A DAY IN THE LIFE OF AN ALLERGIST: FOOD ALLERGIES

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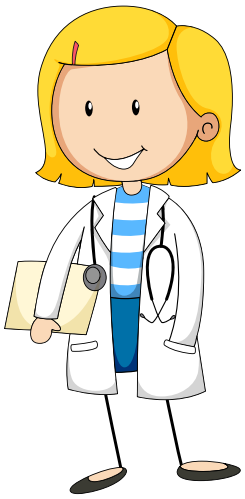
ABSTRACT

Allergology is so much more than 'itchy noses'. It is a broad subspecialty which encompasses immunological 'mishaps' in many organ systems. Part of the art of allergology is sorting out the 'normal' from both the 'allergic' and the 'alternative diagnoses'. The allergist needs to be able to see through common misperceptions. This is achieved by arranging appropriate tests for the patient in a targeted rather than generic way, recognising patterns of symptoms which can lead to the diagnosis, gently guiding the patient into accepting the real diagnosis and setting out management plans for the long term as well as for acute exacerbations and emergencies. It is one of the few subspecialties which deals with the whole patient rather than homing in on a specific organ system. The variety is stimulating and challenging, as demonstrated by a series of cases in the 'day in the life of an allergist.'

Keywords: food allergies; peanut allergy; egg allergy; Coeliac Disease



INTRODUCTION

'Wow, you must be so busy seeing allergies in the pollen season,' is the general comment I receive from people when I tell them I'm an allergist. I guess the public perception of an allergist is that we see itchy, snotty noses all day long. It's anything but this: I only have to reflect on the wide variety of patients and conditions that have challenged me over just the past few days. Allergology is so much more than 'itchy noses'. It is a broad subspecialty which encompasses immunological 'mishaps' in many organ systems. Part of the art of allergology is sorting out the 'normal' from both the 'allergic' and the 'alternative diagnoses'. So much these days is blamed on 'allergies', often incorrectly, in an innocent attempt to put a name to a set of symptoms.

In an attempt to outline the broad variety of cases coming through the allergist's door, and to outline some common pitfalls, I have summarised some of the classical or interesting cases which I examined over a two-day period in December 2019. These I have amalgamated into 'a day in the life of the allergist …'.

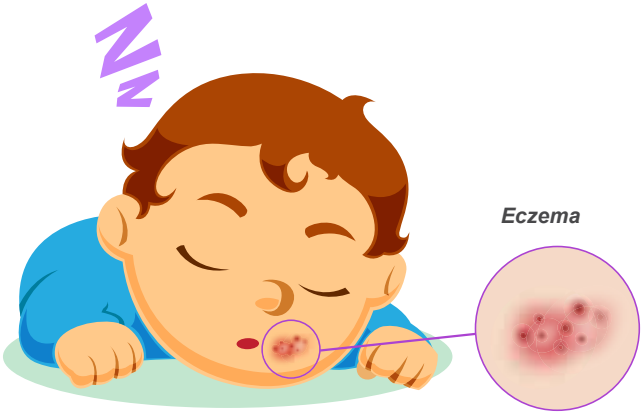
The first 'part' of the day focuses on food allergies.

THE DAY BEGINS

CASES 1, 2 AND 3: FOOD ALLERGY – TO GIVE OR NOT TO GIVE? THAT IS THE QUESTION …

Case 1: Peanut – LEAP into action

At 9 am, a six-month-old baby comes in for a 'corridor' peanut challenge. The baby boy had early-onset eczema at three months, which was fairly difficult to control. Maternal elimination diets as advised by the clinic sister did not help. Blanket elimination diets are never the answer. I had first met him at four months of age. After managing the flares with emollients and topical corticosteroids, he was currently well controlled on emollients twice daily and tacrolimus 0.03% ointment to the face and body on alternate days.



At five months – when his mother felt he was ready to start solids – we decided that the best way to advise on highly allergenic solids would be to perform skin-prick tests (SPTs) for our 'top 6' allergens: cow's milk, hen's egg, soya, wheat, peanut and fish.

This was in view of his increased allergy risk, based on early-onset moderately severe eczema.

