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Contact Dermatitis : an Australian Perspective

Contact dermatitis covers both immunological pathogenesis (contact allergic dermatitis) and dermatitis produced by an agent directly damaging the skin without immunological involvement (contact irritant dermatitis). Contact allergic dermatitis is the most common type seen in practice. The clinical signs are very similar for both.

Contact irritant dermatitis results in damage by a chemical directly to the keratinocytes with no immunological involvement. Thus the effect occurs with the first exposure to the chemical. The damaged skin may then elicit an inflammatory response.

Contact allergy is a T cell immune reaction that occurs after more than 2 weeks, and often several months to years after exposure to the offending allergen. The immune system retains a memory for the allergen.

CONTACT ALLERGIC DERMATITIS

Clinical signs are located anywhere the agent contacts the skin. However there are common patterns that give clues to the causative allergen. The primary lesions are erythemic and papular to vesicular, however secondary lesions of ulceration, scale, crusts and lichenification develop with time and repeat exposure. The lesions show variable pruritis. Thus if the animal is lying on the allergen, a water line is seen that separates the affected ventral skin with reduced hair cover from non-affected dorsal and haired skin.

Contact allergy to topical medications and environmental allergens are the common presentations in veterinary practice. Both have diagnostic characteristics related to how and where the allergen contacts the skin.

Outdoor Allergens

Contact allergies caused by environmental allergens are mainly plants that the dog comes in contact with in the house yard. Therefore evidence of contact allergy dermatitis is seen on the ventral hairless skin because long hair provides protection. Consequently shorthaired dogs like Staffordshire Bull Terriers, Boxers, Jack Russells, Terriers and Fox Terriers are more susceptible. In deep chested dogs, like Boxers, the inguinal skin may not contact the ground and thus is spared lesions, whereas the ventral chest and ventral surface of the feet and the posterior carpus and tarsus may be severely affected. Short-coated dogs (ie Staffordshire Bull Terriers and Jack Russells) may show symp-



Fig1. Chronic contact allergy to mango tree sap, note affected face, ears, lateral limbs and waterline effect.

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toms on the inside arm and lateral hock. The muzzle and ventral chin may also be affected as can the ears and skin over the zygomatic arch. The perineum and scrotum can be affected in some cases.

Wandering Jew, a common garden weed, is often the cause of ventral papular eruptions. Because sap from the leaves of



Fig 2.

Fig 2. Wandering Jew allergy showing papular pustular dermatitis



Fig 3.

Fig 3. Contact allergy to carpet grass, note the lesions on face & limbs and the deep protected skin of the axillary fold is lesion free.

the plant is the causal agent for contact dermatitis, lesions are not affected by seasonal elements. These plants belong to the Commelinaceae family, most commonly *Tradescantia* spp. and *Commelina* spp. All share the same chemical that acts as the allergen and thus cross-reacts. It is the most common cause of contact allergy in dogs partly due to the frequency at which it and its variants are found in Australian back yards and also because of the succulent nature of the plants. The sticky sap attaches to the dog's skin giving prolonged exposure and increasing the chance of sensitisation.

In man, common garden plants that cause contact allergy are various *Grevillea* spp. (Proteaceae) of which there are 250 species common to Australia. The ground cover spe-



Fig 4.



Fig 5.



Fig 6.



Fig 7.

Fig 4. *Callisia repens* (Turtle vine) & *Tradescantia Zebrina* (Wandering Jew). Fig 5. *Commelina benghalensis* (Scurvy weed/Wandering Jew) & *Callisia fragrans* (Inchplant). Fig 6. *Tradescantia pallida* (Purple heart). Fig 7. *Callisia fragrans* (Inchplant)

cies are a risk for dogs. Mulches have occasionally been implicated in contact allergy.

Indoor Allergens

Reported contactants are carpeting plasticisers, deodorants and cleaners as well as cement but these are not common in the author's experience. Reactions to wool bedding may be an indoor atopic contact allergy as wool is a protein. This is confirmed by the intradermal skin tests.

Drug induced contact allergy

Topical treatments like rinses, ointments and shampoos are responsible. Signs are seen at the application site and can be in haired areas. Ear ointments are commonly involved, as there is often a need to give repeated applications and prolonged treatments. Many of the topical treatments like skin ointments and lotions and ear ointments contain neomycin or related antibiotics that share antigen sites on the drug and thus cross-react. Sensitivity to one, example being neomycin, will cause sensitivity to gentamycin. There is also a possibility that the excipient base of one ointment/lotion may share the same or related excipient of another. For example, the glycols are common in topical lotions & ointments and as emollients in rinses and shampoos. These cases may have erythema and scale, however if the medicament contains a steroid then only adherent scale is found.

Miscellaneous Causes

Nickel in jewellery is a common cause of contact allergy in humans. Contact allergy to leather collars and chains occasionally occurs in the dog.

The water-soluble antigens (usually proteins) of plant pollens are responsible for the type 1 hypersensitive reaction of Atopy, whereas agents extracted with organic solvents are the small molecules (usually oleoresins) causing the classic contact allergies of a type 4

Are your Pruritic patients driving you crazy?

Take a test not a tablet!

