

The overworked or fraudulent diagnosis of food allergy and food intolerance in children

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Introduction

Extravagant diagnostic and therapeutic claims in the arena of food allergy have simulated an antagonistic response. Many doctors have coped with what is a genuinely difficult subject by pretending it does not exist. Given the current resistance by the medical profession to the concept of food allergy, the lack of simple objective means of assessment, and the unsatisfactory treatment of conditions such as eczema or behaviour problems, the stage is set for the exploitation of desperate families. The cases reported here suggest that the medical profession currently has the choice of either improving its efforts to deal with these difficult problems or instead preparing to deal with the consequences of bogus diagnosis or treatment.

The increasing interest in food allergy and food intolerance is only a small part of a far wider general concern about the possible adverse effects of various foodstuffs. Food is not only implicated in the aetiology of degenerative conditions such as ischaemic heart disease. Nutritional factors (Dobbing, 1983) and toxins in food (Renwick 1982, Conning & Lansdown 1983) are also strong candidates as causative factors in the aetiology of congenital malformations. With increasingly good paediatric treatment for the diminishing problem of serious infections, vastly improved surgical treatment for children with major malformations, and an increasing parental expectation of having a healthy child, there is decreasing parental acceptance of troublesome chronic problems such as, for example, atopic eczema or behaviour problems.

It is a common mistake to underestimate the amount of distress that can be caused by a disease as apparently trivial as atopic eczema. To doctors, eczema is merely a skin disease. To children who are severely affected it can be a handicap. The regularly disrupted nights constitute the greatest single burden for the family, and many such parents have not had an uninterrupted night of sleep for years. Wide publicity was recently given to a mother who murdered her eczematous child. Of the first 250 children with atopic eczema seen in the Department of Child Health at Booth Hall

Children's Hospital since 1982, three mothers had tried to suffocate their child. Part of the handicap of severe eczema is the disfigurement caused by the erythematous lesions of eczema itself and the dry flaky ichthyotic skin which so frequently accompanies atopic eczema. Children with eczema are invariably given unpleasant nicknames at school. Passers-by in the street are apt to ask if the child has been burnt, an indication of the revulsion associated with skin diseases. Whilst it has been suggested that an unpleasant facial appearance might conceivably serve a biological purpose in teenagers with acne (Shuster 1978), this can hardly be claimed for small children with eczema, where the psychological handicap of an unpleasant appearance may be compounded by short stature and asthma.

The medical management of eczema tends to be unsatisfactory. This is attributable partly to the fact that doctors commonly do not realize how handicapping the disease can be, partly because dermatology is an unpopular and badly taught subject at undergraduate level, and not least because of the poorly established interface between adult dermatology and paediatric medicine. Poor adherence to treatment, often attributable to poor communication, undermines the effective, safe and often simple treatment that is available for all but the worst cases. Whilst the disruption caused by the wide range of behaviour problems may be more easily appreciated, they are not very effectively serviced by paediatricians or by the small number of child psychiatrists in this country. Taking the Royal College of Psychiatrists' (1983) recommendation that there should be an 'irreducible minimum' of one consultant child psychiatrist per 100 000 of the population, the North West Region is short by 24, having only 16 child psychiatrists.

A major confounding problem is the lack of precise definition of either atopic eczema or hyperactivity on the one hand, and food allergy or intolerance on the other. There is a singular absence of agreement over what precisely constitutes atopic eczema, and there is disagreement about the relationship between atopic eczema and related ill-defined entities such as seborrhoeic dermatitis.

A set of major and minor criteria for the diagnosis of atopic eczema has been proposed recently (Hanifin 1984) but it is remarkably unwieldy and has no objective basis. The term hyperactivity has been robbed of any meaning by its use to describe such differing phenomena as poor sleeping, disobedience, aggression, temper tantrums and restlessness, as well as 'true' hyperkinesia. Age-related scores for measuring 'hyperactivity' have been devised (Conners 1980), but their omission is a hallmark of most studies. The definition of allergy as 'a state of altered reactivity' (Platts-Mills 1984) is fine for immunologists but too vague to be of any use to clinicians. The merit of this definition is that it does not seek to classify the immune mechanisms into type I, III, III and so on. Indeed, the interactions between the various components of the immune response suggest that it is far too simplistic to use the concept of type I hypersensitivity. It is the immunologically 'lay' community (i.e. clinicians) who feel the need to equate 'allergy' with IgE-mediated hypersensitivity and who become confused when only a few of the symptoms or signs are explicable on this basis. A recent trend has been to confine the term food allergy to forms of food intolerance in which there is evidence of some abnormal immunological reaction. The enormous unreliability of immunological markers in this situation undermines the precision of this definition. The Joint Report of the Royal College of Physicians and the British Nutrition Foundation on Food Intolerance and Food Aversion (Lesso 1984) defines food allergy as above, includes it as one category of food intolerance, and recognizes as a separate entity food aversion (psychological avoidance or intolerance). Clinical ecologists, on the other hand, persist in using the term food allergy to cover any adverse effect experienced as a result of ingesting food. Argument about definition has arisen partly because of a serious lack of valid laboratory tests to support a diagnosis of food allergy. The most promising candidate at one time, tests for food-specific IgE antibodies (RAST tests), now appears to be unreliable. Response to the withdrawal of a food item, combined with the response to double-blind reintroduction, seems to be the only way to validate a diagnosis of food allergy or intolerance, but the rigours of this approach have in practice deterred many allergists and almost all ecologists.