Hen's egg showed up significantly positive at 5 mm (egg white extract) and 8 mm (fresh egg white), whereas peanut showed up as positive but low sensitised at 2 mm. The remaining four showed up as negative.

TABLE I: SPT RESULTS PERTAINING TO CASE 1

ALLERGEN	SPT RESULT
Egg white	5 mm
Fresh egg white	8 mm
Cow's milk	0 mm
Fresh cow's milk	0 mm
Soya	0 mm
Wheat	0 mm
Peanut	2 mm
Hake	0 mm
Positive control	4 mm
Negative control	0 mm

With the extremely high likelihood of an established egg allergy, egg avoidance was advised. We told the parents that we would review him at 11 months to repeat tests and decide on the suitability of introducing baked egg into his diet. The low positive to peanut called for immediate action. This child was at greater risk of a peanut allergy than the general population in view of his egg allergy and eczema. However, the low level of sensitisation gave us a glimmer of hope that we were perhaps still within a 'window of opportunity' to try to 'shift' the immune system into accepting the peanut allergen – as per the Learning Early About Peanut Allergy (LEAP) study findings.[1] Therefore, three weeks after starting on bland solids such as pear and butternut puree, we decided to carry out a peanut corridor challenge.

The corridor challenge is suitable for low-risk cases. Such cases would benefit from having a food allergen introduced in a controlled environment in which they have someone at hand to help interpret and manage reactions. In this challenge, the doctor is nearby but the patient is not constantly receiving expensive and time-consuming one-on-one nursing.

The little baby boy responded very well to the two-dose abbreviated challenge. He tolerated a full teaspoon of peanut butter (mixed in pear puree) with no ill-effects after a two-hour observation period. We were all delighted; peanut allergy is a tricky allergy with a low likelihood of someone outgrowing it, therefore tolerance in a high-risk child is a reason for celebration. The mother was given strict instructions to add a teaspoon of peanut butter to a puree or porridge at least three times weekly for no less than six months.

Learning points

- 'It all begins with the skin.' A defective skin barrier allows epicutaneous sensitisation to food and aeroallergens, placing the eczematous child at higher risk of food allergies and respiratory allergies (especially with early-onset eczema < 6 months and with more severe cases).[2]
- The blanket elimination of foods is never the answer to managing atopic dermatitis (AD). It is vital to institute topical treatment to manage flares and to consider proactive treatment to maintain the skin integrity long term.
- Targeted food-allergy testing may be necessary to rule out food allergies, most of which have resulted from the eczema rather than being the 'cause' of the eczema. Should a child be found to have negative screening tests to allergens, use the window of opportunity to introduce those allergens orally as soon as possible.
- A clear benefit of earlier introduction of peanut and egg has been demonstrated in large-scale clinical trials, mostly in children at higher risk of food allergy.[1,3]
- If a young patient has been found to tolerate a food, then they need to be encouraged to eat a good portion of that food a few times a week to avoid loss of tolerance. Exact timelines are not known, but it seems most important in the first year of life.[4–6]
- The concept of the corridor challenge in oral food challenges that are considered to be low risk is extremely helpful, less labour-intensive than formal challenges, and more accessible to the patient.
- Having a treatment room available in order to accommodate such challenges is useful – the practitioner can continue to see other patients but pop in intermittently and be available when problems arise. In higher-risk cases, a formal, fully supervised and prolonged incremental oral food challenge is needed.

Case 2: The ups and downs of food allergies

Next up is a review of a patient known to be food-allergic. She is a two-year-old girl with a known IgE-mediated allergy to hen's egg (white and yolk) and peanut. She had early-onset eczema and was incorrectly advised to delay the introduction of egg and peanut. But the clinic sister at her 12-month vaccination advised that she should 'try egg first before the measles, mumps and rubella (MMR) vaccine'. It is a common misconception that the MMR vaccine can cause a higher incidence of reactivity in children with an egg allergy. In any case, following advice, the child's mother tried scrambled egg at 12 months of age and the child reacted with an itchy urticarial rash around the mouth and swelling of her top lip. The young girl had been brought to us a month after this original reaction (at 13 months), at which stage SPTs showed a positive response to egg white, fresh egg white and peanut (see Table II). Further testing was negative to tree nuts, chickpea, lentils and sesame. She was happily consuming dairy, fish and wheat so these allergens were not tested for.

