

Letter to the Editor

Further fatal allergic reactions to food in the United Kingdom, 1999-2006

To the Editor:

Since the original report on United Kingdom (UK) fatal anaphylaxis 1992-1998,¹ we have attempted to investigate every food-related anaphylactic death in the UK. In addition to the previously described methods, all UK asthma deaths up to the age of 32 years were studied prospectively for a 12-month period during 2003-2004 to determine whether the fatal attack had been triggered by food allergy. Not all such cases were reported to the study prospectively, and retrospective analysis has not yet been completed; however, it now seems unlikely that many food-allergy-triggered asthma fatalities had been missed.

For each death, the probability that it was caused by anaphylaxis and the probability that the cause had been correctly identified were assessed. Despite detailed study of the medical history, results of allergy tests, events on the day of the reaction, microscopic examination of the stomach contents, and immunochemical analysis of remaining food, in one third of cases, it was not possible to be certain which food had caused the reaction. Deaths caused by an acute attack of asthma have only been included when strong evidence exists that the attack was triggered by eating a food to which the deceased patient had an allergy. We excluded 4 deaths caused by asphyxia from upper airway angioedema attributed to food allergy in those taking angiotensin converting enzyme (ACE) inhibitors because the proposed food allergy cause for the reaction seemed improbable; ACE inhibitors cause nonallergic angioedema in occasional patients,² which may prove fatal.³ We have included a man with fish allergy who had eaten fish and begun to wheeze, who died from inhalation of vomit. He had consumed an alcoholic drink, but it was thought his vomiting was from his fish allergy, not the drink.

We report 48 additional deaths meeting these criteria from 1999 to 2006. Ages ranged from 5 months to 85 years, with a median age of 21 years. The age distribution is similar to that in the previous report, with 7 aged 0-10 years, 26 aged 11-30 years, and 15 aged more than 30 years. There were 22 men (46%) reacting to milk (4), peanuts (3), nuts (2), fish (1) shellfish (1), snail (1), sesame (1), egg (1), and uncertain (8); and 26 women reacting to milk (2), peanuts (6), nuts (7), tomato (1), and uncertain (10). The circumstances comprised at home (14), the home of friends or relatives (10) at work (1), at school (2), at nursery (1), in a restaurant (11 of which 4 were abroad), out and about (6, of which 4 were from takeout food), in camp (2), and a wedding reception (1). Two deaths were overseas visitors to the UK.

Epinephrine auto-injector pens had been provided to 19 (40%), including 11 of the 13 with previous severe reactions. Over half the deaths occurred in patients whose previous reactions had been so mild that it was unlikely that a doctor would have recommended they should carry a pen. Pens were (apparently) used correctly by 9 (but 2 had time-expired); 1 used 3 pens correctly but still died. For

some, pens may have failed to deliver an intramuscular injection because of the depth of the subcutaneous adipose tissue, but this was not the case for at least 3. Pens not used correctly were used too late in the reaction (5), had not been carried on that occasion (4), or were misused (1). Recently, a 16-year-old girl with a nut allergy took the risk of eating a chocolate because she trusted her pen would save her. She used it immediately when she saw nuts in the chocolate but nonetheless died from her reaction.

The food blamed for fatal reactions was catered (18), domestically prepared (6), packaged/labeled (16), sold loose/unlabeled (2), whole nuts (3), and unknown (3). Fourteen patients were thought not to have been avoiding the culprit food; avoidance was graded as casual for 16, careful for 7, extremely careful for 6, and unknown for 5. Even with the most diligent avoidance, lapses occurred during festive eating, foreign travel, or when distracted by disruption to routine. Just as much as they need to recognize foods that will cause them to react, patients should be made aware of these potentially dangerous circumstances and be supported in assessing them and in developing appropriate coping strategies with increased vigilance in hazardous situations.

Deaths typically occurred in those whose previous reactions had been mild, which supports the concept that severity of subsequent reactions cannot be predicted from the reaction history.^{4,5} Contrary to previous recommendations,⁶ 1 fatality was supported upright after she lost consciousness; most patients died from respiratory arrest. Data from the first 7 years of the registry suggested that overuse of salbutamol, lack of daily inhaled steroid, and asthma exacerbation might be associated with fatal food reactions. The pattern has been similar in the second 7 years: 43/48 took daily treatment for asthma, and 3 were known to avoid inhaled steroids. The state of health on the day of death is known for 32: 10 had varying degrees of asthma exacerbation leading up to the fatal reaction, which suggests this may be a cofactor for severity. In a few cases, a flare-up of eczema or ill-defined malaise may have signified a change in cytokine levels predisposing to a severe reaction.⁷ We conclude that patients with a food allergy should take extra care if they feel unwell.

We think over half of those dying had had no professional advice about their food allergy; a few we think had been poorly advised. Improved education of patients with food allergies, their caregivers, doctors, and the food industry might help prevent deaths.

We conclude that the effectiveness of self-injectable epinephrine cannot be guaranteed and should not be relied on; moreover, most of those patients dying had such trivial previous reactions they would have had little motivation to carry a pen or to remember how to use it. After adoption of a properly informed allergen avoidance strategy and optimal daily asthma management, patient alertness to additional risk factors may be the most important component of managing food allergy.

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