

Table 1

Demographics and Clinical Characteristics of EoE Patients with and without Subcutaneous Immunotherapy

	EoE-SCIT (n = 667)	EoE+SCIT (n = 10)	P
Age (mean years $\pm$ SD)	26.0 $\pm$ 18.4	29.2 $\pm$ 14.2	.59
Male (n, %)	459 (69)	5 (50)	.20
White (n, %)	532 (81)	9 (90)	.46
Symptoms (n, %)			
Dysphagia	466 (71)	8 (80)	.52
Heartburn	249 (39)	4 (40)	.94
Abdominal pain	143 (22)	1 (10)	.36
Symptom length prior to diagnosis (mean years $\pm$ SD)	7.3 $\pm$ 8.6	13.8 $\pm$ 8.8	.046
Atopy (n, %)			
Rhinitis/sinusitis	253 (40)	10 (100)	.01
Asthma	156 (24)	6 (60)	.01
Food allergy	173 (29)	4 (44)	.32
Baseline EGD findings			
Rings	298 (45)	4 (40)	.75
Stricture	134 (20)	3 (30)	.45
Narrowing	93 (14)	2 (20)	.60
Furrows	376 (57)	5 (50)	.67
Exudates/white plaques	225 (34)	7 (70)	.02
Edema/decreased vascularity	199 (30)	4 (40)	.50
Dilation performed	140 (21)	3 (30)	.50
Baseline eosinophil counts (mean eos/hpf $\pm$ SD)	65.2 $\pm$ 44.7	72.8 $\pm$ 36.5	.62

Abbreviations: EGD, esophagogastroduodenoscopy; EoE, esophageal eosinophilic esophagitis; eos, eosinophils; hpf, high-power field; SCIT, subcutaneous immunotherapy; SD, standard deviation.

Despite our review of a large database of EoE patients and a large data warehouse, we could identify only a small fraction of EoE patients who underwent treatment with SCIT at our center, with even fewer receiving SCIT after the initial diagnosis of EoE. Consequently, we are unable to make definitive conclusions regarding the role of SCIT. The number of cases were limited by a single center study, patients could have been seen by an outside allergy practice to receive SCIT, and some had changes in concomitant EoE treatment that could impact response. Further investigation should include multiple medical centers and community-based practices, as well as limit other treatment changes. Nevertheless, because we only included EoE subjects who we could confirm received SCIT, our data are valid in this small group, and they should form the basis for future prospective studies using validated EoE outcomes and standardized SCIT protocols.

In conclusion, with the exception of increased atopic disease and longer duration of symptoms, few differences were found between EoE+SCIT and EoE-SCIT patients. The EoE+SCIT group had relatively low initial treatment response rates before SCIT. At follow-up, response rates were slightly improved, but in the context of less topical steroids and more dietary elimination. We did not observe any worse outcomes among patients in the

EoE+SCIT cohort, suggesting that SCIT in EoE patients may be safe and is worthy of future study.

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Supplementary Data

Supplementary data associated with this article can be found in the online version at <https://doi.org/10.1016/j.anai.2019.02.022>.

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An institutional review of flying Hymenoptera venom immunotherapy in patients with cutaneous systemic reactions only

The basis of venom immunotherapy (VIT) can be defined as protection against IgE-mediated immunologic mechanisms, such as

anaphylaxis.^{1,2} Most insect stings produce local reactions of swelling, pain, erythema, and pruritus, typically peaking by 24 to 48 hours and resolving within 3 to 10 days.³ Unfortunately, some patients experience systemic reactions that range from cutaneous reactions only (characterized by urticaria and/or angioedema, excluding throat, larynx, and tongue) to life-threatening systemic

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Table 1

Comparison of the 2011 and 2016 Stinging Insect Hypersensitivity Practice Parameter With Regard to Cutaneous Systemic Reaction

2011 Practice parameter	2016 Practice parameter
Systemic reaction: VIT evaluation recommended	Systemic reaction: VIT evaluation recommended
Systemic reaction: in vitro or skin testing	Systemic reaction: in vitro or skin testing
Cutaneous systemic reaction: Exempt VIT if <16 years old VIT recommended if >16 years old	Cutaneous systemic reaction: Exempt VIT for all age groups

Abbreviation: VIT, venom immunotherapy.

anaphylactic reactions (SARs).⁴ These SARs occur in 0.4% to 0.8% of children and up to 3% of adults.³ VIT should be strongly considered for all patients who meet the criteria for stinging insect hypersensitivity.