Now, a year after her original tests, she was coming in for a review. The family had been counselled that egg allergy was likely to be outgrown during childhood and that, in contrast, the peanut allergy had only a small 20% chance of being outgrown.[7] They arrived in great hope that the egg allergy had already been outgrown, as their avoidance of whole egg had resulted in a pristine record. To their disappointment, she tested even higher to both egg and peanut than at the original visit (see Table II).

TABLE II: SERIAL SPT RESULTS PERTAINING TO CASE 2

	SPT EGG WHITE	SPT EGG YOLK	SPT RAW EGG WHITE	SPT PEANUT
December 2018	3 mm	3 mm	6 mm	5 mm
December 2019	4 mm	4 mm	10 mm	7 mm

'Does this mean she is now anaphylactic?' was the dejected question. Of course, we cannot tell this merely by the skin-prick size.[8] I explained to the family that in our experience skin tests often get larger towards two years of age as the immune system matures (personal observation); this does not necessarily reflect the severity of the reaction or the long-term prognosis. This put their minds at rest. We discussed the consumption of baked egg in the form of biscuits, muffins and cupcakes (with egg as a minor ingredient), and happily she was consuming these foods without issue. We reassured the family that baked-egg tolerance generally represented a good prognosis for the egg allergy and that it would probably be a matter of time before tolerance developed. We reiterated her action plan and changed the antihistamine doses according to her weight, then wrote a letter to her new playschool outlining her allergies. The next appointment was scheduled for 12 months later.

Upon leaving the room, the father stated that he had heard about this new 'miracle drug', Palforzia, for peanut allergy.[9] Would we be able to bring some into South Africa?

I carefully explained the concept that Palforzia was peanut protein measured off in precise amounts and encapsulated for ease of use. I reassured him that our clinic had been performing peanut desensitisation for several years, using a very similar concept at a fraction of the cost of the commercial product. This desensitisation involved peanut flour being weighed out in little containers rather than in a capsule and given incrementally in gradually increasing doses until a good 'protective' maintenance dose was reached. 'None of this is a quick fix,' I explained. Cure comes very rarely; more commonly the patient is desensitised by the end of the formal programme but needs to continue with regular dosing of peanut at the maintenance dose daily in order to maintain tolerance.[10–12] This represents a 'raising of the bar', aimed at reducing both the angst associated with peanut allergy and the reactivity to trace amounts of peanut. Two years old was quite young (but not impossible) for peanut desensitisation. I suggested waiting till after the next test (at three years) to assess the trend in peanut sensitisation levels and then to decide on the suitability of desensitisation.

Learning points:

- Sensitisation to foods can increase over time as the immune system matures, before it decreases as tolerance to certain foods develops.
- This increase in sensitisation levels does not necessarily equate to higher reactivity clinically – try not to alarm the patient by saying that the large size of the reaction means that it is very serious; this is not necessarily true.
- Sufficient evidence now suggests that introducing peanut and egg earlier in children at higher risk of these allergies may be protective – this news needs to be communicated at grassroots levels as well as to primary healthcare centres and baby clinics.
- Routine childhood vaccines, including measles and MMR, do *not* contain allergenic egg particles.

It was now time for a quick cup of tea. While being relieved that I was not allergic to the delicious creamy milk in my tea, I thought about all our brave patients and their parents and how truly invasive and all-encompassing a true food allergy can be. For some, there is a glimmer of hope – in the form of oral immunotherapy – to contain the constant anxiety when the patient is not in a contained environment. To reiterate: oral desensitisation (or specific oral tolerance induction (SOTI)) represents a raising of the bar rather than a cure. The commitment to the programme may need to be lifelong, or until such time as a more curative technology develops. Patient selection needs to be stringent. Compliance is vital, as are a willingness to take in the 'medicinal' food routinely, resting for a few hours afterwards and adhering strictly to emergency plans should the patient react.

