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Characteristics of patients presenting to the emergency department with anaphylaxis in Riyadh, Saudi Arabia



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المخلص

أهداف البحث: دراسة مواصفات المرضى الذين يراجعون أقسام الطوارئ بحالات تأق في المملكة العربية السعودية.

طرق البحث: روجعت ملفات المرضى الذين سبق معالجتهم في قسم الطوارئ في مستشفى رئيس من الدرجة الثالثة في مدينة الرياض في الفترة من عام ٢٠٠٩ إلى ٢٠١٢، وكان تشخيصهم "حساسية" أو "تفاعل تحسسي" للتعرف على المجموعة التي ظهرت عليها أعراض وعلامات تحقق معايير شبكة التأق المنبثقة عن اللجنة الوطنية للحساسية والأمراض المعدية، شعبة حساسية الأطعمة والتأق في الولايات المتحدة الأمريكية.

النتائج: من ضمن ١٥٢٢ ملفاً طبياً حقق ٦٢ مريضاً معايير التأق، من بينهم ٣٩ (٦٣%) بالغين و ٢٣ (٣٧%) أطفال (تحت ١٢ سنة). عموماً، كان متوسط العمر لجميع المرضى ٢١.٦ عاماً. وبلغ عدد الذكور ٣٨ (٦١%) كانت الأطعمة أكثر المسببات شيوعاً، ولكن تفاصيل المسببات لم تكن مدونة بالتفصيل المطلوب، وفي ٥٥% من الحالات لم يسجل أي سبب. ووجد أن مرضى الربو هم أكثر عرضة للإصابة بالتأق. كما وجد أيضاً أن هناك نقص ملحوظ في وصفات حقن الأدرينالين الذاتية عند خروج المرضى من الطوارئ. وحول عدد قليل من المرضى لاختصاصي الحساسية.

الاستنتاجات: كانت مواصفات مرضانا المصابين بالتأق مشابهة لتلك التي في المدونات الطبية. وهناك حاجة ملحة لتتقيف أطباء الطوارئ عن التعليمات الموجهة للتعامل مع حالات التأق، وكذلك عن أهمية جمع المعلومات الخاصة بالمرض.

الكلمات المفتاحية: تأق؛ المملكة العربية السعودية؛ فرط تحسس غذائي؛ الأدرينالين؛ الحالات الإسعافية

Abstract

Objective: To investigate the characteristics of patients presenting to the emergency department with anaphylaxis in Saudi Arabia.

Methods: Records of adults and children who presented to the emergency department of a major tertiary health care center in Riyadh from 2009 to 2012 with a diagnosis of "allergy" or "allergic reaction" were reviewed to identify patients with symptoms and signs fulfilling the criteria of the National Institute of Allergy and Infectious Diseases/Food Allergy and Anaphylaxis Network for anaphylaxis.

Results: Out of 1522 records, 62 patients fulfilled the criteria for anaphylaxis. Among them 39 (63%) were adults and 23 (37%) were children (≤ 12 years of age). Overall, the mean age ($\pm$ SD) of patients was 21.6 (± 16) years. There were 38 (61%) males. Food was the most common trigger, but details of the triggering agents were poorly recorded and 55% of patients could not identify a specific trigger. Asthma was found to be a risk factor for anaphylaxis. There was a marked under prescription of adrenaline auto-injector on discharge. Only few patients were referred to an allergist.

Conclusion: Our patient population with anaphylaxis had similar characteristics to those in the literature. There is an urgent need to educate emergency department physicians about the guidelines of anaphylaxis management and the importance of gathering specific data.