In 2011, the American Academy of Allergy, Asthma, and Immunology/American College of Allergy, Asthma, and Immunology Joint Task Force on Practice Parameters published a guideline stating that patients who have had a systemic reaction to flying Hymenoptera (FH) should be evaluated for VIT.³ It is known that approximately 30% to 60% of patients who have had a systemic reaction to FH will have a similar or worse reaction, resulting from subsequent stings.³ Thus, VIT is strongly recommended for these patients and often required for active duty military personnel. VIT is an effective intervention for FH allergy that reduces the risk of subsequent reaction from 30% to 60% on subsequent stings to less than 5%.⁵ Furthermore, the stings that occur during VIT are found to result in milder reactions than previously experienced.³

The 2011 practice parameter defined who should be considered for VIT. The criteria for VIT includes a history of systemic reaction and presence of specific IgE by in vitro testing or skin testing.³ The guideline also stated that in patients with frequent large local reactions VIT can reduce the duration and size of the lesions.^{1,6,7} The guideline exempted patients with VIT who were 16 years and younger who only experienced a cutaneous systemic reaction (CSR) defined by diffuse or local urticaria and/or angioedema without accompanying respiratory, gastrointestinal, cardiovascular, or neurologic symptoms.³ The rationale was that these patients had an only 10% chance of experiencing an SAR on subsequent sting.³ For patients older than 16 years, VIT was recommended.³

In 2016, the Joint Task Force on Practice Parameters published an update to the 2011 practice parameter that debates the necessity of VIT in all patients with CSR only.⁴ It cites 2 prospective studies that demonstrated less than a 3% chance of progression to a systemic reaction and no severe reactions on subsequent insect stings in those patients who previously experienced CSRs only.⁴ Sting challenge studies demonstrated that such patients are unlikely to have a systemic reaction with subsequent sting.⁴ Thus, the guideline states that VIT is generally not necessary for adult patients who have only experienced CSRs because they are at low risk for experiencing a systemic reaction (Table 1).

The number of patients currently receiving VIT for CSRs at our institution since the publication of the 2016 practice parameter is unknown. This information is necessary for a cost and safety analysis. To our knowledge, this is the first examination of patients receiving VIT for CSRs only.

This institutional review board–approved, quality assurance retrospective medical record review study evaluated all patients receiving FH VIT from 2011 to 2018 at Wilford Hall Ambulatory Surgical Center to determine how many patients are receiving VIT for CSRs only. A total of 36 patients receiving FH VIT were identified by accessing an electronic immunotherapy database. Among these patients, those who were older than 16 years and who received VIT from 2011 to 2018 were evaluated further through medical record review to identify the need for VIT.

Six patients were identified as having been prescribed VIT for CSRs. All were receiving VIT with FH extracts only. The ages of the 6 patients ranged from 16 years 11 months to 42 years at time of VIT initiation. The sex demographic was split equally among the identified patients. Currently, 1 patient is receiving VIT. This patient has been undergoing maintenance VIT since November 2018 and wants to continue because he gardens in an area with increased FH activity. The remainder of the patients have discontinued use of VIT for various reasons. Two patients completed 3 to 5 years of maintenance therapy by 2018; 2 patients preferentially discontinued VIT after less than 12 months of maintenance therapy, citing logistical difficulties; and 1 patient was advised to discontinue because of systemic reactions during the build-up phase. The 2 patients who preferentially discontinued VIT (one with wasp extract and the other with wasp/mixed-vespid extracts) reported interval field stings that resulted in no reaction or a large local reaction. This is similarly true of the patient who completed 3 years of maintenance VIT with honeybee and mixed-vespid extracts. The remainder of the patients denied interval field stings. All 6 patients continue to carry an epinephrine autoinjector.

The 2016 practice parameter recommends discussing with adult patients who are receiving VIT for CSRs the risks and benefits associated with discontinuing treatment.⁴ Risks include the potential for having an SAR when not receiving VIT.⁴ Conversely, the risks of continuing VIT include having an SAR attributable to VIT.⁴ Consideration must be given to the lifestyle and overall health of the patients and whether the patients engage in high-risk activities that subject them to Hymenoptera stings.⁴ The economics of VIT and the availability of Hymenoptera venom extracts are also viable considerations for discontinuing VIT for CSRs only. VIT is an expensive therapy, and venom extracts can be difficult to acquire. On the basis of a recent publication in 2010,⁸ immunotherapy-treated pediatric patients accrued an 18-month median total health care cost of approximately \$3000. Even a small number of patients who receive VIT for CSRs can be costly over time and may subject patients to unnecessary risks.

To our knowledge, this is the first evaluation of patients who receive FH VIT for CSRs at our institution. The information gleaned from this study allows for a risk vs benefit discussion with patients regarding whether to continue FH VIT initiated for CSRs. This therapy, although successful for patients who have experienced a true IgE-mediated anaphylactic reaction, is not without risk and is costly. A review of VIT for patients with CSRs is warranted for quality assurance and patient safety purposes.

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