There is no question that avoidance of specific foods improves atopic eczema in selected cases (Juto *et al.* 1978, Graham *et al.* 1984). Whether food is truly causal is open to question. The claim that hyperactivity can be alleviated by dietary avoidance of various chemicals (Randolph 1947, Feingold 1975) has failed the test of double-blind trials (Mattes & Gittelman 1981, Thorley 1984, Taylor 1984), but there clearly are rare children

whose behaviour deteriorates after ingestion of certain substances. This is well demonstrated by the aggressive behaviour that can result from phenobarbitone, and the restlessness and hyperkinesia that can result from oral administration of β_2 stimulants such as salbutamol. The suggestion that impulsivity, short attention span, poor concentration, irritability, aggressiveness, emotional lability, intolerance, frustration, unhappiness, lethargy, fatigue, learning problems, sleep disturbance, nocturnal enuresis or encopresis, excessive sweating or excessive thirst are symptoms indicating the need for avoidance of certain foods, chemicals or other environmental items such as perfumes (Menzies 1984), has never been scientifically investigated.

For some years the University Department of Child Health at Booth Hall Children's Hospital has had an interest in atopic eczema, and this includes food and inhalant allergy. This review describes the overworked or fraudulent diagnosis and treatment in 15 patients prior to their referral to the Department. These patients are part of a cohort of 240 patients referred because of atopic eczema and 10 patients referred because of behaviour problems.

Patients

Case 1

Atopic eczema from the age of 18 months. Seen by GP and later by consultant dermatologist, and treated with 1% hydrocortisone, aqueous cream and an emollient in the bath. At the age of 2 years she was seen at a private allergy clinic. A diagnosis of hyperactivity was made, a condition that had not been previously suspected, and the parents were advised against the use of topical corticosteroids. A diet of fresh fruit, fresh meat, fresh vegetables and spring water, but avoiding citrus fruit, bread or milk products, was recommended and tried for two weeks, without success. Intradermal testing was performed, but after 10 injections the mother refused to allow any more. As a result of these tests it was suggested that the child was allergic to corn, and avoidance of all corn-containing foods was advised. In addition, a bottle of drops was prescribed, one drop to be taken by mouth before each meal, and the mother was sold a copy of 'Tracking Down Hidden Food Allergy' (Crook & Crook 1980). After two months of treatment the family discontinued the diet and drops.

Referred at the age of 3 years because of atopic eczema. Examination showed mild eczema affecting less than 1% of the skin surface area, accompanied by mild generalized autosomal dominant ichthyosis. A pigeon chest and a Harrison's sulcus were also present, and there was a 12-month history of recurrent cough and wheeze.

Treatment was with nebulized sodium cromoglycate 20 mg four times daily, white soft paraffin for the ichthyosis, and 1% hydrocortisone ointment when necessary for the eczema. There was a clear history that exposure to dogs, cats and house dust caused wheezing and worsening of the eczema, and avoidance of all three was recommended. By the age of 4½ the chest deformity had resolved, her asthma was asymptomatic off all regular prophylactic treatment, and her eczema had improved and only rarely required corticosteroids.

Case 2

First noted to have atopic eczema at the age of two months, and asthma, rhinitis and conjunctivitis at 2 years. Adenoids removed at the age of 2½. At the age of 4 he was seen at a private allergy clinic and 40 intradermal tests were performed with multiple positive results. Cow's milk and milk product avoidance was recommended, but no milk substitute or detailed dietary advice or diet sheets were given. This diet did not help and further intradermal tests were performed, as a result of which it was suggested that in addition to cow's milk products the boy should avoid potatoes, apples, oranges, wheat, yeast, and all colouring agents and preservatives. The family were unsure how to implement this diet, and the health visitor sought advice from a dietitian who felt the diet was unsafe. The boy was then treated with a bottle of drops, one drop to be placed under the tongue before each meal. This treatment failed. Finally, the father was given a further solution and advised to give two subcutaneous injections to his son each morning for a course of 30 injections, without benefit.

Referred at the age of 5 years because of eczema, asthma, rhinitis and conjunctivitis. Examination showed that his height was on the 25th centile but his weight was well below the 3rd centile. There was mild autosomal dominant ichthyosis but no evidence of eczema. A Harrison's sulcus was accompanied by wheezing at rest, and a peak expiratory flow rate was only 25% of the predicted figure. The nasal mucosa was boggy and inflamed, and his conjunctivae mildly injected. He was treated with nebulized beclomethasone dipropionate 100 µg, nasal beclomethasone dipropionate 100 µg and sodium cromoglycate 2% eye drops, all three times a day, and aqueous cream was provided for his skin. At follow up at the age of 6 years he was virtually symptom-free on the above treatment, his weight had increased to the 25th centile and his height had increased to the 50th centile.

Case 3

Atopic eczema was first noted from the age of 3 months. It was later found that ingestion of egg, peanuts or chicken caused vomiting. At the age of 2 years lymphocyte cytotoxicity testing was

performed at a private allergy clinic and the results suggested allergy to cow's milk, rice, beef, pork, lamb and house-dust mites, but a diet avoiding the foods did not help and was abandoned. Later the eczema spontaneously resolved.

