



PathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA



Issue #010

DECEMBER 2011 / JANUARY 2012 | Published by RCPA

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- Be on 'red alert' this summer to avoid the trauma of sunburn
- Acute pancreatitis is the tadpole that roars
- The dark side of body art

Welcome to the December/January edition of ePathWay

Summer has arrived and that means more outdoor activities, barbeques in the hot weather and perhaps some body art to celebrate the 'new you' in 2012. So this holiday edition looks at the Festive Season from a 'pathology' point-of-view including a closer look at sunburn and food poisoning, the risks of tattoos and piercings and an overview of acute pancreatitis. But it's not as bah-humbug as it sounds!

We would like to thank all of the pathologists (and one midwife) contributors for giving their time and expertise so generously during the year making e-PathWay possible, and to Ms Jane Carstens our medical writer, who translates medical information into an easy read. We also wish everyone a safe and healthy Christmas and New Year and we are looking forward to continuing to keep you up-to-date about pathology in Australasia in 2012.

Best wishes

The ePathWay Editorial Committee

Interesting Facts

5.4 million

The approximate number of Australians who contract food poisoning each year.

120

The approximate number of deaths from food poisoning in Australia each year.

Food Poisoning is usually a poultry affair at Christmas

300,000

The approximate number of prescriptions for antibiotics to treat food poisoning in Australia each year.

Source: NSW Food Authority

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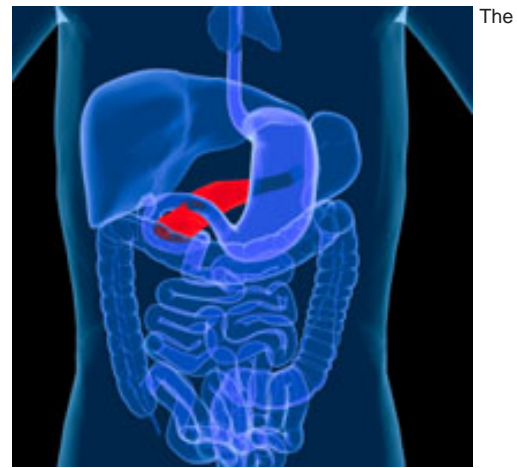
Be on 'red alert' this summer to avoid the trauma of sunburn

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Acute pancreatitis is the tadpole that roars



festive season is a fitting time to shine a spotlight on the pancreas because it plays pivotal roles in helping the body digest food and control blood sugar levels. But if it becomes inflamed, as in acute pancreatitis, it can be life threatening for some people. The pancreas is also an organ that demands respect since it can actually 'eat' itself.

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The dark side of body art

It's New Year's Eve and everyone is feeling festive and free-spirited. There's a tattoo parlour and body-piercing shop nearby so why not get a bit of body art to celebrate the New Year? Lots of people have them so what could possibly go wrong? Well, have you ever heard of a granuloma or hepatitis? It's difficult to gauge how many cases of tattoos and body piercings go wrong, but pathologists see the dark side of body art and their stories aren't pretty.



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Food Poisoning is usually a poultry affair at Christmas



'Tis the season for increased cases of food poisoning with poultry high on the list of causes. Humans can also infect each other, mostly due to unclean food handling practices, so the trick this festive season is to ensure food is handled, stored and prepared correctly.

Dr Gillian Wood, microbiologist and infectious diseases physician at Southern Health, says the causes of food poisoning can be divided into two categories; organisms that come from animals, and organisms that come from other humans.

"Campylobacter and Salmonella are the main organisms that come from animals to be aware of," she advises. "The cases of food poisoning from these organisms increase dramatically at Christmas due to increased consumption of chicken and turkey. Poultry are colonised with these organisms and the meat gets contaminated with them during the butchering process."

Dr Wood says cooking meat properly, especially poultry, is the key to ensuring Campylobacter and Salmonella don't survive. She also advises

thawing meat fully to ensure it is completely cooked through to the middle. Thawing meat in the fridge also prevents it reaching temperatures where these organisms thrive. With all meat, whether it's cooked or not, it is also important to avoid temperature abuse.

"Temperature abuse occurs if you don't keep raw or cooked meat cold, as the organisms that cause food poisoning can then multiply," says Dr Wood. "This is particularly true if the food is left sitting on a bench at a room temperature of about 25 degrees. But if the temperature is higher, say over 30 degrees, the organism count increases even more.

