Acute urticaria presenting in the emergency room of a general hospital

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Abstract

Background

Acute urticaria is a common disorder that often prompts patients to seek treatment in the emergency room (ER). There are few data on acute urticaria presenting in ER.

Objectives

This study aimed to provide demographic and clinical data of patients presenting with acute urticaria at an ER of an Italian general hospital covering an area of about 90,000 inhabitants. The predictive factors of the length of stay in the ER had also been investigated.

Methods

The database of ER patients was searched for urticaria by ICD-9 code and by keywords in the diagnosis description. All the medical records of the identified patients were reviewed and the length of stay in ER was noted.

Results

A total of 459 patients were admitted to ER with acute urticaria in a 1-year period corresponding to 1.01% of total ER visits and to 1.2 admission per day. Angioedema was present in 139 cases (30.3%), fever in 55 (12%). Twenty-nine patients fulfilled the criteria of anaphylaxis. Triggers could be identified in 193 cases (42%): drugs in 20.7%, insects bites (10.2%), foods (7.4%) and contact urticaria in 3.7%.

Anaphylaxis ($p < 0.001$), food ($p < 0.05$) and drugs ($p < 0.05$) as triggers were significant and independent predictive factors of the length of stay in ER.

Conclusions

Patients with acute urticaria are frequently referred to the emergency room, but only in a few cases urticaria is associated with severe allergic manifestations. Drug and food hypersensitivity, together with anaphylaxis, are the best predictors of the length of stay in ER.

Abbreviations

- ER, emergency room;
- NIAID/FAAN, National Institute of Allergy and Infectious Disease/Food Allergy and Anaphylaxis Network

1. Introduction

Acute urticaria is extremely common, possibly affecting as many as 10–20% of the population at some time in their lives. It is most frequently a self-limited disorder caused by an allergic reaction to a food or drug, or it may be a manifestation of viral infections [1]. Sometimes, particularly in adults, acute urticaria is actually

the beginning of chronic spontaneous urticaria, which is defined by a duration > 6 weeks. Acute urticaria may be associated to angio-edema and may be a component of anaphylaxis [1].

Many patients with acute urticaria are treated by their family physician, but acute urticaria is a common disorder that often prompts patients to seek treatment in the emergency room (ER). In fact, acute urticaria is the most common cutaneous disease treated in the ER, both in adults [2] and in children [3], [4] and [5].

Clinical presentation of acute urticaria referred to the emergency room and possible related aetiologies have been mainly investigated in children [5], [6] and [7]. Determining whether urticaria is part of an anaphylactic reaction is important as the patient needs prompt treatment and careful monitoring if an anaphylactic reaction occurs.

We wished to investigate the demographic and clinical data as well the predictive factors of the length of stay in the ER of patients with acute urticaria presenting to the emergency department of a general hospital.

2. Materials and methods

2.1. Patients

We reviewed the records of patients presenting with urticaria to the Dimiccoli Hospital ER from January 1 through December 31, 2011. Records of patients were retrieved by using the search stem “urticaria” and “allerg-.” Ultimately, charts with *International Classification of Diseases, Ninth Revision* (ICD-9) codes including but not limited to “allergic urticaria” (708.0), “allergic reaction not otherwise specified” (995.3), “adverse food reaction” (995.7), and “drug allergy” (995.27) were reviewed. Patients who met the criteria for urticaria were included in the study, even if their visit was not given an urticaria diagnostic code. Demographics, chief complaint, atopic history, suspected trigger, time from exposure to onset of symptoms, and symptoms before evaluation and during the ER visit, medications administered, physical examination findings and length of stay were recorded. The study was approved by the Dimiccoli Hospital Review Board.

2.2. Definition of urticaria and identification of anaphylaxis

Urticaria is defined by the onset of characteristic intensely itchy lesions, consisting in wheals that may be round, oval or serpiginous in shape, and vary in size from less than a centimeter to several centimeters in diameter [8]. Angioedema, when associated with urticaria, usually affects the face and lips, extremities and/or genitals. Patients presenting with angioedema without urticaria were not included. The diagnosis of anaphylaxis was obtained by evaluating the clinical data associated to the reports by two of us (CB and GR) according to NIAID/FAAN criteria [9]. Briefly, the acute involvement of at least another organ (cardiovascular apparatus, respiratory system and gastrointestinal tract) is required, in addition to urticaria, to fulfill the diagnostic criteria of anaphylaxis.

2.3. Data analysis

Descriptive statistics were produced for each relevant variable. Normal distribution of variables was assessed according to the Kolmogorov-Smirnov test of normality.

