



PathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA



Issue #007

SEPTEMBER 2011 | Published by RCPA

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- Genetic pathology takes medicine to a deeper level
- A difficult pill to swallow
- Gout's cause is crystal clear

Interesting Facts

1 in 3

The number of people who will develop allergies at some point in their life

80 percent

The number of children diagnosed with allergic rhinitis who will still have trouble 10 years later

Welcome to the September edition of ePathWay

This month's articles cover a diverse range of topics including allergic rhinitis (also known as hay fever), genetic testing, gout and pill oesophagitis.

It's also spring which heralds the 'sneezing season.' But there's more to it than a few extra grass pollens floating through the air. Fortunately Dr Daman Langguth has straightened out a few misconceptions regarding allergic rhinitis. Dr Langguth is a clinical immunologist and immunopathologist with a special interest in allergy research. His current project involves investigating Australian grass pollens, particularly the role of paspalum (Bahia grass) in allergic rhinitis.

We welcome your feedback about the stories covered in ePathWay, and hope you find it an invaluable way of being kept up to date about pathology in Australasia.

Hay fever: there are a few twists in this tale



40 percent

The number of young adults who will still be sneezing 20 years later

(Source: Australian Society of Clinical Immunology and Allergy (ASCI))

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A difficult pill to swallow



through the oesophagus wall.

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Acute gout pain is often described as throbbing, crushing and excruciating. An acute gout attack can start suddenly with no warning signs, and more often than not happens during the night when even the weight of a bed sheet causes agonising pain. It's therefore wise to understand the cause of this arthritic condition to find out if you're in the firing line.





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Hay fever is a misleading name because it isn't caused by hay and it's not a fever. It's actually an inflammation of the mucous membranes in the nose, eyes, ears, sinuses and throat in response to an allergen (something you are allergic to). Hay fever also has a different medical name.

"Hay fever is an all-encompassing term that tends to be used to cover any inflammatory nose disease, including those not caused by allergies," explains Dr Daman Langguth, clinical immunologist and immunopathologist at Sullivan Nicolaides Pathology. "The official disease term for this condition is allergic rhinitis."

The best-known allergen for allergic rhinitis is airborne grass pollen. It triggers an allergic reaction when it is breathed in through the nose resulting in a combination of sneezing, nasal congestion, nasal itching and rhinorrhoea (runny nose). While allergic rhinitis is associated with spring and its increased pollination activity, grass pollens are present all year round in warmer areas. They also vary in species across Australia and New Zealand.

So, we know it's not officially hay fever but allergic rhinitis, and it's an allergic reaction and not a fever, but there's another twist in this tale. The pollen itself isn't the culprit, but the protein it contains that causes the allergic reaction. This is why allergic rhinitis can also be triggered by animal dander.

"Among animals, cats are the prime cause of allergic rhinitis because they have sticky proteins on their skin and in their saliva that stick onto everything such as clothes, chairs and carpets," says Dr Langguth. "Other animals that commonly produce a reaction are dogs, guinea pigs and horses."

The next layer down in the allergen hunt is definitely not cuddly, furry or cute. Dust mites can also cause allergic rhinitis, and again it's not the mite itself but the protein in their faeces that is the allergen. Mould spores are another trigger.

If different allergens (which may be mixed up together in the one place) can cause allergic rhinitis, how do you work out which one is causing the reaction? That's where an allergy test can help.

"Allergy testing is becoming more sensitive," says Dr Langguth. "Once upon a time we could only say if an allergy test was positive or not. Now we can look for the particular immunoglobulin E antibody that the body produces in response to specific allergens through a RAST test."

RAST stands for RadioAllergoSorbent, which sounds complicated, but is actually a simple blood test that can check the body's response to various grasses, dust mites and animal dander through an Environmental Allergy Extended RAST panel. If the allergen happens to be grass, then Dr Langguth says ripping up the lawn and replacing it with a concrete 'moat' isn't going to help because most grasses pollinate a 20km radius. If it's dust mites or mould spores, then a thorough cleaning regime can help. But if it's the family cat, well, that's yet another twist in this tale.

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“Genetic testing is becoming more common due to an increased awareness of available tests in the medical and general community, better understanding of disease biology and improved affordability of tests due to technology changes,” explains Dr Melody Caramins, genetic pathologist at the Prince of Wales Hospital Department of Haematology and Genetics.

An important aspect of this new discipline is its potential role in preventative medicine. Treating chronic and advanced diseases is very expensive, so recognising if someone will potentially develop a heart rhythm disturbance or diabetes, and then initiating preventative measures, could have a huge effect on society. Genetic pathology also strikes a chord at a personal level.

“The value of genetic testing means different things to different families,” explains Dr Caramins. “For people with leukemia it can mean treatment tailored to an individual based on genetic testing, or preventative information and screening for patients with a genetic predisposition to breast cancer.”