"Mixing of salads and cooked foods with raw meats or their juices can mean foods that do not get subsequent cooking may be contaminated with these organisms and make people sick," she says.

It doesn't matter how carefully meat is cooked and stored if the food-handling techniques are unhygienic. Norovirus and Staphylococcus aureus are the two most common organisms spread by people, usually due to poor hand washing practices.

"Norovirus is a viral infection that is easily spread from the hands of an infected person to food," explains Dr Wood. "It is highly contagious as it only takes between one to 10 viral particles present in the food to make people sick."

Unlike Norovirus, Staphylococcus aureus is a bacterium present in the nasal passages, throats and on the skin of about 50 percent of healthy individuals. However, if it gets onto food that is prepared or stored incorrectly it may produce an enterotoxin (a toxin secreted by the bacterium) that causes gastrointestinal reactions, such as vomiting, when it is ingested.

"Staphylococcus aureus likes salty and dairy environments such as ham or mayonnaise, and if this food is not kept cold then the organisms will multiply and may produce the enterotoxin that makes people sick," says Dr Wood.

Foods that require considerable handling during preparation, and those kept at warmer temperatures after preparation, are frequently involved in food poisoning with both Staphylococcal and Norovirus. Uncooked shellfish, especially raw oysters, are also easily contaminated with Norovirus.

The consequences of all of these organisms are various gastrointestinal symptoms. Dr Wood says Campylobacter and Salmonella primarily cause diarrhoea, while Norovirus and Staphylococcus aureus are usually vomiting illnesses. However, both diarrhoea and vomiting may occur with all types of food poisoning. Pathologists can diagnose the offending organism through various tests that usually involve a faeces specimen.

Providing a faeces specimen to a pathology lab because of food poisoning isn't a very festive thing to do, especially if more than one family member is affected. So play it safe by ensuring food is handled, stored and prepared correctly to enjoy a happy and healthy holiday season.

Dr Wood's Top Tips

1. Don't let raw meats or their juices come into contact with salad vegetables or cooked food.
2. Keep perishable food cold.
3. Only leave food out of the refrigerator for one hour, or two at the absolute maximum.
4. Put leftovers back into the fridge within two hours of being put out.
5. Reheat leftovers to at least 74 degrees Celsius, and make sure the food is hot in the middle.

For more tips on food safety go to:

http://www.health.vic.gov.au/foodsafety/downloads/poison_prevent.pdf

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Be on 'red alert' this summer to avoid the trauma of sunburn



Sunburn and trauma are not usually associated together, but they should be. Sunburn is a sign of skin cells in trauma and the body's reaction to the ultraviolet (UV) radiation in sunlight. UV radiation is also a blessing and a curse. It's the best natural source of vitamin D but is also the major cause of skin cancer. ¹ There is a happy medium in all of this, and it involves being on 'red alert' this summer.

"UV light damages skin," says Professor Richard Scolyer, skin pathologist at the Royal Prince Alfred Hospital (RPAH) and Melanoma Institute Australia. "The closer you live to the equator, the higher the levels of solar radiation."

The skin is the body's largest organ. Its colour is due to a pigment produced in the epidermis (the superficial part of the skin) called melanin which offers some protection from the sun's UV rays. Darker skin has more numerous melanin particles and offers more protection than fairer skin which is an adaptation of people from northern latitudes where solar rays are relatively weak. Genetically speaking, fairer-skinned people traded the benefits of sun protection for bone-strengthening vitamin D through exposure to UV rays, and are not as well equipped for the strong UV rays found in down under latitudes.

"Australia and New Zealand have large populations of Anglo Celtic descent who live close to the equator and who also enjoy an outdoor lifestyle," says Professor Scolyer. "Their skin is very susceptible to damage from the sun."

Sunburn can happen in as little as 10 minutes on a summer's day, while even mild sunburn, tanning and exposure below the sunburn threshold can cause skin damage that may be irreversible.

"UV rays damage the DNA of the cells, and if the damage keeps accumulating it can lead to skin cancer," says Professor Scolyer. "The redness and heat of sunburn is a reaction to that damage because you get increased blood flow to the area caused by an inflammatory response to the damaged cells."

