



TRANSCRIPT

S1. E7: Eczema (Part 1)

Dr. Tom Kovi: Hello and welcome to Spot Diagnosis, a podcast about all things dermatological, brought to you by the Skin Health Institute in Melbourne, Australia. I am Dr. Tom Kovi.

Associate Professor Alvin Chong: And I'm Associate Professor Alvin Chong. We are your hosts.

Tom: This episode we'll be talking about atopic dermatitis, also known as eczema. It's a very common dermatological problem in children. Today, we're joined by Associate Professor John Su. Professor Su is dual trained in both dermatology and pediatrics. He's head of dermatology at Eastern Health and consults at the Royal Children's Hospital in Melbourne.

He has been a principal investigator in a number of clinical trials in various skin disorders, including atopic dermatitis. Welcome and thank you for sharing your time with us today, Professor Su.

Associate Professor John Su: Thank you Tom.

Tom: In this episode we're going to be covering this in two parts. Firstly, we'll talk about the epidemiology of eczema, what causes it and the clinical aspects. In the second part, we'll be covering the treatment and hot tips on management of eczema. Firstly, let's clarify the terminology. Can we use the term atopic dermatitis and eczema interchangeably?

John: The terms mean different things to different people, but largely speaking, atopic dermatitis and atopic eczema are the same thing. Dermatitis refers to inflammation of the skin and atopy to the tendency for people to develop certain allergic conditions, including atopic dermatitis, but also respiratory allergies like asthma and allergic rhinitis.

Alvin: John, what actually causes atopic eczema?

John: Atopic eczema seems to be the result of a number of different factors. The main ones we discuss are, first, the barrier of the skin being compromised, and there seems to be significant genetic predispositions to this. Second is a tendency of the immune system to behave in a "allergic way".

Third is the constitution of our microbiome, the bacteria and bugs that normally live on our skin and fourth, the presence of itching and physical factors which affect the skin.

Alvin: Can you tell us a bit about the filaggrin gene mutation in eczema?

John: Filaggrin is a protein that we find in the keratinocytes, which are the skin cells of the epidermis. They're found in the keratohyalin granules and they are made from profilaggrin, which is a precursor. In themselves, they're subsequently broken down into what can be known as natural moisturising factor. The determination of filaggrin largely rests on our genes.

Some people have what we call *null filaggrin* alleles, which is really a nonfunctional mutation leading to the absence of production of filaggrin. This seems to be a very significant factor in pathogenesis of eczema in a good number of people, possibly a quarter to a half of people with atopic dermatitis have *null filaggrin* alleles.

Tom: We keep hearing things about the atopic triad of eczema, hay fever and asthma and the atopic march. Can you tell us a little bit about this?

John: Yes, there is certainly an increase in the development of one allergy when you have another one. If you have eczema, you're more likely to get respiratory allergy like asthma and allergic rhinitis. However, it's not a simple story and not one size fits all. In a recent study, there's a suggestion that probably only about 10% of people with eczema have this so called atopic march progression.

By atopic march, we mean that eczema and the barrier defect of the skin, coming first, leads to a tendency to be more easily sensitised to allergens that can go through the skin and subsequently we can develop food allergy, asthma and, later on, allergic rhinitis.

Alvin: How common is atopic eczema.

John: Atopic eczema affects, we believe maybe 15 to 20% of children and somewhere between 3 to 7% of adults. Although these estimates will vary according to populations and studies.

Alvin: It is a disease of industrialised nations. Any thoughts or hypotheses on that?

John: There is a hypothesis which has been known as the hygiene hypothesis, which suggests that if we live too clean, we don't get exposed to so called good bugs that help us develop tolerance and hence, we can be more easily made allergic.

Now, there is some credence to this. For example, we know that with, say, food allergy. If you delay the introduction of peanuts, you can more likely get peanut allergy later on in life. However this is more complicated than it sounds.

Roughly speaking, it is possible that gastrointestinal exposure to allergens tend to make us develop a certain tolerance, especially during a particular period in infancy, for example, around four to 11 months of age. Whereas skin exposure to allergens, as we've discussed may lead to sensitisation.

Tom: Do people grow out of eczema?

John: Probably, two thirds or so will grow out of it as it were after childhood. There has been recent epidemiological studies, which have suggested that the patterns of eczema are much more complex than we had previously thought. Sarah Brown's group had looked at cohorts in the UK and the Netherlands, and found that there were six more common trajectories of eczema. The most common being the ones that start early and grow out of it early, but there are other groups including the ones that start early, that persist, and those that start early but don't grow out of it early, which tend to have some more lingering disease.

They also identified another new group, which was mid-childhood development, around six years of age, which can also grow out of it. These different trajectories would suggest that not one size fits all. We do have to treat children very personally.

Tom: Just to follow on that, is there any way to actually predict which of the subgroups these children may be in and how would we counsel the parents?

John: This is a very good question. Trying to identify better genotype, phenotype correlations and phenotype prognosis correlations is a work in progress. At this stage it is very difficult to categorically say to any parent bringing in a child that, your eczema is likely to finish at such and such an age. We can only go on broad statistics.

Alvin: So, we just move on to the clinical manifestations of eczema now. What does eczema look like? How do you actually diagnose it?

John: We generally think of eczema as a red itchy rash. The pattern of eczema does change according to the age. For example, in young infants it tends to affect the cheeks and the shins and subsequently affects other parts of the body, limbs and then, later on, it can more characteristically affect the folds of the cubital fossa, the popliteal fossa and so on.