To compare the main characteristics among groups, ANOVA or ANOVA by ranks tests (depending on the distribution of the variables) was used for determining statistical significance ($p < 0.05$) between continuous variables; a paired t test or Wilcoxon signed-rank test was used when comparing different time points. Dichotomous variables were analyzed with the χ^2 test.

To assess the effect of covariates on the length of stay in ER, a set of multiple robust regression analysis, with White-corrected standard errors in the presence of heteroskedasticity and normality deviations, was performed using the length of stay in ER as dependent variable and demographic and anthropometric variables and clinical characteristics of urticaria as predictors. The predictive variables were retained in the model if the regression coefficient was significantly different from zero (the null hypothesis) at 5% level or if their presence affected other estimations and were significant at least at 0% level.

Marginal (adjusted) means with 95% confidence intervals were estimated by the regression and reported.

The analysis were performed using STATA/SE 11.2 for Windows 64® (StatCorp LP, College station, USA) statistical package.

3. Results

We included 459 subjects out of 44,112 attendances, consecutively presenting to the emergency room of Dimiccoli Hospital (Barletta, Italy) between January and December 2011 (1.26 admissions/day) with acute urticaria, isolated or associated with other clinical symptoms. Clinical and demographic characteristics of the patients are summarized in Table 1. The patient age was distributed from 1 month to 90 years, with a mean age of 35 years. One hundred and eight patients (23.5%) were < 18 years old and 351 (76.5%) were ≥ 18 years old. Men accounted for 50.8% of the group and women 49.2%.

Table 1. Patients characteristics.

Number of subjects	459
Mean age (years (range))	35.4 (0–90)
Subjects ≥ 18 years	351
Subjects < 18 years	108
M (%)	233 (50.8)
F (%)	226 (49.2)
Angioedema (%)	139 (30.3)
Fever (%)	55 (12)
Other symptoms (cough, nausea, diarrhea) (%)	44 (9.59)
Anaphylaxis (%)	29 (6.3)
Exacerbated chronic urticaria	42
Length of stay in ER (minutes: mean(range))	155 (20–240)
Latency trigger - symptoms (minutes: mean(range))	30 (10–1440)

Comorbidities	**Adults**	**Children**
Asthma	5 (1.42)	1 (0.93)
Allergic rhinitis	33 (9.4)	9 (8.33)
Atopic dermatitis	4 (1.14)	3 (2.78)

Angioedema was present in 139 cases (30.3%), fever in 55 (12%) and other associated symptoms in 73 cases (15.9%), 29 of them fulfilled the criteria of anaphylaxis (6.3% of the entire study population) (see Table 1). Triggers could be identified in 193 cases (42%): drugs in 20.7%, followed by insects bites (10.2%), foods (7.4%) and contact urticaria in 3.7%. Drugs (mainly non steroid anti-inflammatory drugs and beta-lactamic antibiotics), as trigger, were more frequently involved in adults than in children, while spontaneous/idiopathic urticaria was more prevalent in children than in adults (Table 2 and Table 3). The exacerbation of chronic spontaneous urticaria was the reason for presenting to ER in 42 subjects (9.2%), and most of them (76%) were adults. Patients were treated mainly with i.v. glucocorticoid (93%) and parenteral anti-histamine drugs (78%). Oral therapy was seldom administered: only one patient received oral glucocorticoid and 40 patients (8.7%) oral anti-histamine drug. Adrenaline was used only in 15 out of 29 cases of anaphylaxis (52%). The mean length of stay in the ER was 155 ± 74.9 min (range 20–420 min).

Anaphylaxis ($p < 0.002$), food ($p < 0.05$) and drugs ($p < 0.05$) were significant and independent predictive factors of the length of stay in ER at multiple regression analysis (Table 4).

Table 2. Triggers of urticaria.

Trigger	Adults, *n* = 351 (%)	Children, *n* = 108 (%)	*p*
Drugs	79 (22.51)	13 (12.04)	0.017
Insects bites	37 (10.54)	10 (9.26)	ns
Foods	28 (7.98)	5 (4.63)	ns
Contact urticaria	15 (4.27)	2 (1.85)	ns
Infections □	11 (3.13)	3 (2.77)	ns
Idiopathic	181 (51.57)	75 (69.44)	0.001

□

Upper respiratory tract infection.

Table 3. Triggers of anaphylaxis.

Trigger	Adults, *n* = 26 (%)	Children, *n* = 3 (%)	*p*
Drugs	11 (42.31)	1 (33.33)	ns
Insects bites	3 (11.54)	0	ns
Foods	7 (26.92)	0	ns
Idiopathic	5 (19.23)	2 (66.66)	ns

Table 4. Robust regression analysis significant results using length of stay in ER as dependent variable (upper part of the table) and marginal means of length of stay in ER by predictive factors adjusted at average age and each other (lower part of the table).