Referred at the age of 5 years because of recurrence of the eczema. Examination showed a few small patches of mild atopic eczema affecting the fingers and the feet, accompanied by marked autosomal dominant ichthyosis. Treatment was with emulsifying ointment for the ichthyosis and clioquinol 3%-hydrocortisone 1% ointment when necessary for the eczema. Follow up 4 months later showed that all the lesions were well controlled.

Case 4

Atopic eczema first noted at 13 months. Hydrocortisone ointment was prescribed, but the parents were warned to use it very sparingly and were consequently too frightened to use it at all. At the age of 26 months he was seen at a private allergy clinic, where a diet of fresh fruit (but not citrus fruit), fresh vegetables and fresh meat with spring water was recommended. No benefit was seen after three weeks on this diet. Pulse tests were then performed, whereby individual foodstuffs wrapped in cellophane were placed one by one over the boy's wrist, and if his pulse rate went up he was said to be allergic to the food concerned. 'Good pulse readings' could not be obtained at the wrist, so the test was done on his groin. The tests revealed allergy to cow's milk, eggs, sugar and citrus fruits, and avoidance of these items was recommended. After 10 days the eczema had deteriorated, but the mother was advised to continue and that this was a 'withdrawal symptom'. Continuation of the diet for three months was thought to be of slight benefit, and was maintained.

Referred at the age of 2½ years because of persistent atopic eczema. A history was obtained that ingestion of eggs caused an immediate urticarial reaction, and were therefore avoided, that contact with primulas caused immediate inflammation of the skin, and that contact with water caused itching (aquagenic pruritus). Examination showed moderately severe atopic eczema of the backs of the hands, the fingers, the wrists and the antecubital fossae, with autosomal dominant ichthyosis of the face and trunk. Treatment was with emulsifying ointment for the ichthyosis, 1% hydrocortisone ointment for the eczema, and it was suggested that all foods being avoided should be reintroduced into the diet one at a time. The result was almost complete resolution of problems with his skin, and at follow up one year later all foods had been successfully reintroduced except for cow's milk which was repeatedly observed to cause immediate urticaria. A five-day survey of his nutritional intake showed

a very low intake of calcium, and as he declined to drink a cow's milk substitute he was given a calcium supplement.

Case 5

Atopic eczema from the age of 14 months, and patches of eczema on the knees, hands and face soon became pustular with a purulent discharge and crusting. At 18 months a paediatrician suggested withdrawing cow's milk from the diet and substituting goat's milk, with some temporary improvement. A private allergy clinic suggested withdrawing goat's milk from the diet, and substituting it with a soya-based milk substitute, with temporary improvement. After further deterioration, at the age of 2½ years, he was seen several times at a private 'clinical ecology' clinic. A form of a pulse test was employed, whereby single foodstuffs were applied to the skin of the boy's face in front of his ear, and he was said to be allergic to the food if his pulse rate increased. These investigations indicated allergy to cow's milk, yeast, colouring, fish, oranges, eggs, mushrooms, oats, wheat, peas, beans, nuts, tomatoes, cats, dogs, feathers and wool. Avoidance of these items produced no benefit, but the parents continued with the dietary restriction. The parents were unable to pay for any further private treatment, having spent £400.

Referred at the age of 2 years 11 months because of severe eczema, with a request for further investigations into allergy. Examination showed heavily infected eczema of the face, knees, legs, fingers and wrists. Group A beta-haemolytic *Streptococci* and *Staphylococcus aureus* were recovered from swabs of the pustules on the knees, legs, wrists and face. He was admitted to hospital and given intramuscular benzylpenicillin 300 mg and flucloxacillin 250 mg four times a day, with complete resolution of all infected lesions. The residual minimal eczema was treated with E45 cream. The parents declined to discontinue the diet, and later also eliminated carrots and onions from his diet. At the age of 3 years 9 months a deterioration of the eczema was attributed by the parents to the boy eating wheat-containing biscuits at school, but examination showed infected eczema with numerous pustules. The same bacteria were recovered, oral antibiotics were given, and the lesions resolved in a few days. When last seen at the age of 5 years 6 months he was free from eczema but had developed asthma which had resulted in two admissions to hospital and required treatment with inhaled beclomethasone. His parents were unwilling to try any of the foods being avoided, and he remained on a very restricted diet.

Case 6

At the age of 9 months a rash appeared on his right

cheek. It comprised several 'blisters' which soon burst, discharging clear fluid. There was surrounding erythema. The lesion never completely disappeared, and at approximately monthly intervals further 'blisters' appeared at the same site. There were no other skin lesions, and there was no family history of atopic disease, but a paediatrician diagnosed eczema and recommended a milk- and egg-free diet and topical hydrocortisone cream. The lesion remained unchanged, with further recurrences of the blistering at approximately monthly intervals, coinciding with episodes of teething. The parents contacted a self-referral allergy advisory service who performed 'radionic' tests on a sample of the boy's hair. These tests were said to indicate allergy to 'milk, beetroot, sugar beet, sugar cane, cheese, yoghurt, butter, tinned milk, dried milk, goat's milk, white sugar, maple syrup, raw molasses sugar, and demerara sugar'. Avoidance of these items was of no benefit, the family sought further referral to an allergy clinic, and the boy was seen at 15 months of age.⁶

Examination showed a normal child except for an erythematous lesion discharging clear fluid on his right cheek. Herpes simplex virus was cultured from a swab of this lesion. By this stage the parents were able to recognize an increase of erythema that was present the day before a recurrence, and it was therefore suggested that acyclovir 5% cream be applied to the lesion at the first sign of a recurrence. This failed to prevent (but possibly ameliorated) recurrent lesions (from which the virus could again be recovered) which all coincided with teething. Oral acyclovir, 200 mg per day, was given, but this too failed to prevent recurrences. At the latest visit, when he was 20 months of age, a new crop of herpetic vesicles had appeared on the left cheek. Serum levels of IgG, IgA and IgM, and a total and differential white cell count, and a platelet count were all normal.