While the sun emits UVA, UVB and UVC radiation, the ozone layer blocks all UVC and most UVB radiation but none of the UVA radiation. Although UVB is the waveband causing sunburn, both UVA and UVB can cause DNA damage and skin cancer as well as wrinkles and discolouration.

Heat and high temperatures are also poor indicators of UV levels. They depend on factors such as latitude, ozone, cloud, reflection from surfaces such as water or snow, time of year and time of day. It's therefore a good idea to check the National UV Indicator websites for Australia² or New Zealand,³ even during the winter months. Sun protection is recommended when the UV index level reaches three and above.

Maintaining vitamin D levels in our sunburnt countries is also easy, and shouldn't cause extra 'sun seeking' behaviour.

"It only takes about six to eight minutes of exposure to 15 to 20 percent of the body's surface area - hands, arms and face or legs - in fair skinned individuals most days in summer in most regions of Australia and New Zealand to maintain vitamin D levels," explains Professor Scolyer. "But people must protect themselves from the sun, avoid exposure in the middle of the day, and if they notice any new or changing skin lesions they should go to their GP for advice."

So be on 'red alert' this summer to avoid the trauma of sunburn by slipping on sun-protective clothing, slopping on 30+ sunscreen, slapping on a hat, seeking shade and sliding on sunglasses.

¹ Skin cancer is covered in [ePathWay issue #009](#)

² National UV Index Map: <http://www.bom.gov.au/australia/charts/UV.shtml>

³ Sunsmart UVI Index: <http://www.sunsmart.org.nz/being-sunsmart/uv-index>

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Acute pancreatitis is the tadpole that roars



The festive season is a fitting time to shine a spotlight on the pancreas because it plays pivotal roles in helping the body digest food and control blood sugar levels. But if it becomes inflamed, as in acute pancreatitis, it can be life threatening for some people. The pancreas is also an organ that demands respect since it can actually 'eat' itself.

The pancreas is a tadpole-shaped organ, tucked in behind the stomach, which has two important roles. The endocrine pancreas (endocrine means secreting a hormone into the bloodstream) makes hormones, such as insulin and glucagon, which help to regulate blood sugar.

The exocrine pancreas (exocrine means secreting a substance out through a duct) is a part of the digestive system and helps the body digest food, especially protein. It does this by releasing pancreatic juice which only becomes activated when it reaches the duodenum (the tube that connects the stomach to the second part of the intestine). Otherwise these powerful juices can 'eat' the protein-based pancreas and its duct – a situation that can happen if they are prematurely activated through diseases or by a blockage in the duct.

"The two main causes of acute pancreatitis are gallstones and alcohol," explains Dr Weldon Chiu, chemical pathologist at Auckland Hospital and Middlemore Hospital in New Zealand. "But different populations have varying incidence. For example, in Australia and the UK gallstones account for more cases than alcohol, but in the US and some parts of Europe, alcohol-related acute pancreatitis is more commonly seen."

The causes of acute pancreatitis also vary with different groups within the population. Dr Chiu says a pregnant woman has a greater chance of pancreatitis related to high blood triglycerides (a type of fat found in the blood) if gallstones have been excluded. A child with acute pancreatitis may have a systemic illness such as an autoimmune disease, trauma to the abdomen or a viral infection such as mumps. If a woman has acute

pancreatitis then chances are it is gallstone-related rather than alcohol. In contrast, if it's a middle-aged man then it is more likely alcohol-related. But a few extra beers during the festive season won't tip the scales.

"Binge drinking does not commonly induce acute pancreatitis as one might have thought. It's more related to long-term high-dose alcohol abuse," says Dr Chiu. "Even so, only about five percent of chronic alcoholics develop acute pancreatitis so there are clearly other factors responsible. Genetic predisposition, smoking or high fat diet have been suggested as contributing factors."

Dr Chiu says acute pancreatitis affects about 20 to 70 people in every 100,000, and there has been a slow increase in the incidence related to gallstones which is probably linked to the rising prevalence of obesity. Whatever the cause, an accurate and prompt diagnosis is important.

"Although four out of five cases are usually mild, the fifth case is serious and can lead to death," says Dr Chiu. "Pathology tests help to make this diagnosis and there are also tests that can help doctors assess the severity and predict the progress of acute pancreatitis. This field is constantly evolving and certainly very exciting."