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Introduction

Anaphylaxis is a serious, life threatening systemic hypersensitivity reaction that is rapid in onset and might cause death.¹ Patients typically present with skin rash accompanied by respiratory compromise, reduced blood pressure, and/or persistent gastrointestinal symptoms. It is an uncommon medical emergency with an estimated lifetime prevalence of 50–2000 episodes per 100,000 persons.² This wide range is likely due to the lack of universal definition of anaphylaxis as well as the inaccurate data recording due to logistic reasons in many studies around the globe.³ Death may occur as a complication. In a study from Australia it was estimated that the rate of death from anaphylaxis is 0.64/million population/year,⁴ while in a more recent study from Florida, USA the estimated rate of death was 0.11% out of all patients presenting to the emergency department with anaphylaxis.⁵ In addition, recent research indicates that the incidence of anaphylaxis is rising among all age groups.^{6,7} Several factors, most commonly food, drugs, and insect venom can trigger anaphylactic reactions. The frequency of the contribution of each group varies with age, sex, and geographical location.^{8,9} On the other hand, a substantial number of anaphylactic reactions have no identifiable trigger. Adrenaline is a life saving medication and an adrenaline auto-injector should be provided for patients presenting with anaphylaxis.^{1,10}

Up to our knowledge there are no data from the Kingdom of Saudi Arabia about patients with anaphylactic reactions presenting to the emergency department. This retrospective study is aimed to identify the characteristics of those patients, as well as triggers and outcomes of their reaction.

Methodology

Records of adults and children presenting to the emergency department of King Fahad Medical City (KFMC), a major tertiary health care institution of the Ministry of Health, with a diagnosis of “allergic reaction” or “allergy” from 2009 to 2012 were searched for. A code of “anaphylaxis” was not available. Patients’ charts were reviewed to identify those who satisfy the criteria of the National Institute of Allergy and Infectious Diseases/Food Allergy and Anaphylaxis Network, proposed at the Second Symposium on the Definition and Management of Anaphylaxis,¹¹ and adopted by the World Allergy Organization (WAO) in its guidelines.¹ According to these guidelines, Anaphylaxis is highly likely when any one of the following three criteria is fulfilled:

1. Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (e.g., generalized hives, pruritus, or flushing or swollen lips, tongue or uvula) AND at least one of the following:

- a. Respiratory compromise (e.g., shortness of breath, wheezing, stridor, hypoxemia).
 - b. Reduced blood pressure (BP) or symptoms of end-organ dysfunction (e.g., collapse, syncope, incontinence).
2. Two or more of the following that occur rapidly after exposure to a *likely allergen* for that patient (minutes to several hours):
 - a. Involvement of the skin or mucosal tissue.
 - b. Respiratory compromise.
 - c. Reduced BP or associated symptoms.
 - d. Persistent gastrointestinal symptoms (e.g., crampy abdominal pain, vomiting).
 3. Reduced BP after exposure to *known* allergen for that patient (minutes to several hours):
 - a. Infants and children: low systolic BP (age specific) or greater than 30% decrease in systolic BP.
 - b. Adults: systolic BP of less than 90 mm Hg or greater than 30% decrease from that person’s baseline.

These criteria were recently evaluated and found to have a sensitivity of 96.7%, specificity of 82.4%, positive predictive value of 68.6%, and negative predictive value of 98.4%.¹²

Other data on patients’ demographics, triggers of anaphylaxis, associated possible augmenting factors (exercise within 2 h of the event, fever, acute infection), relevant past medical history, and disposition were also collected.

The Institutional Review Board (IRB) at KFMC approved this study (IRB log number 13-155).

Results

Records of 1522 visits with a diagnosis of “allergic reaction” or “allergy” over 4 years period were identified and reviewed. Sixty-two patients with clinical features fulfilling the National Institute of Allergy and Infectious Diseases/Food Allergy and Anaphylaxis Network criteria for anaphylaxis were identified. Among those, 39 (63%) patients were adults and 23 (37%) were children (≤ 12 years of age). Overall, the mean age ($\pm$ SD) of patients was 21.6 (± 16) years. There were 38 (61%) males. Table 1, shows the characteristics of adults and children with anaphylaxis.

There was only few data on the details of the known or likely trigger of the anaphylactic reaction (Table 1). In terms of drugs, adult patients’ reactions were triggered by metformin, ibuprofen, and antihistamine, while children had amoxicillin and Augmentin as triggers. In terms of food, 5 adults had their reaction triggered by peanuts, 4 by shrimp, one by fish, and one by mixed food (sandwich). On the other hand 2 children’s reactions were triggered by milk and peanut. Finally, in reactions that were triggered by insect venom, only in 3 incidents the type of insect was specified. They were all adults and the insect was ant.