There are some subgroups where it may be complicated by other conditions. For example, if you have airborne allergy to grass pollen and dust mite, there can also be an accentuation around the upper face, the forehead and the periorbital regions and in eyelids, and that has a characteristic look.

The morphology of eczema also can vary. We think about erythema, which is redness, papulation and edema, which is the slight puffiness of the skin, excoriations, which are the

linear scratch marks of the skin from the itch, lichenification, which refers to leathery thickening of the skin with accentuation of skin markings. That tends to be particularly in the more chronic forms, where there's been rubbing.

In acute forms there can be vesiculation and exudation, with fluid coming out of the porous skin. Often there is also a background of dry skin, the so called atopic xerosis, but complications such as infection will also change the appearance, there introducing pustules and pus and smelly exudate and odor.

Tom: Here's our tip number one. Eczema has variable distributions in different age groups. Eczema is most commonly flexural in adult, whereas eczema is usually over the face and the trunk in children.

Alvin: John, what are the possible complications of eczema? Can you talk us through those?

John: The complications which are almost universal, are the effects of itch and commonly sleep disturbance. As a result of that also, distraction and disturbance with daily function. More specific to local areas, we can get secondary infection most commonly with golden staph or *Staph Aureus*, but also with viruses including herpes simplex, also more common warts and molluscum.

In certain areas, like the hand, we can indicate secondary disabilities, loss of hand function. On the face, with stigmatization, loss of self-esteem, which then leads us onto a very real array of psychological effects that can range from depression and anxiety, increased ADHD and other mental health issues, school phobia, isolation. Then there are a lot of other biological effects as well.

We've talked already about other atopic conditions, respiratory allergy, food allergy, but we also get other organs involved. For example, on the eye, we can get allergic Vernal Keratoconjunctivitis. We can have effects on growth. We can, from the eczema itself, not just the treatment, we can have effects on bone density, anemia has been described, obesity, even in children.

There are many organ systems that can be affected and then, there are also the effects of treatment.

Tom: Professor Su, I've read your study about the impact of eczema on both the patient and the family, from a psychological and social point of view. Do you mind just commenting on that?

John: Yes. A number of studies have been done and we did an early one, and that compared the impact of eczema on families with type one diabetes and asthma. We found that the

impact of moderate severe eczema seemed to be greater than that of type one diabetes, which was quite astounding at the time.

We also found that the cost of eczema for families was greater than that of asthma, for moderate severe disease. Even with mild disease, it did seem to have substantial impact as well as financial cost.

For example, I've had children where there's been really quite devastating effects, on their social life as well as personal life. Children approaching the end of school, getting towards exam time, who have just suddenly stopped going to school.

I've had one child in particular recently, who had seemed reasonably adjusted to chronic eczema and then suddenly rung up one day, to say that he'd stopped going to school and would not even allow a home visit and was not communicating. Which brought home to me that I think eczema, even though it's very visible, is often treated as just another skin condition.

The gravity and repercussions of it are unacknowledged. For people who do have eczema, it's almost an unspeakable condition because it's not publicised. It's not considered by some people as even a disease. The burden is great and much better education is required.

Tom: Here's tip number two. Eczema can be a tremendously distressing disorder because of the biological, financial, social and psychological impacts of eczema. Appropriate treatment at an early stage is important.

Alvin: Let's talk a little bit about myths. Like any skin disease, eczema has a cluster of myths around it. John, tell us a little bit about what you've heard and what's interesting to you.

John: Yes. Often we get a mixture of truths and fake news. Often people think it's all one thing, and in particular, it's all allergy, and it's all food allergy in particular. This can range from going to a very radical diet, to doing inappropriate testing.

We know that if you just blindly do allergy testing, you can get very deceptive results. Then there are also other kind of food attributions, including sugar and gluten and everything-free diets. Some of these things are cultural, some of them are almost mainstream now, but there are many myths.

I think dispelling these are challenge to all physicians and, to a certain extent, unless we have some uniformity in our approach and educate other non-health professions, then we're going to really struggle.

There's a big phenomenon of steroid phobia which is any bit of cortisone is going to cause devastating effects on my body, both topically and thinning of the skin, as well as affecting

my child's growth or my hormone axis. This has led to avoidance of treatment, whereas appropriate use of steroids we know, can be very safe without side effects.

There's also a phenomenon, in some places, of conversely of steroid addiction and this myth about that we perhaps need to remove all treatment to purify the body, to detox as it were. This has had devastating effects on many affected people and families.

Also even lifestyle things like bathing and swimming. Yes, swimming can irritate the skin because of the alkalinity, but many families actually don't bathe their children, because they think that bathing will dry up the skin, but not knowing that if you bathe and then moisturise straight after that, that can actually help with the absorption of moisturisers.

Tom: Thank you. This brings us to the end of part one. Please join us for Part 2 on the management of eczema.

Alvin: We hope you have enjoyed this podcast. Remember, these podcasts are not meant to replace medical advice. If you have a skin condition that requires attention, we strongly encourage you to see your medical practitioner.

Tom: For those who would like to access some further information of this subject, we have placed a transcript, together with some further education and information resources for you on our website. I also want to do a shout out for the GP education events that we run at the Skin Health Institute. Just go to spotdiagnosis.org.au.

Alvin: Please share spot diagnosis with your friends and colleagues. Rate and review us. Let us know what you think. We would really appreciate your feedback and any suggestions. Thank you for listening.

More information, and other dermatology education resources, can be found on our website at

spotdiagnosis.org.au