While acute pancreatitis isn't related to once-a-year indulgent behaviour, maintaining a healthy diet and lifestyle is one way to protect this important organ. But if it does become inflamed from acute pancreatitis, then it certainly does become the 'tadpole that roars.'

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The dark side of body art



It's New Year's Eve and everyone is feeling festive and free-spirited. There's a tattoo parlour and body-piercing shop nearby so why not get a bit of body art to celebrate the New Year? Lots of people have them so what could possibly go wrong? Well, have you ever heard of a granuloma or hepatitis? It's difficult to gauge how many cases of tattoos and body piercings go wrong, but pathologists see the dark side of body art and their stories aren't pretty.

"It's quite common to see a granulomatous response to a tattoo which often appear as lumps in the skin," explains Dr Simon Clark, dermatopathologist at Douglass Hanly Moir Pathology. "They may be a response to the tattoo ink as foreign material, or the person may already have had sarcoidosis which is an autoimmune disorder, but it develops further and suddenly pops up at the site. Body piercings can also cause granulomas."

A granuloma is a non-specific type of inflammatory response in body tissue. It looks like little lumps around the tattoo or piercing sites and are more disfiguring than dangerous. This response isn't surprising since the tattoo dye is stabbed into the dermis (inner layer) of the skin where it is engulfed by cells called macrophages which remove foreign objects, such as bacteria, from the body. However, tattoo pigment cannot be eliminated but is engulfed by the macrophage, which is how tattoos become permanent.

"Tumours can also arise at the site of the tattoo, especially if multi-coloured dyes are used," says Dr Clark. "For example, Keratoacanthomas can erupt, and there may be 20 of these at the site involving the tattooed area. I see about two or three of these cases a year."

Keratoacanthoma is a skin tumour, considered to be a form of squamous cell carcinoma (SCC) ¹, which is unlikely to spread beyond the tattoo

site. However, blood borne viruses will cross-infect if they are given the opportunity.

“The main infection concerns with tattoos and piercings are the blood borne viruses hepatitis B and hepatitis C, and Human Immunodeficiency Virus (HIV),”² explains Dr Raymond Chan, microbiologist at the Royal Prince Alfred Hospital. “These viruses can cross-infect if equipment is contaminated with blood and is not cleaned effectively, or if the person performing the procedure is infected with any of these viruses and their blood mixes with their client’s blood during the procedure.”

“To emphasise the seriousness of this risk, Dr Chan says he asks his patients about their body piercings and tattoos, including where the procedures were performed, when he is assessing their risk of a blood borne virus infection. He says piercings also carry the risk of bacterial infections. They can be acute infections which become red and painful with pus, just like any abscess that occurs after trauma, or they can be chronic where the area just stays inflamed and doesn’t clear up.

“Chronic infections are common where cartilage has been pierced, such as the upper ear, probably due to poor blood supply,” he says. “They also occur where thick wads of skin have been pierced, such as the nipple area, because it’s a long track through the skin and can’t drain adequately.”

There are also situations where piercings accidentally cause permanent ‘traumatic’ tattoos.

“I had a case where a nose piercing was removed and the silver from the metal had dissolved into the skin’s dermis leaving a black spot,” explains Dr Clark. “In fact, the type of metal used in piercings can cause inflammatory reactions in the same way as tattoo dyes, which may be metallic-based.”

Both pathologists stress the importance of having these procedures performed using a very clean or sterile technique. They also warn against having them done in overseas countries where the techniques may not be clean and the dyes for tattoos may not be safe.

“If possible, go to a reputable tattoo or piercing place with a shop front and ask how they do the procedure, ask if they wear gloves, watch to see if they wash their hands, ask what sort of metal or dye they use and ask how they sterilise their equipment,” advises Dr Chan.

Dr Clark also advises not to get a tattoo in a cosmetically sensitive area so the scars are not on display if complications happen.

“If a person really wants to get a tattoo, get a small one somewhere inconspicuous so if anything goes wrong the scars are not on display,” he says. “Just remember, piercings and tattoos can have serious consequences.”

¹Skin cancer, including SCC, is covered in [ePathWay #009](#)

²HIV is covered in ePathWay [ePathWay issue #005](#)

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