Case 7

Atopic eczema was first noted at 4 months of age, while being hospitalized for an alleged adverse reaction (a fever) to the first dose of diphtheria and tetanus vaccine. The skin lesions deteriorated when the mother introduced a normal weaning diet, and 0.5% hydrocortisone was prescribed. The mother was unwilling to use it, however, for fear that it would interfere with growth. At 8 months the child was seen at a private allergy clinic, where intradermal testing was performed. As a result it was suggested that the child had multiple food allergy. The mother was advised to eliminate egg from the child's diet, although in fact to her knowledge the child had never received egg. Drops said to contain chicken, wheat, potato, rice, corn, tomato, yeast, grapes and cow's milk were supplied,

with the recommendation that 10 drops be taken 10 minutes before each meal.

Referred at the age of 23 months because the mother wanted 'different specialists' views'. Examination showed small patches of mild atopic eczema on the cheek and forehead. Typical lesions of ringworm were found on the back, the trunk and the abdomen. The mother was advised to discontinue the drops, but declined to do so. The ringworm was treated with topical miconazole cream, with complete resolution. No treatment was given for the eczema. At follow up at the age of 27 months there were no skin lesions, and the mother had discontinued the drops.

Case 8

Atopic eczema first noted at the age of 2 months. At 10 months of age the mother sent a sample of the child's hair for allergy testing. 'Radionic' testing was used to establish that the child was allergic to most foods, and strict avoidance was advised. This was of no benefit, and the child was seen at a skin hospital where it was found that he was on a diet consisting solely of mashed potato (without milk or butter) and diluted pure orange or pineapple juice. He was referred to the Department of Child Health, and admitted as an emergency at the age of 13 months.

On examination his weight was 7.6 kg, well below the 3rd centile. Marked atopic eczema was evident over most of his face, as well as on the knees which were lichenified, and he was scratching a lot. Foods were reintroduced into his diet one by one, without adverse reaction, and he gained weight. His eczema was treated with emulsifying ointment topically. When seen last at 17 months his weight was 10.6 kg (between the 10th and 25th centile), and he had mild eczema on his face. His diet consisted of 22 foods and his mother had declined, because of fear, to reintroduce tomato, bread, pork, tuna, onions, and peas. At this follow-up visit the mother brought her six-week old baby, who had been referred by the GP because of maternal concern that the baby's loose stools could be due to food allergy. This baby was admitted to hospital, where she was asymptomatic throughout her week's admission, but it proved difficult to persuade the mother that the baby did not have a food allergy.

Case 9

Complaints of 'hyperactivity', comprising persistent crying, aggression, and restlessness, led this girl to be seen by a paediatrician and a child psychiatrist at the age of 3 years. Both felt that the abnormalities in her behaviour 'related to dynamics within the family', a view that was shared by the GP. The parents felt that no doctor had been sympathetic. The child was then seen by a clinical

ecologist who used a 'radionic' technique to determine that the child was allergic to wheat, oats, rye, corn, rice, milk, dairy products, cheese, soya milk substitute, egg, beef, lamb, pork, chicken, cabbage, mushrooms, yeast, white (beet) sugar, brown (cane) sugar, currants, raisins, dates, bananas, apples, pears, citrus fruits, peanuts, almonds, instant coffee, ground coffee, tea, chocolate, tartrazine, amaranth, monosodium glutamate, salt and North Sea Gas. Avoidance of these items was suggested, and the child's behaviour improved for a few weeks. It was then suggested that vitamin C should be taken as an 'antidote' to 'food reactions', but the parents reported that one hour after taking vitamin C she went 'berserk' with crying and aggression. The family were then told that the child was making excessive amounts of vitamin C and was suffering from vitamin C poisoning. A diet low in vitamin C was recommended and maintained.

The behaviour problems continued, and a sample of the child's hair was analysed for trace element content. As a result it was suggested the child was deficient in calcium, cobalt, copper, lithium, magnesium, molybdenum, potassium and zinc. Levels of 'toxic metals' (aluminium, arsenic, cadmium, lead, mercury) were 'normal', and six trace element ratios were 'normal'. The parents were told that these trace metal deficiencies resulted partly from poor intrauterine nutrition, and partly from intestinal damage due to cow's milk allergy, and a trace metal supplement was prescribed and taken for six months without benefit. It was then suggested that the child's allergies were due to 'intestinal candidiasis', and the 'radionic' technique was reported to demonstrate allergy to *Candida*. Treatment with oral nystatin suspension failed to help the behaviour problems. Wheat desensitization was then attempted with sublingual drops, without benefit.

