



ORIGINAL ARTICLE

Emergency Department Visits for Food Allergy in Taiwan: A Retrospective Study



Chan-Fai Chan ^{a,b}, Po-Hon Chen ^b, Ching-Feng Huang ^{c,d},
Tzee-Chung Wu ^{b,e,*}

^a Department of Pediatrics, National Yang-Ming University Hospital, Yilan, Taiwan

^b Division of Gastroenterology, Children's Medical Center, Taipei Veterans General Hospital, Taipei, Taiwan

^c Department of Pediatrics, Tri-service General Hospital, Taipei, Taiwan

^d National Defense University, Taiwan

^e School of Medicine, National Yang-Ming University, Taipei, Taiwan

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Key Words

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Background: Little is known about the characteristics of patients who visit the emergency department (ED) due to food allergy in Taiwan. This study aims to assess the triggers, clinical presentations, and management of patients presenting to a tertiary ED for food allergy.

Methods: This is a retrospective study of 369 visits presenting to the ED of Taipei Veterans General Hospital, Taipei, Taiwan for food allergy over a 2 year period. Patients' demographics, food allergens, presenting features, and management were addressed and analyzed. Adult and pediatric cases were also compared.

Results: The patients had an average age of 32.9 years [standard deviation (SD) \pm 20.6]; the cohort was 66.9% adult and 53.7% male. Seafood (67.5%), fish (6.2%), and fruits (4.3%) were the major foods eliciting acute allergic reactions. Overall itchy mucocutaneous lesion was the most common presentation (85.6%), followed by anaphylaxis (12.2%), respiratory distress (1.4%), and anaphylactic shock (0.8%). Mucocutaneous involvement was more common in the pediatric population (92.6% vs. 82.2%, $p = 0.007$), whereas anaphylaxis was more prevalent in adults (15.4% vs. 5.7%, $p = 0.0068$). Antihistamines (98.6%) and systemic corticosteroids (63.1%) were commonly used medications. Only 2.2% of patients with anaphylaxis received epinephrine. The average duration in the ED was 1.6 hours (SD \pm 1.8). No death was documented in the current study.

Conclusion: Seafood, fish, and fruits are common foods which cause acute allergic reactions in Taiwan. Although most food allergies are mild, anaphylactic shock still presents in about 1% of patients. Only a minority of patients with anaphylaxis receive epinephrine. As anaphylaxis may

* Corresponding author: Division of Gastroenterology, Children's Medical Center, Taipei Veterans General Hospital, Number 201, Shih-Pai Road, Section 2, Taipei 11217, Taiwan.

E-mail address: tcwu@vghtpe.gov.tw (T.-C. Wu).

be life-threatening, prompt education and use of an epinephrine auto-injector deserves further concern.

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1. Introduction

During the past decades the prevalence of food allergy has increased dramatically worldwide, making it an important public health issue.^{1–6} Although most food allergies cause minor symptoms, a small proportion of patients still suffer from potentially fatal reactions. In contrast to most published reports from Western countries, which demonstrated peanut and tree nuts to be the most common foods causing severe reactions,⁷ limited data revealed seafood to be the main cause of food-induced anaphylaxis in Asia.⁸ Patients with moderate-to-severe food allergies are often sent to a nearby emergency room. Better outcome depends on prompt recognition and timely management of these life-threatening reactions. Despite universal recommendations for the use of epinephrine in anaphylaxis, underuse of epinephrine has been widely reported.⁹ Currently, little is known about the characteristics of patients visiting the emergency department (ED) for food allergy in Taiwan. In order to improve the quality of health care, it is therefore necessary to investigate the common food allergens and current practice in the ED. The aim of this study is to assess the food triggers, clinical presentations, and management in patients presenting to a tertiary ED for food allergy in Taiwan.

2. Methods

2.1. Study design and population

This is a retrospective study over a 2 year period, from November 2009 to November 2011. Medical records of patients presenting to the ED of Taipei Veterans General Hospital, Taiwan, Taiwan with a clinical diagnosis of acute allergic reactions to food were reviewed. Charts were extracted using the International Classification of Disease, ninth revision (ICD-9) codes: 995.0 (other anaphylactic shock), 995.1 (angioneurotic edema), 995.3 (allergy, unspecified), 995.60 (allergy due to unspecified food), 995.61–995.69 (allergy due to specified food), 708.0 (allergic urticaria), and 708.9 (urticaria, unspecified). All medical records were reviewed thoroughly by two pediatricians who were experts in both gastroenterology and immunology. Special attention was paid to patients' previous food allergy history to help identify the cases of food allergy. Adverse reactions caused by food intolerance, food poisoning, food additive, drug, and insect bite were excluded from the study. Cases of possible food allergies where the food consumed was not mentioned were also excluded. For the patients who visited the ED more than once because of treatment failure or relapse symptoms, only one visit was counted to avoid overestimating the specific food allergen. Patients' demographics, eliciting foods, presenting features, treatment, and disposition, were recorded in detail. All edible aquatic

animals, except fish, were collectively referred to as seafood. Food allergens were classified as "mixed food" if more than one identifiable food was ingested. Clinical symptoms were sorted by four categories which included itchy mucocutaneous lesion (e.g., reddening, itching, urticaria, or angioedema), respiratory distress (e.g., wheezing, tachypnea, or dyspnea), anaphylaxis, and anaphylactic shock. The definition of anaphylaxis was involvement of two or more organ systems from the following: mucocutaneous, respiratory, cardiovascular, and gastrointestinal, as adopted from the Second National Institute of Allergy and Infectious Disease/Food Allergy and Anaphylaxis Network Symposium.¹⁰ Anaphylactic shock was diagnosed when patients presented with signs of poor perfusion, such as hypotension plus delayed capillary refill, sudden collapse, syncope, or change of mental status, and requiring prompt resuscitation. The severity was further classified as mild (itchy mucocutaneous lesion), moderate (respiratory distress or anaphylaxis), and severe (anaphylactic shock). Eliciting foods, clinical features, and management of adult and pediatric cases were compared. This study was approved by the Institutional Review Board of Taipei Veterans General Hospital.

2.2. Statistical analysis

The Chi-square test was used to compare between adults and children, and to investigate their independence from each other. A two-tailed $p < 0.05$ was considered a statistically significant difference.

3. Results

Over the 2 year study period, 369 visits to the ED (363 persons) were identified as having acute allergic reactions to food. There were 247 adults (66.9%) and 122 children aged < 19 years (33.1%). The median age of the patients was 32.9 years [standard deviation (SD) \pm 20.6]. Eighty-five percent of the food allergies happened on the day when the food was ingested. Most patients suffered from the allergic reactions after lunch or dinner. Twenty-three percent of the cases had experienced a similar food allergy due to the same identified food in the past. Twenty-two percent of the participants performed Multiple Allergen Simultaneous Test (MAST) or ImmunoCAP at outpatient department follow up; however, only 5% got positive results. The cohort's information is shown in Table 1. Overall, seafood (67.5%), fish (6.2%), and fruits (4.3%) were the major food allergens encountered in our patients, accounting for nearly 80% of all eliciting foods. The three most common food allergens in the pediatric population were seafood (66.4%), fish (4.9%), and fruits (3.3%), followed by egg, nuts, milk, wheat, vegetables, and meat. The three most common food triggers in adults were seafood (68%), fish (6.9%), and fruits (4.9%),

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