Case 3: Raising the bar – tough but rewarding

Our next patient is a 15-year-old boy who travels long distances to visit us every two weeks. He has a severe allergy to many tree nuts. He is midway through up-dosing for an oral desensitisation programme for a combination of macadamia and hazelnuts. He is far older than our average patients for desensitisation (usually the pre-schoolers have the better outcome). Today he is taking in 640 mg of macadamia flour and 640 mg of hazelnut flour. This is equivalent to approximately 50 mg of macadamia protein and 96 mg of hazelnut protein. We have tailored the programme to the circumstances of the patient and are building up more slowly than usual as he has suffered some side-effects (mainly itchy mouth and urticaria). On one occasion he had a wheezy chest but this was after swimming in a gala within two hours of taking his dose. He realises his mistake and respects that exercise is a significant co-factor for anaphylaxis.[13] He is highly motivated to continue the programme and his parents are highly supportive. Therefore, a joint decision has been made to continue SOTI, albeit slowly, despite occasional reactions. This is because he was feeling the benefits of becoming 'more comfortable' with nuts and this outweighed the calculated risks of the procedure.

He takes his dose and is monitored closely for two hours thereafter. He does very well and is sent on his way with the doses all measured out for the ensuing two weeks, after which he will visit us again for his up-dosing. He is reminded to curb activity for at least two hours after his daily dose, and of his emergency treatment plan.

Learning points

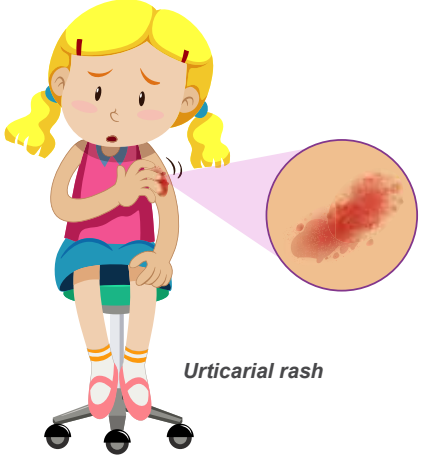
- SOTI has become more commonplace and acceptable in clinical practice, because large clinical studies have shown benefit.[14]
- Although in some instances it effects a cure, in most it represents a raising of the tolerance levels to curb reactions to trace amounts of the allergen. Lifelong regular intake of the allergen may be needed in order to maintain a state of desensitisation.
- The procedure is not without risk, therefore patient selection needs to be stringent, emergency plans for reactions need to be in place, and the programme may need to be tailored to the response of the patients.[15]

CASES 4 AND 5: GLUTEN-RELATED GRIPES?

Case 4: Chronic hives – chronically misunderstood

A 48-year-old female is referred by her GP. For the past two months she has had hives that come and go. She is otherwise well, but the discomfort and itch are intolerable, especially at night. She has tried various elimination diets, and was avoiding gluten strictly, thinking that she may have developed food allergies. She has been to an alternative practitioner to find answers, and IgG tests had revealed multiple 'allergies' to wheat, dairy, egg and peanuts. She had loved all these foods prior to the test but was diligently eliminating them now. But the hives have continued – almost daily. She is desperate to know 'what else she was allergic to'.

Her history is otherwise uncomplicated: a non-atopic lady who is peri-menopausal, but otherwise well. There was no specific pattern to the hives. They come and go, each individual lesion lasting 6–12 hours, leaving no bruising. The GP had started her on an antihistamine – cetirizine 10 mg daily – which had made a small difference. Previous blood tests including a full blood count, thyroid function tests and an autoimmune panel had been arranged by the family doctor and were all normal. On examination, she is well, mildly overweight, with a clear chest, normal heart examination and blood pressure, and diffuse typical hives on her trunk, back and limbs.



Urticarial rash

The concept of chronic spontaneous urticaria (CSU) is difficult for patients and practitioners to grasp.[16] Everyone wants a 'reason' for their symptoms. Explaining that this is an 'internal' rather than 'external' response goes a long way in helping the patient to grasp the concept.[1] I reassure her that this is *not* an allergic response.