Shortly after this, at the age of 4 years, she was referred for further investigation. A leukocyte ascorbic acid level was normal at 1.6 nmol/10⁶ leukocytes (control 1.03 nmol/10⁶ leukocytes), and both patient and control had normal leukocyte and platelet counts. Despite being on a 'low ascorbic acid diet', a 5-day survey of her nutrient intake showed an average daily intake of 45 mg of vitamin C, the intake recommended by the DHSS being 20 mg per day. A serum total IgE level was 1 iu/ml, the normal for her age being < 52 iu/ml. No follow up data are yet available.

Case 10

Atopic eczema from the age of 8 months. Parents tried various unorthodox remedies including comfrey oil, a water purifier, and rubbing the father's saliva into the child's skin. Admitted to hospital at the age of 24 months with eczema

herpeticum of the face and involving both eyes. Then seen at a private allergy clinic where it was suggested that the eczema was due to aluminium from cooking utensils, but avoidance of these did not help. Treatment with 'eczema tea' was also unsuccessful. Using 'radiesthesia', it was said that the child was allergic to cow's milk products, pork, haddock, lemon sole, cod, shellfish, tomatoes, refined flour and sugar. The mother was advised to avoid them, not to give the same fruit every day, and to give no more than two eggs per week. Mother was also advised not to wash the child in water unless it was 'clean rain water'. This treatment was unsuccessful.

Referred at 2 years 4 months. Examination showed severe atopic eczema affecting about 25% of the skin surface area. Topical treatment has subsequently been with clioquinol 3%-hydrocortisone 1% ointment and emulsifying ointment, with almost complete resolution of the eczema.

Case 11

Atopic eczema from the age of 3 months. At the age of 24 months he was seen at a private allergy clinic, where intradermal testing indicated allergy to most of the foods tested, and he was treated with a rotating elimination diet. This diet, implemented for three months, was not accompanied by any improvement in the eczema. Rapid weight loss worried the mother, and the boy was referred at 2 years 3 months.

Examination showed that his height was on the 25th centile, but that his weight had fallen to the 10th centile (records show that prior to the diet his weight had been between the 25th and 50th centile). Moderately severe atopic eczema affected about 10% of his skin surface area. A five-day survey of his nutritional intake showed low intakes of energy, calcium and folic acid. The mother was unwilling to abandon a dietary approach, so the boy was commenced on a diet comprising five foods, including a cow's milk substitute, with careful supervision by a dietitian. After six weeks of this diet his eczema was unchanged, and his mother was advised to reintroduce all other foods one by one, so that any adverse reactions could be noted. No further follow up data are yet available.

Case 12

Atopic eczema from the age of 2 weeks, and admitted to a skin hospital at the age of 3 months. All lesions had remitted by the age of 5 months, but then recurred at the age of 6 years. In response to an advertisement in a magazine, the parents sent off a specimen of the boy's hair for allergy testing. Radionic tests for 60 foods suggested that the boy was allergic to 35 of them, and the family excluded these foods from the diet for six weeks without success.

Referred at the age of 7 years, and examination showed generalized autosomal dominant ichthyosis and atopic eczema affecting about 5% of his skin surface area. The history suggested allergy to cow's milk and eggs, but various elimination diets, supervised by a dietitian, were unhelpful, as were various forms of topical treatment. After 12 months of follow up, the mother suddenly discovered that changing from a 'biological' washing powder to a non-biological one resulted in a complete remission of the boy's eczema. A challenge with the same biological powder, performed reluctantly, caused a relapse. At follow up six months later he was free from eczema, and the ichthyosis was less prominent.

Case 13

Atopic eczema from the age of 2 months, leading to admission to a skin hospital at 2 years of age. A history suggested allergy to cow's milk and bananas. The parents were particularly reluctant to use topical corticosteroids. The child was seen by a clinical ecologist privately, and a neutrophil cytotoxic test was performed. This indicated allergy to many of the 45 foods tested. A diet avoiding these items for four weeks was unsuccessful.

Referred at the age of 2 years 9 months. Examination showed very severe atopic eczema affecting 90% of the child's skin surface area. As previous appropriate topical therapy, including the use of corticosteroids, had been unsuccessful, and in view of the possibility of multiple food allergy, she was admitted to hospital for an extreme form of elimination diet. She was nursed in an allergy-free room, and all food and drink were excluded, nutrition being provided by an elemental diet (Vivonex). After 28 days of this regimen there was no improvement, and the diet was completely abandoned with the reintroduction of normal food. She was later treated with alternate-day oral prednisolone 30 mg, with minimal benefit, and the parents discontinued this after four months. At follow up at the age of 4 years she still has very severe eczema.

Case 14

Poor sleeping since birth became worse at the age of 18 months. The mother was advised by an allergy self-help group to eliminate cow's milk products and tartrazine from the child's diet. This was thought to be beneficial, but there continued to be problems with the child wetting the bed, spontaneously bursting into tears, and rolling uncontrollably on the floor screaming. The parents, searching for a food as a cause, noted that if she was not given tea she would scream for it and concluded that she had become addicted to it.

