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ORIGINAL ARTICLE

Intention to prescribe self-injectable epinephrine: Are there differences depending on who assesses the patient post-reaction?

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Abstract
Introduction: Anaphylaxis is the most severe of all allergic reactions and can even prove fatal. There is limited evidence of a difference in prescribing patterns for self-injectable epinephrine (SIE) between general paediatricians and paediatricians with greater knowledge of allergology.
Objectives: Assess knowledge about prescribing SIE of a sample of primary care/hospital paediatricians and paediatricians with specialised knowledge of allergology through a questionnaire asking them about clinical cases of anaphylaxis in their daily paediatric practice.
Materials and methods: Participants were primary care and hospital paediatricians practicing in different regions of the province of Barcelona and paediatricians with specialised knowledge in the field of allergology from Spain.
Results: A total of 183 paediatricians responded. Of that 59.6% were paediatricians with specialised knowledge of allergology. General paediatricians in most cases correctly prescribed SIE device (more than 70% answered correctly in five of the eight clinical cases). In the case of drug anaphylaxis, which is an avoidable allergen for which SIE is not indicated, 67.5% of general paediatricians would prescribe it. In the case of exercise-induced anaphylaxis there were also differences in the prescription of epinephrine by general paediatricians, with only 40% prescribing it.
Conclusions: In this study the percentage of SIE prescriptions would be higher than expected by general paediatricians, with no differences in the cases proposed between them and the paediatricians with better knowledge of allergology.
Despite these results, it is important to insist on conducting education programmes and disseminating them to facilitate physicians' recognition and treatment of anaphylactic reactions.

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Introduction

Anaphylaxis is a severe systemic allergic reaction of rapid onset that is potentially fatal. Heterogeneity in the clinical signs and symptoms is one reason that the actual frequency of anaphylactic reactions is unknown and probably underestimated because many cases go undiagnosed and/or unreported.[1] Overall prevalence is estimated from 0.05 to 2%, with incidence thought to be increasing, particularly in children and adolescents. According to the Spanish *Alergológica 2005* study (a study analysing epidemiological, clinical and socioeconomic factors of allergic diseases in patients consulting for the first time in an allergology department in 2005), 14.5% of the population under 14 years were allergic to foods (the most common cause of anaphylaxis in children). A total of 66% of these children had been referred to the specialist through the paediatrician, 20.3% by the primary care physician, and only 6.8% by other specialists. Of these patients, 48.5% had required assistance in emergency care due to allergic symptoms. It should be noted that 10.5% of food-allergic children had had an anaphylactic reaction.[2] An Australian study in children found a prevalence of 1 per 1000 A&E visits to be due to anaphylactic reaction, with associated triggers recognised in only 68.4% of them.[3]

Although anaphylaxis is a relatively common condition, little is known about the knowledge among the healthcare professionals involved in the care of patients at risk of anaphylaxis. A review of the literature published in *Allergy* in April 2010, which included studies addressing outcome in knowledge, education, management and quality of life regarding anaphylaxis revealed deficiencies in the management of anaphylaxis at the medical level, as well as among patients and the community.[4]

Materials and methods

The study population consisted of 183 paediatricians, 109 of them (59.6%) with specialised knowledge in the field of allergology and 74 general paediatricians in the public health system as well as hospital care and private health facilities in various regions of the province of Barcelona.

A clinical case-based questionnaire was designed by a paediatrician specialising in allergology and an allergist to assess knowledge about prescribing self-injectable epinephrine (SIE) in the treatment of anaphylaxis. The survey instrument was presented to participants in a clinical session in each of the facilities during the months of May and June of 2013.

Assessment of the responses was based on the opinion of the experts who conducted the survey, relying on the published literature.

The questionnaire posed eight clinical cases, each of which reflected a situation in which prescribing SIE would be indicated or not for the patient, once assessed by the physician. It presented different clinical cases: an infant, four children and three cases of adolescents. Regarding triggers, there was a case of allergy to hymenoptera venom, a case of adverse reaction to drugs, five cases of adverse reaction to food and a case of exercise-induced food-dependent anaphylaxis. In all cases there were only two possible answers (yes or no) (Table 1).

Results

A total of 183 paediatricians responded to the survey, 59.6% of whom are paediatricians with specialised knowledge in allergology. Of the 74 general paediatricians who participated (40.4%), 57 (77%) also worked emergency services shifts (Tables 2 and 3).

Following the recommendations of the EAACI, after an episode of anaphylaxis from hymenoptera insect sting there would be an absolute indication for prescription of SIE.[6] In all, 97% of paediatricians and 98% of specialists in allergology would correctly prescribe the device. In the case of poison anaphylaxis, food anaphylaxis (nuts, shellfish, etc.) there is also absolute indication for SIE. A total of 84% of paediatricians and 88% specialists said they would prescribe SIE in such cases. In the case of food allergy, particularly exercise-induced anaphylaxis, SIE should be prescribed. In this case only 40.5% of paediatricians chose it as opposed to 74% of specialists. In cases of subclinical sensitivity to foods with no history of reaction, in non-IgE mediated food hypersensitivity reactions and/or anaphylaxis, SIE prescription drugs are not indicated. A high percentage of paediatricians, both general and specialists, would prescribe SIE (67.5% and 50.6%, respectively) after a drug anaphylaxis (question 3). In the case of IgE-mediated non-anaphylactic hypersensitivity reactions and medical facilities far from the residence SIE should be prescribed depending on the risk-benefit assessment of delay in its administration. In these cases, as shown in question 5 (nearest hospital is 40 km away and infant with urticaria due to cow's milk protein allergy), only 56.7% of paediatricians and 68% of specialists would recommend having SIE in the family home.

Discussion

There is no universally accepted definition of anaphylaxis nor clear criteria for its diagnosis, which often leads to confusion in treatment.[5] This is because there are numerous clinical signs and symptoms present in an anaphylactic reaction that may vary between different patients and even between episodes in the same patient. The EAACI defines anaphylaxis as a severe generalised or systemic hypersensitivity reaction, potentially fatal, characterised by the rapid development of potentially fatal problems of the airways and/or circulation, usually accompanied by changes in the skin and/or mucous membranes.[6] Furthermore, these symptoms and signs that appear in anaphylaxis may be present in other conditions which must be taken into account when considering a differential diagnosis (acute urticaria, vasovagal syncope, foreign body aspiration, septic shock, etc.).[7]

The emergency management of anaphylaxis is based on early diagnosis, which is primarily clinical. Intramuscular epinephrine is the first-line treatment in cases of anaphylaxis.[8] By definition, at least two systems of the organism must be simultaneously involved in this syndrome. Mucocutaneous involvement is the most common sign, although it may be absent in 20% of patients. Next are the respiratory tract, the gastrointestinal tract and the cardiovascular system.[4] In children, respiratory and digestive symptoms are predominant at a similar rate and are also most commonly associated with each other.[5]