I explain the 'ladder' of treatment for CSU. We would start off on a high dose of antihistamine, building up from two times the regular dose all the way to four times the regular dose if needed. She mentions that she felt very sleepy on cetirizine and was generally sensitive to any medications with any sort of sedating effect. We therefore opt for fexofenadine 120 mg twice daily, to be built up to 240 mg twice daily as needed. We shall consider adding montelukast in two weeks after assessing her response. We inform her about the 'next line' option of omalizumab (anti-IgE), which has an impressive record in CSU but carries significant cost implications. For now, we would monitor her response to high-dose antihistamines.

We explained to her that the condition has no 'cure', but could be well controlled on a tailor-made 'concoction' of medications. Her body would probably outgrow the condition after a while – but this could take months to years. The essentially benign nature of the condition with confinement to the skin was reiterated.

Learning points:

- CSU is often poorly understood, leading to a hopeless search for a 'cause' of the skin issues.
- Elimination diets are inconvenient, expensive and usually not effective.
- Alternative allergy tests such as the IgG tests are not scientifically valid and significantly over-diagnosed allergies, when in actual fact they only reflect exposure.
- Taking the time to explain the condition of CSU and treatment approach to the patient will assist in curbing the search for a cause.
- Quality of life can be severely affected in CSU – going on a journey to find the correct treatment doses and combinations needs careful explanation.

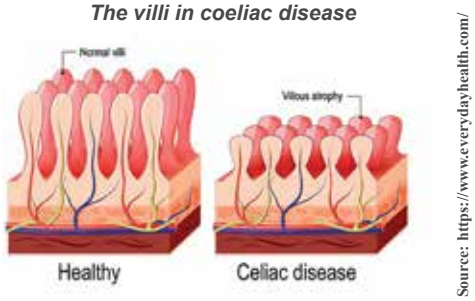
Case 6: Coeliac disease: the great pretender

To end the morning, I have a meeting with the parents of a ten-year-old girl whom I had seen the previous day. She had presented with non-specific abdominal gripes, tension-type headaches and a low mood. She is an anxious child with high expectations of herself. She is well grown and generally healthy. Stools are normal. We had thought the gut symptoms were typical of functional abdominal pain (equivalent to irritable bowel syndrome (IBS) in childhood). However, we had decided to draw basic bloods to rule out possible causes of fatigue and abdominal pain, including a full blood count, thyroid function tests, iron studies and a coeliac screen.

To my utter surprise, the coeliac screen came back with highly positive screening antibody levels: TTG IgA 77 U/L (normal = < 10 U/L); deamidated gliadin IgG 155 U/L (normal = < 10). I called the parents in for a face-to-face discussion.

Coeliac disease has lifelong implications. Gluten-free diets are tricky and expensive. We have to get the diagnosis spot-on.[17] The parents have heard about coeliac disease and mention that 'many of their friends are on gluten-free diets'. The difference between a 'gluten-free fad' and the lifelong gluten-free commitment required in coeliac disease is vast. The gluten-free epidemic has, on the one hand, led to an increased range and availability of gluten-free products; but, on the other hand, it overshadows those with a true need for a gluten-free diet.

The villi in coeliac disease



Source: https://www.everydayhealth.com/

I helped the parents to set up an upper gastrointestinal tract (GIT) biopsy for their daughter as soon as possible so that we could ultimately confirm the diagnosis.

Learning points:

- Coeliac disease can masquerade as symptoms such as fatigue, mood changes and vague abdominal pains.
- The need for lifelong commitment to a gluten-free diet dictates absolute confirmation of the diagnosis, usually with duodenal biopsy in cases in which screening antibodies are positive.
- The gluten-free fad has made critical identifying patients who have a real issue with gluten.

END-NOTE

This morning in the life of an allergist has been anything but the management of itchy noses! The rich variety of different presentations; the responsibility of sorting out allergic from non-allergic conditions; the need for displaying compassion towards chronically ill patients; the necessity to make clear, short- and long-term plans, and the need to see the patient as a 'whole' – all of these make for a varied and fulfilling (if sometimes a bit exhausting) career.

For now, a bite of lunch will do. The afternoon will be dealt with in Issue 2 …

DECLARATION OF CONFLICT OF INTEREST

The author declares no conflict of interest.

This article has been peer reviewed.

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