At the age of 3 years she was referred for further investigations into possible allergies. There were

continued behaviour problems, and the parents reported that violent tantrums always occurred within an hour of ingestion of cow's milk. The child was admitted to hospital, accompanied by her mother and younger sister. Double-blind challenges with cow's milk, performed over a period of five days, produced no adverse reaction. A normal diet was reintroduced without adverse reaction. The child was referred to a child psychiatrist, but by the time she was seen the parents' handling of the child had become more confident, the child was on a normal diet, and the behavioural problems had resolved.

Case 15

This boy was referred at the age of 6 years with the history that whenever he was given cow's milk or eggs, within an hour, he would become 'like a zombie' and cry uncontrollably for several hours. He was also reported to be a poor sleeper, and to have uncontrollable bad behaviour after ingesting cow's milk or eggs. A three-month trial of oil of evening primrose and multivitamins had been unhelpful. The boy was admitted to hospital for six days, and double-blind challenges with cow's milk and eggs were performed without any adverse effect. The nursing staff felt that his behaviour had been abnormal throughout the admission, and inappropriate handling by the parents was noted. The parents accepted that he was not allergic to milk or eggs, and a normal diet was reintroduced without problem. Referral to a child psychiatrist was arranged, but the parents did not attend and wrote to say that the boy's behaviour problems had much improved.

Table 1. Bogus or unreliable methods of diagnosis

Radionics, radiesthesia, radionic ecology, radionic hair testing	5 cases
Intradermal testing	4 cases
Pulse test	2 cases
Leukocyte cytotoxicity	2 cases
Hair trace metal analysis	1 case

Table 2. Bogus or unreliable methods of treatment

Sublingual food extracts	2 cases
Subcutaneous injection of food extracts	1 case
Rotating elimination diet	1 case

Table 3. Conditions missed or not treated as a result of inappropriate allergy diagnosis or treatment

Asthma	2 cases
Herpes simplex skin infection	1 case
Ringworm	1 case
Rhinitis	1 case
Conjunctivitis	1 case
Autosomal dominant ichthyosis	4 cases
Secondarily infected eczema	1 case

Details of inappropriate methods of diagnosis and treatment, and conditions missed or treated inappropriately, are given in Tables 1 to 3.

Discussion

Of 250 children referred because of eczema or hyperactivity, 15 had previously been subject to inappropriate forms of diagnosis or treatment of food allergy. The number of these bizarre cases was small, but they represent a disproportionate amount of work. None of the parents was overtly psychiatrically ill, but none was formally psychiatrically evaluated (Rix *et al.* 1984). Clearly, a degree of gullibility is required for the participation in some of the bogus diagnostic methods and treatment, but desperate parents are not entirely responsible for their own exploitation. Extensive media coverage of so-called miracle allergy cures has contributed to concern about diet as a cause of disease, one of the preoccupations of our age. The various bogus or inappropriate methods used are discussed below, as are the hazards of elimination diets.

Radionics, radiesthesia, psionic medicine, dowsing

These are closely-related forms of extrasensory perception. Usually a pendulum (known as a 'dowser') is employed, but an alternative tool is a rod (Baum 1974, Thompson 1980, Tomlinson 1966, Wethered 1977). A piece of filter paper moistened with a drop of blood, saliva or urine, or a sample of hair (Tomlinson 1966), can all serve as a 'witness'. This witness can be placed inside the pendulum, held against the string of the pendulum, or the pendulum can be suspended above the witness (Tomlinson 1966, Wethered 1977). In some cases 'mere visualisation of the patient can be used as a witness' (Tomlinson 1966). The pendulum is 'susceptible to paranormal influences which will affect its mode of oscillation, and so provide a basis of communication with the problem under investigation'. The pendulum is used as 'an interrogating device', and with 'proper training it is possible to interrogate a blood spot or other sample to obtain medical information' (Reyner 1982). Radionics employs a 'radionic box'. It is composed of 'a long wire, wound in a spiral fashion, with contacts at each end'. The radionic box 'improves the rate found by the pendulum' (Tomlinson 1966), and contains rotary contacts by which 'the ohmage can be increased'. The box can also be used for treatment by 'broadcasting', which is claimed also to be very effective in the treatment of animals (Tomlinson 1966). For those with 'special gifts', a pendulum may not be necessary at all, and one authority reported that he could dowse with his mind 'with a measure of clair-audience' (Locker 1983).

The claims for diagnostic and treatment ability are fantastic. Diagnostic ability is said to be extended by the use of 'starch-impregnated powder in small glass vials' known as 'Turenne witnesses' which represent various diseases (Wethered 1977). These methods, it is claimed, can be used not only for the diagnosis of virtually all common diseases and the detection of allergies (Richards 1982), but also for the identification of individual bacterial pathogens. Identification of viruses is said to be less easy because suitable witnesses are difficult to obtain (Tomlinson 1966). Cures of such diverse conditions as schizophrenia, Hodgkin's disease and coeliac disease are claimed, as is the correction of breech presentation in pregnancy and the prevention of dental caries (Reyner 1982). Some radionic practitioners believe that 'all vaccinations have the effect of diminishing the vital force within the etheric body', and report that 'asthma and eczema have been traced to vaccinations and cured by Psionic Medicine' (Tansley 1983). It is claimed that radionics can be used to treat patients for the elimination of nuclear fallout (Wethered 1977). A common concern expressed in radionic literature is aluminium poisoning from cooking utensils (Richards 1982, Wethered 1977), and one author attributes most duodenal ulcers to aluminium poisoning (Tomlinson 1966). Veterinary radionics is reported to be increasingly practised in Britain and animals are said to be easier to treat than humans (Russell 1983). The use of the pendulum is not confined to medicine. It has been suggested that radionics can be used not only to select a suitable husband or wife but can also be used specifically to check sexual compatibility - 'Blind dates need no longer be blind' (Nielsen & Polansky 1984). It is reported that pendulums were used to locate an entire submarine fleet (Nielsen & Polansky 1984), to sex fossils (Graves & Hoult 1982), to identify the sex of the last person who read a book (Graves & Hoult 1982), to detect sources of underground water with precision even if located in another continent (Mermet 1959), and by examination of portraits to determine the memory, imagination, intelligence, judgment and will power of some famous musicians (Mermet 1959). It is suggested that pendulums be used in the house for the location of missing objects, to find out when to change the vacuum cleaner bag without opening the machine, to communicate with plants, and to locate electrical or plumbing difficulties (Nielsen & Polansky 1984). It is claimed that radionics can be used to stimulate the growth of crops without any fertilizer and control pests without spraying (Russell 1983).

