrasound, swallow study, or upper GI series), and/or undergoing skin testing, were explored. Finally, travel time, distance, and cost savings were reviewed for TM patients. We used Google Maps (Google LLC, Mountain View, California) to estimate the distance in miles and time in minutes to and from the clinics using the patients' addresses. The "fastest route" was selected in all cases. To calculate travel costs, the Internal Revenue Service annual standard mileage reimbursement rate of $.575 for 2020 was used.[4]

Differences in patient characteristics and outcomes between those who had TM visits and those who had IP visits were compared using χ^2 tests. Statistical analyses were performed using Statistical Product and Service Solutions version 26 (IBM Corporation, Armonk, New York). All statistical testing was 2-tailed, with the criterion of significance $P < .05$.

A total of 92 visits (63 patients) were scheduled during the study period. Furthermore, 68 (74%) TM visits were scheduled for 51 patients, and 24 (26%) IP visits were scheduled for 22 patients. A total of 62 (91%) patients presented for their TM visit but only 15 (62%) for their IP visit. There was a statistically significant difference in the show rates for TM and IP visits ($P = .001$).

There was no difference in demographics, insurance, or atopic conditions between the 2 groups except for allergic rhinitis (Table 1). There was no significant difference in outcomes between TM and IP patients related to scheduling for an EGD ($P = .16$), changing or initiating therapy ($P = .41$), ordering laboratory or imaging studies ($P = .73$), or undergoing skin testing ($P = .98$). TM patients did come in for a separately scheduled clinic visit for skin testing, whereas IP patients had skin testing during the regularly scheduled visit.

TM families saved 3489.9 miles (range, 3.9-239 miles) to and from the clinic, with a mean of 56.3 miles saved for each visit. The total travel time saved to and from the clinic was 4369 minutes (range, 19-280 minutes) with a mean of 70.5 minutes. Overall, $2006.69 was saved by the TM patients for travel, with an average of $32.37 saved for each visit.

Although this study was conducted during the COVID-19 pandemic, our findings suggest that TM is an effective method of delivering care to pediatric patients with EoE. The difference in the show rate between TM and IP visits was significant ($P = .001$). At our institution, both TM and IP patients receive phone calls, e-mails, and/or text messages reminding families of the appointment. Nevertheless, attendance at TM appointments may have been further facilitated by phone calls from the clinic's medical assistant to families not logged on at the scheduled time, reminding the family to attend. It is unclear why there was such a high no-show rate for IP visits. Further studies revealing show rates before the pandemic would be helpful.

When comparing TM visits and IP visits, studies have revealed either no difference or superior outcomes for chronic diseases such as asthma.[5,6] In this research, outcomes did not differ between the TM and IP visits for pediatric patients with EoE.

TM can connect clinicians and patients without long travel distances and times, which can lead to cost savings, less lost time from work and school, and potentially have a positive impact on the environment.[7] Similarly, this study revealed savings in travel distance, time, and associated costs.

There are several limitations to this study. First, this was a retrospective study, so the available data and analyses are limited. Furthermore, possible sampling error given the small sample size may contribute to the significant differences in the likelihood to show and the rate of allergic rhinitis between the groups. It is also possible that the patients were more accepting of a TM appointment owing to the pandemic, so a prospective study will be needed to determine whether the families continue to prefer TM visits or if there is a return to predominantly IP visits. Third, travel distance and time savings, including mileage costs, were estimated on the basis of the assumption that patients traveled to their appointment using their car, when, in fact, patients may have relied on alternative forms of transport, such as a bus or train.

TM has the potential to transform the delivery of care to patients with EoE, especially for those who may live far away from allergists/immunologists who are experts in the disease.

Table 1
Patient Demographics

Demographic	Telemedicine patients (n = 51)	In-person patients (n = 22)	*P* value
Mean age, y	10.6	10.4	.89
Sex			
Male	30 (59)	14 (63)	.70
Female	21 (41)	8 (36)	
Atopic conditions			
Asthma	25 (49)	16 (73)	.06
Allergic rhinitis	35 (69)	20 (91)	.04
Eczema	18 (35)	9 (41)	.64
IgE-mediated food allergy	27 (53)	12 (54)	.90
Any atopic condition	43 (84)	21 (95)	.18
Insurance			
Private	30 (59)	12 (54)	.73
Medical assistance or Medicaid	20 (39)	10 (45)	
Other	1 (2)	0	

Abbreviation: IgE, immunoglobulin E.
NOTE. Data are expressed as number or number (percentage).

Acknowledgment

The authors thank Jennifer Demetrakis, RN, for her assistance with data entry.

Anupama Kewalramani, MD*
Jaylyn Waddell, PhD†
Elaine Leonard Puppa, RN, MEd‡
* *Division of Pediatric Pulmonology and Allergy*
Department of Pediatrics
University of Maryland School of Medicine
Baltimore, Maryland
† *Division of Neonatology*
Department of Pediatrics
University of Maryland School of Medicine
Baltimore, Maryland

‡ *Division of Gastroenterology*
Department of Pediatrics
University of Maryland School of Medicine
Baltimore, Maryland
akewal@som.umaryland.edu

References

1. Gonsalves NP, Aceves SS. Diagnosis and treatment of eosinophilic esophagitis. *J Allergy Clin Immunol*. 2020;145(1):1–7.
2. Spergel JM. The key role of allergists-immunologists in the management of eosinophilic esophagitis. *Ann Allergy Asthma Immunol*. 2020;124(3):217–218.
3. Searing DA, Dutmer CM, Fleischer DM, et al. A phased approach to resuming suspended allergy/immunology clinical services. *J Allergy Clin Immunol Pract*. 2020;8(7):2125–2134.
4. Internal Revenue Service. Standard mileage rates. Available at: https://www.irs.gov/tax-professionals/standard-mileage-rates. Accessed March 20, 2021.
5. Chongmelaxme B, Lee S, Dhippayom T, Saokaew S, Chaiyakunapruk N, Dilokthornsakul P. The effects of telemedicine on asthma control and patients' quality of life in adults: a systemic review and meta-analysis. *J Allergy Clin Immunol Pract*. 2019;7(1):199–216. e11.
6. Portnoy JM, Waller M, De Lurgio S, Dinakar C. Telemedicine is as effective as in-person visits for patients with asthma. *Ann Allergy Asthma Immunol*. 2016;117(3):241–245.
7. Dullet NW, Geraghty EM, Kaufman T, et al. Impact of a university-based outpatient telemedicine program on time savings, travel costs, and environmental pollutants. *Value Health*. 2017;20(4):542–546.