Three (7.7%) adults and 5 (21.7%) children had concomitant fever or acute infection. There were 5 (21.7%) adults who had history of asthma, while 9 (39%) children were asthmatics and 4 (17.4%) had history of eczema. Patients were observed in the emergency department for an average of 4 h.

Considering that there are roughly 80,000 patients per year presenting to the adult and pediatrics emergency

Table 1: Characteristics of adults and children presenting to the emergency department with anaphylaxis.

	Adults <i>N</i> = 39 (%)	Children <i>N</i> = 23 (%)	Total <i>N</i> = 62 (%)
Age (years), mean ($\pm$ SD)	31 (12)	4.7 (3.7)	21 (16)
Sex (male)	22 (56)	16 (70)	38 (61.3)
Known or likely triggering allergen:			
Food	11 (28)	2 (9)	13 (21)
Drug	4 (10)	2 (9)	6 (9.7)
Insect venom	7 (18)	2 (9)	9 (14.5)
Unknown trigger	17 (44)	17 (73)	34 (54.8)
Clinical features:			
Rash/swelling	39 (100)	23 (100)	62 (100)
Respiratory compromise	35 (90)	22 (97)	57 (92)
Reduced blood pressure	6 (15)	2 (9)	8 (13)
Persistent gastrointestinal symptoms	6 (15)	4 (18)	10 (16)
Disposition:			
Admission	0 (0)	1 (4.3)	1 (1.6)
Epipen prescription	0 (0)	2 (9)	2 (3.2)
Referral to an allergist	5 (13)	5 (22)	10 (16)

department at KFMC, the rate of patients with anaphylaxis among emergency department visitors is 20/100,000 per year.

Discussion

There are limited studies investigating the epidemiology of anaphylaxis in the literature in general with great variability between studies from different countries. This is the first study to look at anaphylaxis in the emergency room in Saudi Arabia. Patients' mean age is younger than what is reported in the literature for adults and children combined^{5,7} or for children alone.¹³ This may be due to the higher ratio of children in the Saudi population as compared to the US or EU. The frequency of anaphylactic reactions from all emergency department visits in this study is less than what was reported from a center in New York (180/100,000).¹³

Similar to other studies, the respiratory system is the commonest affected system after the skin and mucosal tissue. The rate of involvement is, however, higher than what was reported from the US (49%),^{7,13} but close to that reported in the registry of German speaking countries (87%) that included only children and adolescents.¹⁴ On the other hand, the rate of cardiovascular system involvement was similar to the rate reported in a study from Rochester, MN (14.2%)⁷ but much lower than that reported in the German study (47%).¹⁴ There are no reported deaths in this study. This is likely to be due to the small patient population, since death from anaphylaxis is uncommon.

Consistent with other studies^{5,7,14} food was the most common trigger of anaphylaxis, followed by insect venom then drugs. Also, similar to what is reported in the literature peanuts and seafood were the commonest incriminated food items.^{5,7,13,14} In addition, similar to all previous reports,^{1,7} asthma was a risk factor for anaphylaxis in our patient population since its prevalence

among them is more common than the general Saudi population (around 20%), especially in children.^{15,16}

An alarming finding is the very low rate of prescriptions of adrenaline auto-injectors especially that there were no close follow up given. In addition, there was a very low rate of referral to allergy specialists especially from the adult emergency department. Provision or at least prescription of an adrenaline auto-injector and referral to a specialist are endorsed by several experts and are also recommended in the anaphylaxis guidelines.^{1,3,10,17} The lack of an adult allergist in our institution may partly explain why the results are particularly poorer than the pediatrics section. Moreover, there was inconsistent recording of some data related to the event of anaphylaxis, particularly in relation to the triggers and the details of the clinical presentation as well as treatment given at home.

This study is limited by the retrospective nature, that it is a single center study, and sometimes the poor recoding of data by emergency department physicians. Therefore, it is recommended to evaluate this critical issue more precisely in a prospective multicenter study, preferably nationwide. In addition, education of emergency department physicians on the proper evaluation and management of patients with anaphylaxis particularly the use of adrenaline, which is a life saving medication in this situation and to assure proper follow up after discharge.

Conflict of interest

The author has no conflict of interest to declare.

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