

## CONTROVERSY

## Adrenaline syringes are vastly over prescribed

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Allergy is being seen more and more commonly. A recent review of accident and emergency admissions in England reported 415 anaphylactic cases (adults and children) from 100 000 referrals in 1991/92, but 876 in 1994/95.<sup>1</sup> Death following anaphylaxis is most feared but fortunately remains a very rare event, currently estimated at less than one case per year per million of the UK population.<sup>2</sup> There is always the instinct that these fatal incidents could and indeed should have been avoided or prevented, especially in children. A widely quoted North American study of 13 children and adolescents following fatal or near fatal food related anaphylaxis,<sup>3</sup> concluded that “epinephrine should be prescribed and kept available for all children and adolescents with IgE mediated food allergies”. Applied literally, that is a huge number of cases. A telephone survey estimated a 1% prevalence for peanut allergy alone in the United States.<sup>4</sup> Detailed review of data referred to above<sup>3</sup> reveals that adrenaline had been prescribed for three of the six fatal cases of food related anaphylaxis and three of the seven non-fatal cases, but was only actually used in the community setting by one case (a survivor). Also, the authors noted that “four of the children who received epinephrine before severe symptoms developed, became progressively sicker and eventually required intubation”. Similar cases where adrenaline administration failed to save lives were reported by Pumphrey.<sup>2</sup> A single dose of adrenaline may prove insufficient, raising the question of how many syringes to prescribe for each case. More than 100 000 adrenaline syringes are currently available in the community in the UK, many in a paediatric context.

However, there is no clear evidence that the recent more liberal community prescribing of adrenaline syringes has saved lives significantly on a population basis. Pumphrey’s anaphylaxis register data is striking. Only one quarter of all 165 anaphylactic deaths (adults and children) recorded between 1992 and 1998 were food related, and no case was recorded in a child aged less than 13 years. Iatrogenic (majority being drug related) causes were identified in 50% of cases. Adrenaline overdose, often by the intravenous route, was deemed to be the direct cause of death in several cases, including two children.

**Adrenaline—risk/benefit considerations**

Adrenaline is a powerful drug, with side effects including fatal cardiac arrhythmias, pulmonary

oedema, and cerebral haemorrhage.<sup>2 5 6</sup> Risks are higher in recipients with relatively common arteriopathic conditions such as hypertension and diabetes mellitus.<sup>5</sup> The more widely adrenaline is prescribed and used, the more frequently will side effects be reported. All these points become more alarming when adrenaline is prescribed to non-medical individuals, sometimes with little or no explicit training, especially in relation to instructions on when to use adrenaline and when not to use it. Comprehensive and helpful published advice on patient training is available,<sup>7</sup> but compliance is poor. Twenty per cent of families fail to carry adrenaline with them outside the house.<sup>8</sup> Many others have an imperfect understanding of when and/ or how to use adrenaline. Fifty per cent of those prescribed adrenaline either do not have it with them, carry an out of date prescription, or use it inappropriately.<sup>8</sup> When adrenaline is carried, there is a risk of excessive patient confidence, perhaps resulting in delayed arrival at hospital.

**Adrenaline syringes—indications**

Some consensus exists. It seems reasonable to prescribe adrenaline (assuming full patient/family training beforehand) in cases where there has been a previous life threatening allergic reaction. Outcome may be worse in cases with uncontrolled asthma, and anaphylaxis in children especially can be mistaken for asthma.<sup>2 9</sup> That, however, promotes an argument in favour of focusing efforts towards improved asthma control rather than automatic adrenaline provision. Other cases are far less clear cut. For example, a child with cat allergy severe enough to require admission for asthma and hypoxia would probably not be given an adrenaline syringe to take home. By contrast, a peanut sensitive child reporting a single episode of mild contact urticaria confined to the hands, many years ago, just might be provided with adrenaline on demand, despite having been entirely well when simply avoiding nuts. Whether the latter case merits adrenaline can be debated. On the one hand, it is theoretically possible that future exposure to peanut could provoke a far more serious, potentially life threatening reaction. Conversely, although nut allergy is common, fatal anaphylaxis is exceedingly uncommon, especially in children.<sup>2</sup>

**Diagnosis of IgE mediated allergy**

Good up to date data relating to the positive and negative predictive values for allergy tests currently in use is lacking. In a recent commu-

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nity survey,<sup>10</sup> 50% of skin prick test positive infants could eat nuts without ill effect. It seems sensible to restrict tests to individuals who give a convincing clinical history of hypersensitivity, otherwise the risk of “false positive” tests increases. Prescription of adrenaline without a clear clinical history suggestive of genuine type 1 hypersensitivity is ill advised. There is no evidence that specific IgE antibody titre correlates with risk.<sup>9</sup>

### Conclusion

Adrenaline is commonly used as a first line drug in life threatening allergy.<sup>11–13</sup> Inappropriate use needs to be avoided, however, in view of potentially serious side effects. Community use should be much more restricted with increased involvement and reliance on trained medical staff. The case in favour of the current trend towards prescribing adrenaline more and more widely to the lay public has not been justified. Fatalities directly attributable to adrenaline are a sobering reminder of the risks.<sup>2–6</sup> In our collective enthusiasm to help protect the patient, we have perhaps forgotten the risks, especially in children. It is time to review just who does merit a community adrenaline syringe.

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