

Emergency Department Management of Children Presenting with Severe Allergic Reactions

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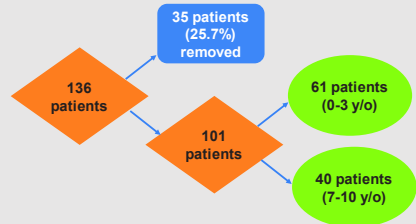
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BACKGROUND

Severe allergic reactions are medical emergencies that can rarely lead to death. Emergency Department (ED) management of severe allergic reactions in children may differ between infant/toddlers compared to older pediatric patients. This study compared the management of two populations of pediatric patients who presented to the ED at Mount Sinai Hospital in 2018 with severe allergic reactions.

METHODS

A retrospective chart review was performed for diagnoses of anaphylaxis and allergic reactions in patients ages 0-3 years old compared to patients ages 7-10 years old who presented to Mount Sinai Hospital's ED in 2018. 136 patients fulfilled criteria based on ICD-10 codes. All 136 patient charts were reviewed; 35 patients were excluded from analysis due to alternative etiology for symptoms (ie infection), lack of symptoms at the time of arrival to ED, or presentation with chief complaint of environmental allergies or asthma exacerbation. This project was approved by the institutional review board. Descriptive statistics and Fischer's exact test were used for comparison.



RESULTS

	0-3 years	7-10 years	P value
FEMALE	33 (54.1%)	22 (55.0%)	1.00
INSURANCE			
Medicaid	33 (54.1%)	24 (60.0%)	0.68
Private	24 (39.3%)	16 (40.0%)	1.00
None	4 (6.6%)	0	
ALLERGY HISTORY			
Eczema	7 (11.5%)	11 (27.5%)	0.06
Asthma	3 (4.9%)	20 (50%)	0.0001
Food allergy	6 (26.2%)	18 (45.0%)	0.06
Hx Anaphylaxis	2 (3.3%)	7 (17.5%)	0.03

Table 1. Demographics

Of the 101 patients who were evaluated (54.5% female), there was no significant difference in history of food allergy and eczema between infant/toddlers and older pediatric patients. Infants/toddlers were more likely to present with cutaneous symptoms (P=0.0004), however, there was no significant difference seen in patients presenting with respiratory, gastrointestinal, or cardiovascular symptoms or with involvement of two or more organ systems between groups. Older patients were more likely to receive epinephrine prior to arriving to the ED (P=0.479). There was no statistical difference when comparing the delivery of epinephrine to infants/toddlers versus older patients.

	0-3 y/o (19)	7-19 y/o (8)	P value
Pre-ED Epinephrine	3 (15.7%)	2 (25.0%)	0.62
ED Epinephrine	9 (47.4%)	6 (75.0%)	1.00

Table 2. Patients who fulfilled anaphylaxis criteria

	0-3 years	7-10 years	P value
PRE-ED TREATMENT			
Antihistamine	9 (14.8%)	9 (22.5%)	0.43
Epinephrine	3 (4.9%)	7 (17.5%)	0.05
FIRST KNOWN ALLERGIC REACTION	45 (73.8%)	22 (55.0%)	0.06
TRIGGER IDENTIFIED			
Food	35 (57.3%)	19 (47.5%)	0.42
Drug	5 (8.2%)	2 (5.0%)	0.70
Venom	2 (3.3%)	0	0.52
Unknown	22 (36.1%)	20 (50%)	0.22
AMBULANCE ARRIVAL	9 (14.8%)	9 (22.5%)	0.43
SYMPTOMS IN ED			
Skin	61 (100%)	32 (80.0%)	0.0004
Respiratory	9 (14.8%)	9 (22.5%)	0.43
Gastrointestinal	14 (23.0%)	8 (20.0%)	0.81
Cardiovascular	10 (16.4%)	10 (25.0%)	0.32
Multiple Systems	22 (36.1%)	14 (35.0%)	1.00
TREATMENT IN ED			
Epinephrine	11 (18.0%)	9 (22.5%)	0.62
H1 Blocker	49 (80.3%)	32 (80.0%)	1.00
H2 Blocker	14 (23.0%)	16 (40.0%)	0.08
Steroids	17 (27.9%)	21 (52.5%)	0.02
DISCHARGE PLAN			
Epinephrine Rx	14 (23.0%)	10 (25.0%)	0.82
Allergy Referral	16 (26.2%)	12 (30.0%)	0.82

Table 3. Management of Allergic Reactions

SUSPECTED FOOD TRIGGERS



DISCUSSION

Current guidelines for anaphylaxis management does not differ by age. This study demonstrates that management for severe allergic reactions in infants/toddlers (ages 0-3) compared to older pediatric patients (ages 7-10) is not significantly different in terms of epinephrine administration, antihistamine administration, discharge epinephrine prescription, or referral to an Allergist. However, older pediatric patients were shown to receive steroids more often than younger patients.

REFERENCES

- Wang, Julie, and Hugh A. Sampson. "Food anaphylaxis." *Clinical & Experimental Allergy* 37.5 (2007): 651-660.
- Greenhawt, Matthew, et al. "Guiding principles for the recognition, diagnosis, and management of infants with anaphylaxis: an expert panel consensus." *The Journal of Allergy and Clinical Immunology: In Practice* (2019).