Unfortunately, these techniques are not amenable to any sort of scientific study. It is said that radionics 'does not have a place within such a restrictive belief system as orthodox science.

Radionics is an interface with higher dimensions of reality and consciousness, where the gods of logic and reason do not necessarily hold sway' (Tansley 1982). Scientific study is precluded by the fact that disbelief either in the patient's mind or that of a third party destroys the reliability of the testing process (Simmonds 1984). 'It has been known, for example, for a sceptical doctor to refer a case for psionic medical diagnosis as a sort of test; perhaps even to discredit the technique. This scepticism conveys itself to the practitioner, either directly or through the patient, and unless he is able to preserve his integrity of mind, failure is inevitable . . . The weight of prejudice is immense and it is usually sufficient to render the dowser incapable of attaining that necessary freedom and innocence of mind to be able to function . . . It therefore behoves every practitioner . . . to avoid any occasion where there is likely to be a climate of disbelief. Psionic medicine requires of the practitioner a mind undisturbed by the clash of disputation - a state not easy to attain in the presence of those whose coin is dispute' (Reyner 1982). A single conviction for 'fraud and medical quackery' was obtained in the USA in 1951, when a case was brought by the Food and Drugs Administration against a Ruth Drown who was imprisoned (Russell 1983).

Skin testing

Skin testing can either be epicutaneous (scratch or prick testing) or intradermal. Scratch and prick testing are widely used in the diagnosis of allergy to inhalants in patients with asthma and rhinitis. The drawbacks, which greatly reduce the value of these tests, are false-negative results in infants and false-positive results either in those who have 'outgrown' their allergy or in those where positive skin tests are not correlated with positive inhalational challenges. In short, a positive skin test to a cat in a child with asthma cannot be taken as a certain indication that (a) the cat is a contributory cause, or (b) that its removal will help the patient. As far as prick testing for food allergy is concerned, even the greatest enthusiasts insist that in addition to positive skin tests 'double-blind food challenge is essential to establish a diagnosis of symptomatic hypersensitivity to food' (Bock *et al.* 1977). Intradermal testing, which was employed in 4 patients, is subject to greater difficulties other than the pain caused by the injections. The sensitivity of skin testing can be increased by intradermal injection (Tipton 1983), but the need for a large amount of antigen to elicit a wheal reaction gives rise to positive tests of no clinical significance, and intradermal skin tests have no place in the diagnosis of food allergy and are not recommended (May & Bock 1978). Finally, intradermal testing carries a small hazard of anaphylaxis (Austen 1965).

Injection of food solutions

In one patient, using the 'Miller method' (Miller 1972), following intradermal testing, 'neutralizing doses' of all the 'allergenic' foods were combined into a single solution and injected subcutaneously. There is no known mechanism to account for the neutralization of provoked symptoms by the injection of dilute solutions of food allergens (Kailin 1971), and controlled and double-blind trials have failed to confirm the reproducibility or validity of this technique (Van Metre 1983, Grieco 1982, Caplin 1973). The American Academy of Allergy and Immunology (1981) and the USA National Center for Health Care Technology (1981) have reported that this technique is unproven.

Treatment with sublingual food solutions

Two patients were treated with sublingual food drops. This treatment is based on the concept that sublingual food drops may provoke allergic symptoms with one dilution and relieve symptoms with another dilution. The former concept has been disproved (Lehman 1980a), and several well controlled clinical trials have been unable to demonstrate any benefit from the latter (Lehman 1980a,b, Grieco 1982). The Food Allergy Committee of the American Academy of Allergy (1981) investigated sublingual provocative testing, found that the test did not distinguish between control solutions and food extracts, and concluded that this is not a satisfactory method of diagnosis of food allergy (Breneman *et al.* 1973, 1974, Golbert 1975).

