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Ann Allergy Asthma Immunol 127 (2021) 496–511

Contents lists available at ScienceDirect

Letters

Anaphylaxis-related knowledge and concerns in Canadian families during the coronavirus disease 2019 pandemic

Anaphylaxis is a life-threatening condition defined as the involvement of 2 or more systems after exposure to a possible allergen or hypotension after exposure to a known allergen.[1-3] The first-line treatment for anaphylaxis is prompt administration of an epinephrine autoinjector (EAI).[4] Guidelines advise that after epinephrine administration, patients should arrive to the emergency department (ED) for assessment and observation.[2,3] A recent editorial recommends that cases in which symptoms resolve after EAI administration, patients could manage anaphylaxis at home and notify their physician on a nonurgent basis.[5] If symptoms persist or worsen, a second dose of epinephrine should be administered, and patients should be assessed in the ED.[5] The aim of this study is to evaluate knowledge and concerns related to anaphylaxis management among Canadian patients or parents of children with food allergies during the coronavirus disease 2019 (COVID-19) pandemic.

We developed a questionnaire to capture participant's knowledge and concerns regarding history of previous severe allergic reactions and willingness to use epinephrine for anaphylaxis during the COVID-19 pandemic. The questionnaire was distributed by e-mail and social media to members of Food Allergy Canada, the leading national patient organization supporting Canadians affected by food allergy. The study was approved by the McGill University Health Centre Ethics Board.

Participants were directed to a study information page and a consent disclosure statement. We did not collect any other personal data. Participants were queried on demographics (ie, age, sex), then progressed through closed- and open-ended questions on food allergy, anaphylaxis, and COVID-19.

Among the 140 participants who began to fill the consent form, 113 (80.7%) completed the questionnaire. Among those filling the questionnaire, 92 (81.4%) answered all questions and were defined as complete responders. Those who did not answer all the questions (18.6%) were defined as partial responders. Most of the participants were parents who filled in the questionnaire for children with allergies (n = 60; 53.1%). The other participants were adults with allergies (n = 53; 46.9%). Half of the participants were of female sex (n = 59; 52.2%). Almost half of the participants (n = 53; 46.9%) reported that they or their child had eczema, and 44 (38.9%) participants reported that they or their child had asthma. One-fifth of the participants (n = 21; 18.6%) reported that they or their child had other allergic comorbidities.

Among the 113 participants, most (n = 82; 72.6%) reported that the patient or caregiver would not have hesitations to using an EAI for an allergic reaction during the COVID-19 pandemic. Among 18 participants (15.9%) reporting hesitations, the most common were COVID-19 related, which included fear of being exposed to COVID-19 with medical staff (n = 15; 83.3%), not wanting to spend time monitored in the ED (n = 12; 66.7%), and challenges accessing the ED during COVID-19 (n = 8; 44.4%). Other hesitations included reaction not severe enough to use EAI (n = 7; 38.9%), insufficient knowledge on anaphylaxis and EAI use (n = 4; 22.2%), difficulty in getting a new EAI (n = 4; 22.2%), and fear of needles (n = 1; 5.6%).

A total of 25 patients (22.2%) reported having had anaphylaxis since the start of the COVID-19 pandemic. Among these reactions, 24 participants (96.0%) reported not using an EAI to treat the reaction. Of these 24 participants, most (n = 18; 75.0%) reported that they would not hesitate to use one. In this group, most were parents with children with allergies (n = 17; 70.8%) and 6 (25.0%) were adults. The use of an EAI for anaphylaxis during the COVID-19 pandemic was significantly lower than the use of an EAI during the participant's or their child's worst anaphylactic reaction of life (4.0% vs 40.9%; difference: −24.3% [95% confidence interval, −53.8% to −20.0%]) (Table 1). Among the participants who had a reaction during COVID-19 and did not use their EAI, 5 (20.0%) reported not using one owing to concerns on going to the ED during COVID-19.

To the best of our knowledge, this is the first study to evaluate EAI use hesitancy during the COVID-19 pandemic. Although our results reveal that most of the participants indicated that they would not hesitate to use an EAI for an allergic reaction during COVID-19, the vast majority of the cases did not use their EAI. Among those reporting hesitations, fear of exposure through interactions with staff and challenges accessing the ED during COVID-19 were among the most common reasons. These findings are in line with other studies in Canadian children with food allergy reporting fear of EAI use and underutilization of EAI,[4,6] as well as with recent systematic review and meta-analysis conducted by our group revealing that less than 25% of children and less than 10% of adults will use their EAI.[7] Our findings suggest that COVID-19 contributes to increased hesitancy in EAI use.