Almost every human ailment has a genetic component, yet genetics has traditionally only played a

medical role in cases of birth defects and for a limited number of diseases. Rapid advances in this area mean almost every disease process can now be viewed from a genetic level.

“Developments in genetics are explaining many things we didn’t understand before in every organ system,” says Dr Caramins. “Genetic pathologists are able to make a diagnosis, provide an answer to a clinical problem and contribute in a very important way to clinical decisions about how patients are treated.”

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A difficult pill to swallow



Hands up if you've heard of pill oesophagitis. The chances are most hands are still down because this condition is relatively unknown. It occurs when a pill becomes stuck in the oesophagus and slowly dissolves while it is in contact with the delicate oesophagus lining. This causes inflammation and ulceration, while in extreme cases a hole can be 'eaten' right through the oesophagus wall.

The oesophagus, or 'foodpipe', is the hollow muscular tube that connects the mouth to the stomach. It has a natural narrowing in the middle where pills can become stuck, especially if they are not taken properly.

"The biggest risk factor for pill oesophagitis is not taking medication correctly," explains Dr Robyn Laurie, anatomical pathologist at Dorevitch Pathology. "For example, someone might take their tablets before bed and have just a teaspoon of water to wash it down before they lie down for the night."

Dr Laurie says it's relatively easy for the pills to become stuck without adequate water to wash them down and the benefit of gravity to help the process. The elderly are also at risk as they often have poor motility in their oesophagus and may take a lot of medications.

"The most commonly implicated drugs in the elderly are non-steroidal anti-inflammatory drugs, potassium chloride and quinidine sulphate which may also cause a stricture in the oesophagus," says Dr Laurie. "Post-menopausal women and others with osteoporosis who take bisphosphonates, and younger patients who take doxycycline for acne, are also at a higher risk."

Add to this mix large tablets, capsules and slow-release medications that can cause injury due to prolonged direct mucosal contact, and it's easy to see why this condition occurs. When ulcerations happen the symptoms are often non-specific such as chest pain, difficulty swallowing or pain when swallowing, so a doctor may request an endoscopy (to look down the oesophagus) and biopsy. It's the

interpretation of the biopsy tissue by a pathologist that can confirm the diagnosis.

“Pathologists are able to tell if it’s inflammation and ulceration caused by a medication as opposed to a malignancy or just reflux,” says Dr Laurie. “And the good news is that most cases of pill oesophagitis-related ulcerations heal in a matter of days once the drug is stopped, without any need for medical therapy.”

Prevention is also better than the cure, so Dr Laurie says it’s best to have a fluid chaser of at least 100 ml of water and to stay upright for some time after taking medications. This can make a difficult pill easier – and safer - to swallow.

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Gout's cause is crystal clear



Acute gout pain is often described as throbbing, crushing and excruciating. An acute gout attack can start suddenly with no warning signs, and more often than not happens during the night when even the weight of a bed sheet causes agonising pain. It's therefore wise to understand the cause of this arthritic condition to find out if you're in the firing line.

Gout is often the result of too much urate in the blood. Urate is a chemical created when the body breaks down substances called purines (found in some foods and drinks). Most urate dissolves in the blood and travels to the kidneys where it passes out in urine. If the body produces too much urate, or doesn't remove enough of it, then it turns it into urate crystals which are deposited in the fluid around the joint/s causing gout. Any joint may be affected, but gout usually targets the big toe.

"It is not known for certain why gout affects certain joints, but it does tend to affect joints that have been injured or have osteoarthritis," says Dr Nicola Dalbeth, rheumatologist and associate professor at the University of Auckland. "Urate crystals are more likely to form in cooler temperatures, and this might explain why the toes are more often affected."

Dr Dalbeth says gout has a number of risk factors. These include medical problems such as chronic kidney disease, heart disease, obesity and kidney transplantation, as well as a high intake of sugary soft drinks, beer, red meat and seafood. Gout also occurs more often in men and older people, with Māori and Pacific Island people especially at risk.

"We know that Māori and Pacific Island people experience more severe gout at an earlier age, with frequent attacks and joint damage. Studies in the 1980s showed differences between Māori and European people in the way the kidney gets rid of the urate, and we think this is why Māori have higher rates of gout," says Dr Dalbeth. "We are now trying to understand this in our genetic studies which show that the genes associated with gout have a much greater effect on gout risk in Māori and Pacific people."

Dr Dalbeth says pathology is essential in the diagnosis and management of gout. The key test to diagnose gout is identifying the urate crystals under a microscope, while the management involves monitoring blood urate levels to ensure they are reducing to the level required for the gout crystals to dissolve.

The good news is gout is preventable and treatable. And since the pain is known to be throbbing, crushing and excruciating, working out if you're in the firing line is probably worth the effort.

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