Leukocyte cytotoxicity

Two patients were investigated by leukocyte cytotoxicity testing, also known as the leukocyte food allergy test or the cytotoxic food test. The test consists of the observation of morphological changes in blood cells, primarily polymorphonuclear leukocytes, incubated simultaneously with the appropriate antigen and the patient's serum (Black 1956, Ulett & Perry 1974). Problems with this test include the high incidence of false-positive results, and very poor accuracy in evaluating patients with well established allergic reactions to foods. Further difficulties are that the test is very time-consuming, requiring several hours to interpret the slides; the reading of the slides itself is very subjective with poor correlation between observers reading the same test blind, and results in the same patient fluctuate from day to day and week to week, rendering the test useless (Chambers *et al.* 1958, Golbert 1975, Lieberman 1975, Benson & Arkins 1976, Lehman 1980a, Grieco 1982). Double-blind studies have shown that leukocyte cytotoxicity testing fails to detect well established food allergies and is associated with a substantial incidence of false-positive results. The American

Academy of Allergy (1981), and the USA National Center for Health Care Technology (1981) have reported that this test is unproven, unreliable, and without scientific basis.

Pulse testing

A form of the pulse test was employed in two patients. The basis of the pulse test is the observation that the pulse rate may rise after a subject has eaten a food to which he is allergic. However, in these two patients the food was not actually eaten, but placed in the close vicinity of the patient. This method has never been validated.

Intestinal candidiasis

Intestinal candidiasis was suggested as a cause of behaviour problems in one patient, and has become a popular disease to be incriminated as a cause of food allergy. The basis for this notion is obscure. Crook (1984) claims that many food 'sensitivities' improve and allergies 'lessen' when oral nystatin is given, but he provides no scientific evidence in support. The 'microflora of the alimentary tract', especially *Candida albicans*, have been suggested as a cause of 'clinical ecologic disorders' (Mansfield 1984). Symptoms suggesting adverse reactions to intestinal flora, especially *Candida albicans*, are reported by Mansfield (1984) to be abdominal bloating after food, pruritus ani, recurrent cystourethritis with no evidence of bacterial infection, and recurring gastritis. Crook (1984), on the other hand, lists 'feeling bad all over', headaches, muscle or joint pains or incoordination as 'almost certainly yeast-connected', and recommends 'sniffing' or inhaling nystatin to clear nasal congestion, post-nasal drip and 'mental and nervous symptoms'. For 'severe yeast connected illness', Crook (1984) recommends nystatin enemas.

Hazards of elimination diets

Although elimination diets are being increasingly employed in the treatment of food allergic disease by orthodox physicians, there has been no detailed evaluation of all the hazards. These are listed in Table 4. Supervision by a dietician is essential, to prevent failure of the diet due to incomplete avoidance of a particular food. Avoidance of a

Table 4. Disadvantages of elimination diets in children

Nutritional deficiency:
Failure to thrive
Rickets
Scurvy
Anaphylactic shock
Social isolation
Emotional problems
Persistent inappropriate belief in allergy as a cause of symptoms
Expense

simple food such as cow's milk is remarkably complex because of the widespread distribution of cow's milk products in an enormous range of foods. In theory, parents ought to be able to cope by carefully reading the labels of all food, but many are unaware that, for example, whey or caseinate may be derived from cow's milk. In practice, the lists distributed by dietitians of foods free from cow's milk products are invaluable. Other items, such as soya or colourings or preservatives, can be even more complex to eliminate. Continued supervision by a dietitian is essential to prevent the nutritional deficiencies that can easily arise with unsupervised diets. Documented nutritional disasters due to unsupervised elimination diets include failure to thrive due to inadequate energy intake and/or protein intake (see Cases 2 & 8) (Lloyd-Still 1979, Tarnow-Mordi *et al.* 1984), scurvy (Garvey 1982), and rickets (David *et al.* 1984a). A significantly low intake of calcium is a special risk of elimination diets in children (David *et al.* 1984b). A further immediate concern of elimination diets is that the removal of a food followed by its reintroduction creates the conditions for anaphylactic shock. This may be a particular danger in the treatment of cow's milk allergy, but can also occur with other foods (David 1984).

The later hazards of elimination diets are more insidious and not so well documented. One result is that once the concept of food allergy is introduced it may become an obsession that is difficult to eradicate (Warner & Hathaway 1984), with the family endlessly searching for some elusive allergic factor to explain their child's disorder. A failure to follow up, a characteristic of certain clinics, may make the development of inappropriate allergy fixation more likely. Restrictive diets can be traumatic for children, who dislike being unable to eat the same food as their siblings or friends. Behaviour disorders are common in such children, often leading to the diet being abandoned. The long-term psychological hazards of appropriate or inappropriate diets have not been studied. Considerable expense may be incurred by private allergy treatment as in Case 5. Elimination diets themselves incur extra expense (Hathaway & Warner 1983), though where the family is receiving supplementary benefit this may be marginally offset by a special dietary allowance.

Conclusion

It is a matter of concern that techniques such as radionics and others are being applied clinically without any attempt at validation by accepted standards of scientific evidence. The clinical setting that generates dramatic claims for therapeutic success allows bias free play in both patient and doctor, a particular problem for conditions such as atopic disease that are already so well known

to be responsive to placebo therapy. Proponents of these methods must expect most doctors to reject these procedures until convincing evidence to the contrary is forthcoming. The onus to produce this evidence rests on the proponents of the methods. Bogus diagnosis and treatment provides fuel for many doctors who are sceptical about the existence or relevance of food allergy. This in turn may deter the appropriate referral of patients with conditions such as atopic eczema which may be amenable to treatment by avoidance of foods and inhalants. There is little to distinguish between doctors who deny the existence of food allergy from those who invent fictional evidence, except perhaps for their motivation.

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