

Underreporting of anaphylaxis in a community emergency room

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Little is known about the epidemiology of anaphylaxis. In a retrospective study of all cases of anaphylactic shock occurring in a hospital catchment area of 48,000 persons during a 13-year period, 20 cases were documented, resulting in an incidence of 3.2 cases per 100,000 inhabitants per year.¹ Other reports have focused on specific agents, such as penicillin and insect venom.^{2,3}

Such incidence studies are complicated by several factors: (1) small and selected patient groups are usually analyzed; (2) definitions of anaphylaxis are variable and do not differentiate between only mucocutaneous signs and the added presence of cardiovascular, respiratory, and gastrointestinal signs or symptoms; and (3) the number of undiagnosed or false-negative cases based on the definition used cannot be determined. To better estimate the occurrence of anaphylaxis, an analysis of emergency room records of all patients in a defined catchment area over a 4-month period was conducted.

METHODS

A retrospective analysis, on a weekly basis, of the emergency room records of all patient visits ($n = 19,122$) to a rural tertiary care medical center's emergency room (St. Mary's Hospital, Rochester, Minn.) was conducted for the 4-month period of May 1, 1993 through August 31, 1993. On the basis of 1992 data, emergency room visits to this specific medical facility accounted for approximately 80% of the total emergency room visits within the city of Rochester (population = 71,000).

A case was classified as anaphylaxis if the patient manifested acute mucocutaneous signs (pruritis, flushing, erythema, urticaria, angioedema, or conjunctivitis) plus any one of the following signs or symptoms: (1) respiratory: rhinitis, swelling of uvula, tongue, or pharynx or stridor, dyspnea, or wheezing; (2) cardiovascular: presyncope, loss of consciousness, systolic blood pressure lower than 100 mm Hg; or (3)

gastrointestinal: nausea, vomiting, diarrhea, fecal urgency, or abdominal cramps.

A telephone survey of the patients was conducted 5 to 8 months after the emergency room visit. The following questions were asked: (1) was there any recurrence of the signs and symptoms? (2) did the emergency room physicians recommend follow-up with an allergist? and (3) was there, in fact, follow-up with an allergist? Thirteen of the 17 patients (76%) classified retrospectively as having anaphylaxis were listed in the local telephone directory and were available for follow-up.

RESULTS

Four patients were diagnosed by the emergency room physicians as having had anaphylaxis. However, 13 additional patients were identified by the authors as meeting the criteria for a diagnosis of anaphylaxis on the basis of history and results of physical examination contained in the emergency room record. These 13 patients were diagnosed most frequently as having an "allergic reaction" (Table I). Ten emergency room physicians diagnosed these 13 patients, and three physicians made 6 of the 13 diagnoses. The 4-month period incidence of anaphylaxis seen in a community emergency room was therefore 17 cases per 19,122 emergency room visits (0.09%).

Of the 17 patients (age range, 11 to 54 years; median age, 30 years), 13 were female and 10 had a personal history of atopy (defined as asthma, hay fever, or eczema). Thirteen of the 17 patients had a probable cause inferred from the history: food, seven; drug, three; latex, one; and exercise-related, two. None of the cases was fatal. Four of the 17 patients were admitted to the hospital; three of these were diagnosed by the emergency room physicians as having anaphylaxis. Five of the 13 patients who were dismissed from the emergency room were instructed to carry an epinephrine kit. Five of the 17 patients received epinephrine in the emergency room. Ten of the 17 patients received systemic corticosteroids either in the emergency room or as a prescription.

On questioning, of the 13 patients available for the telephone survey, only one had a recurrence of

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TABLE I. Emergency room diagnosis and clinical presentation of cases consistent with anaphylaxis

Patient No.	ER diagnosis	ICD-9 codes	Clinical signs or symptoms	Follow-up with allergist
1	Allergic reaction	995.3	Pruritus, wheezing-subjective	No
2	Allergic reaction; possible viral gastroenteritis	995.3; 008.8	Urticaria, wheezing-subjective, gastrointestinal	Yes
3	Idiopathic urticaria; syncope episode	708.1; 780.2	Urticaria, wheezing-objective, hypotension	No
4	Anaphylactic reaction	995.0	Urticaria, wheezing-subjective	Yes
5	Allergic reaction	995.3	Angioedema, wheezing-objective	No
6	Allergic reaction; bronchospasm	995.3; 519.1	Angioedema, urticaria, wheezing-subjective	No
7	Mild anaphylaxis	995.0	Angioedema, pruritus, wheezing-objective	Unavailable
8	Angioedema	995.1	Urticaria, angioedema, wheezing-subjective	Unavailable
9	Allergic reaction	995.3	Angioedema, wheezing-objective	Yes
10	Hives	708.9	Urticaria, wheezing-subjective	No
11	Anaphylactic reaction	995.0	Urticaria, pruritus, syncope	Yes
12	Anaphylaxis	995.0	Urticaria, pruritus, angioedema, hypotension, gastrointestinal	Unavailable
13	Allergic reaction	995.3	Angioedema, wheezing-subjective	Yes
14	Allergic reaction	995.3	Urticaria, pruritus, wheezing-subjective	Unavailable
15	Allergic reaction	995.3	Urticaria, angioedema, gastrointestinal	Yes
16	Allergic reaction	995.3	Urticaria, gastrointestinal	Yes
17	Angioedema	995.1	Angioedema, wheezing-subjective	No

ER, Emergency room; ICD-9, International Classification of Diseases—ninth revision.

anaphylaxis during the subsequent 5- to 8-month period. Six of the 13 patients reported that they did not see an allergist for further evaluation, and four of these six patients stated that a follow-up visit with an allergist was not recommended.

DISCUSSION

The finding in this study, a 4-month period incidence of anaphylaxis of 0.09%, does not appreciably differ from incidences reported in other retrospective studies.^{2,3} Neither does this value contradict the intuitive clinical appreciation of anaphylaxis as a relatively uncommon medical problem. However, most of the cases in this study would have been unreported in the International Classification of Diseases—ninth revision nomenclature as anaphylaxis. Although there were no fatal outcomes in the 5- to 8-month follow-up period, the diagnosis of “allergic reaction” rather than anaphylaxis can obfuscate the seriousness of these cases and minimize the urgency for evaluation of the patient by an allergist.

The management of anaphylaxis in emergency

rooms has been demonstrated to show variable rates of epinephrine kit prescription and patient education.⁴ All patients with anaphylaxis should be instructed to carry an epinephrine kit and should know how to use it. The results of this report suggest that a universally accepted definition of anaphylaxis among emergency room physicians and allergists is needed. This definition will help identify patients for appropriate medical treatment, prevention of delayed reactions, follow-up evaluation of causes, and for future epidemiologic studies.

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