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Original article

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.

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 angioedema 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 [3–5].

Clinical presentation of acute urticaria referred to the emergency room and possible related aetiologies have been mainly investigated in children [5–7]. 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.

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

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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 (Tables 2 and 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).

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,

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.