Some potential limitations are that our sampling population consisted of Food Allergy Canada members only, and therefore, our results may not be generalizable to the rest of the population. Although our questionnaire asked on anaphylaxis, we did not ask specific symptoms nor severity of anaphylaxis to decrease questionnaire length. Hence, we could not determine the severity of anaphylaxis. Furthermore, we were not able to determine the cause for the high percentage of individuals who did not respond to certain questions. Current studies suggest that response rates for surveys are generally less than 50%, unless an incentive is used.[8] Given that the highest number of nonresponses to a question in our survey was 19%,

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

https://doi.org/10.1016/j.anai.2021.07.006
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Table 1
Allergic Reaction Since the Start of the Coronavirus Disease 2019 Pandemic (n = 113)

Variable	n (%)
EAI use for worst reaction in life	
Symptoms experienced during worst reaction (n = 113)	
Skin	84 (74.3)
Respiratory	59 (52.2)
Gastrointestinal	36 (31.9)
Drop in blood pressure	22 (19.5)
Other	14 (12.4)
Anaphylaxis (≥2 systems involved)	66 (58.4)
EAI used for worst reaction (n = 113)	
Yes	32 (28.3)
No	65 (57.5)
No response	16 (14.2)
Among cases of anaphylaxis (n = 66)	27 (40.9)
EAI use during the COVID-19 pandemic	
Person or caregiver with hesitation to use EAI during the COVID-19 pandemic	
Yes	18 (15.9)
No	82 (72.6)
No response	13 (11.5)
Type of hesitation[a] (n = 18)	
COVID-19–related hesitations:	
Fear of being exposed to COVID-19	15 (83.3)
Did not want to spend 4-6 h being monitored	12 (66.7)
Challenge accessing ED during COVID-19	8 (44.4)
Other hesitations:	
Reaction not severe enough to use an EAI	7 (38.9)
Concerned that a replacement EAI would be difficult to get	4 (22.2)
Unclear signs and symptoms of anaphylaxis	3 (16.7)
Fear of needles	1 (5.6)
Did not know how or not confident to use EAI	1 (5.6)
Other	2 (16.7)
Anaphylactic reaction since the start of COVID-19 (n = 113)	
Yes	25 (22.1)
No	70 (61.9)
No response	18 (15.9)
EAI used for this reaction (n = 25)	
Yes	1 (4.0)
No	24 (96.0)
If EAI was not used, part of decision owing to concerns about going to ED during the COVID-19 pandemic (n = 25)	
Yes	5 (20.0)
No	19 (76.0)
No response	1 (4.0)
Type of concern[a] (n = 5)	
COVID-19–related concerns:	
Fear of being exposed to COVID-19 by medical staff	3 (60.0)
Did not want to spend 4-6 h being monitored	3 (60.0)
Challenges accessing ED during COVID-19	2 (40.0)
Other concerns:	
Reaction not severe enough to use EAI	3 (60.0)
Concerned that a replacement EAI would be difficult to get	0 (0.0)
Unclear signs and symptoms of anaphylaxis	1 (20.0)
Fear of needles	0 (0.0)
Did not known how or not confident to use EAI	1 (20.0)
Other	0 (0.0)
Was a member of your household diagnosed as having COVID-19?	
Yes	1 (0.9)
No	91 (80.5)
I do not know	0 (0.0)
Prefer not to answer or no response	21 (18.6)

Abbreviations: COVID-19, coronavirus disease 2019; EAI, epinephrine autoinjector; ED, emergency department.
[a]Categories are not mutually exclusive.

our percentage of partial and complete responders is in line with that in other studies.[8]

In conclusion, our survey may provide an explanation on EAI underutilization for anaphylaxis during the COVID-19 pandemic. In general, prehospital EAI is underused[7]; however, additional concerns have been found from our participants as 20% indicated hesitations to using an EAI and only 1 participant among 25 used their EAI during the pandemic, despite experiencing anaphylaxis. Per a recent editorial recommending at-home management of anaphylaxis with epinephrine, it may be beneficial to incorporate these recommendations into current anaphylaxis management guidelines.[5] It is important to encourage the use of EAI, given the reduced accessibility to the ED during the pandemic.[9] Implementation of home management for anaphylaxis into current guidelines will likely contribute to increased EAI use during the COVID-19 pandemic.

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