Factors significantly associated with longer stay in ER

Factor	Minutes	95% confidence interval	*P* value
Constant	141.2	128.32 to 154.08	
Food as trigger	26.044	2.496 to 49.592	0.03
Drugs as trigger	15.534	− 0.009 to 31.078	0.04
Anaphylaxis	72.734	26.560 to 118.908	< 0.01

Marginal means of lenght of stay in ER by predictive factors

Factor	Minutes	95% confidence interval
Food as trigger		
Yes	179.3	157.2–201.3
No	153.2	146.1–160.3
Drugs as trigger		
Yes	167.5	153.9–181.0
No	151.9	144.3–159.6
Anaphylaxis		
Yes	226.3	180.5–272.1
No	153.6	146.8–160.3

ER: emergency room.

4. Discussion

It is widely believed that acute urticaria, when not associated to anaphylaxis, is not life threatening and generally controllable in outpatient clinics [8]. Nevertheless, acute urticaria is a common disease in the ER,

accounting for 1.2 admission per day in our study, in agreement with reports from other countries [2]. In other words, non-urgent patients, who do not require emergent care, seem to have utilized the ER, causing unnecessary expenditure of national medical resources. In our series, only 29 (6.3%) out of 459 patients presented acute urticaria as one of the symptoms associated to anaphylaxis for whom emergency care was certainly appropriate.

A problematic issue with the diagnosis of anaphylaxis, which may explain the under-reporting or misreporting of anaphylaxis cases, depends on the underuse, in clinical practice, of the diagnostic criteria developed by Food Allergy and Anaphylaxis Network (FAAN) as well the failure to agree among health care providers on the severity threshold for classifying a reaction as anaphylactic reaction. According to two important studies [10] and [11], only 1% of the acute systemic allergic reactions evaluated in emergency departments had been diagnosed as anaphylaxis, as most of systemic allergic reactions received the diagnosis of acute allergic or acute hypersensitivity reactions. We confirm, in our series, that none of the cases we classified as anaphylaxis, on the basis of the clinical data reported in the medical records, received the proper anaphylaxis ICD code. This explains well why too many patients with anaphylaxis (nearly half in our series) do not receive epinephrine as recommended.

More than 9% of patients visiting ER for acute urticaria were not there for the first episode of their skin problems as these patients, most of them were adults, had actually chronic urticaria. Hence, through the detailed disease education at the first visit and the encouragement of self-medication for acute urticaria (antihistamine drugs eventually associated to glucocorticoids), these non-urgent urticaria patients can be taught to manage their acute symptoms on their own, referring to their general practitioners or specialists. Intravenous corticosteroids were the most common therapy used on initial presentation of acute urticaria, followed by first-generation histamine (H)1 antagonists, administered i.v. or i.m. and second-generation H1 antagonists, used in only 8.7% of cases, despite their recommendation as first-line therapy [8]. Physicians working in an emergency department as opposed to primary care setting have been reported less likely to use second-generation H1 antagonists [9].

In most cases (58%), the aetiology of acute urticaria was not determined, while in a few patients (6.3%), acute urticaria was the first manifestation of anaphylaxis, mainly due to drugs and hymenoptera stings. It is important that physicians practicing emergency medicine provide appropriate aftercare instructions to patients [12] and refer these patients to allergological evaluation to define the culprit drug or insect venom in order to advise the patients about safe alternative drugs or to start specific immunotherapy for hymenoptera venom respectively.

The mean length of stay in ER of patients presenting with acute urticaria had not been investigated before. We found the mean length of stay in ER of our patients was only 2 h and half, underlying the benign course of acute urticaria presenting in ER, even if most of patients leave the Hospital still presenting urticarial lesions. Foods and medications as triggers, and anaphylaxis were the independent factors significantly associated to longer stay in ER. Foods and medications as triggers had been found associated to more severe acute urticaria in children presenting to ER [7], while personal allergy history, particularly atopic dermatitis, was the most important predictor of the duration of a first attack of acute urticaria in children [13].

5. Conclusions

In conclusion, patients with urticaria are frequently referred to the emergency room, but only about 6% of the cases studied were associated with severe clinical pictures.

Considering the benign course of acute urticaria, efforts should be made to disseminate the guidelines [8] and [12] for its treatment among general practitioners, in order to reduce unnecessary expenditure of medical resources and prevent overcrowding of emergency department.

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