So! Get rid of the fleas. Switch to quality hypoallergenic food to rule out concurrent food allergy. Consider atypical Sarcoptes; if in doubt, treat empirically. Treat any pyoderma; recurring pyoderma points towards Atopy. Test and treat any secondary Malassezia.

Now you can do the test (An IDEXX canine allergy ELISA).

Send Dermcare the results for a FREE Dermatologists report.

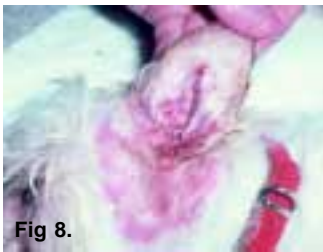


Fig 8.



Fig 9.

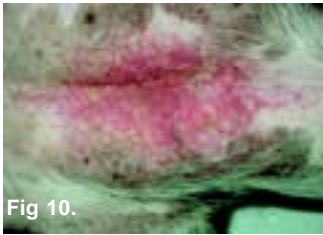


Fig 10.

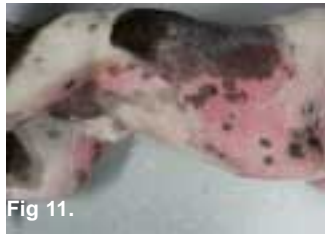


Fig 11.

Fig 8. Contact allergic reaction to ear preparation containing Gentamycin. A previous Neomycin ear treatment probably sensitised the dog to this group of drugs. **Fig 9.** Allergic contact dermatitis due to a leather collar, hair has been clipped to reveal lesion. **Fig 10.** Contact reaction to repeated Savlon™ ointment, pathogenesis of the reaction is poorly understood but may be a combination of allergy and irritation. **Fig 11.** Same dog as in Fig 2 with waterline of red skin where clipped for intradermal allergy testing (thus the black marker pen dots) Note ventral recessed inguinal skin is spared.

immunopathogenesis. Therefore contact allergy plants like Wandering Jew cause signs all year round as opposed to pollen allergies that are seasonal.

CONTACT ATOPIC DERMATITIS.

This is a **seasonal** contact reaction having clinical signs and a pattern of distribution similar to classic contact allergy with a type 4 immunological pathogenesis, only the immunological reaction is a type 3 to grass pollens. Atopic dermatitis is now divided into inhaled allergic dermatitis and contact atopic dermatitis. Some grass pollens cause classical inhaled atopy and these grass species are included in the intradermal skin test or allergy ELISA. The same grasses may also be absorbed through the skin but more often different grass species are responsible for contact atopic dermatitis. Proteins of pollens can be absorbed through the mucosal surfaces of the respiratory system or can be absorbed through the skin. To be absorbed they have to be leached from the pollens in an aqueous medium. Excretions

Bathing Lots of Dogs?

Before applying Aloveen conditioner, try using a chamois cloth to remove excess water. This will also cut down on the amount of towels needed in your practice.



What Do You Do With A Dirty Wombat?



At High St Vet Surgery in Rockhampton they wash them in Aloveen. Pictured with number 14 (from left) are Dr Terry Fisher, Dr Johanna Ruska and Robyn Kent. If you have any interesting Dermatology or Dermcare product photos that we could use in our newsletter please send them in, we would love to see them. If yours is published some free product will be coming your way.

of the eye and respiratory mucosa are probably the extracting medium for wind borne pollens. On skin surfaces the morning dew and rain are probably responsible and is continued via the patients' saliva from licking at lesions, usually the feet. This may explain why the forepaws are more affected than the hind paws. The history "my dog will not walk on the wet grass" is commonly heard during consultation in such cases. Why the difference? Lawn grasses causing contact atopy have flowering parts hidden laterally, below mowing height, and will pollinate despite regular mowing, whereas inhaled pollens are from grasses with long culms (stems) permitting a more efficient pollen launch and distribution.

The author is not familiar with grass species in southern states responsible for contact atopic dermatitis, but in the subtropics of Queensland, Kikuyu (*Pennisetum clandestinum*) and carpet grass (*Axonopus* spp) are implicated. Many clients mistake carpet grass for Buffalo grass (*Stenotaphrum secundatum*). Buffalo grass is sterile and so far not implicated in dog allergies.

DIAGNOSIS

The diagnosis is based on the history of exposure, physical findings and results of provocative exposure. This is confirmed by patch test and resolution of signs on avoidance of the allergen. Differential diagnoses are atopy, food allergy and contact irritant dermatitis. Secondary malassezia and Staphylococcus dermatitis must be identified and eliminated if present before investigating the contact allergy. These will mask the underlying signs and confuse any manipulation or test results.

Medication associated contact allergy is diagnosed by the association of the dermatitis in time with the suspected treatment and the distribution of the dermatitis in the area of application of the treatment. Haired areas may be affected. The first step in a suspect environmental allergy is to bath the dog in Dermcare Natural shampoo or Dermcare Aloveen shampoo, then remove

and isolate the dog from the suspected area. This usually means isolation from the yard, or inside the house, if this is where the allergen source is suspected to be implicated. If resolution occurs then provocative exposure or patch testing with the suspected allergens will confirm sensitivity. Provocative exposure is easily accomplished with a cooperative owner. Once the dog is settled in isolation (often only 1 to 2 days, for contact atopy or up to 2 weeks for classic contact allergy (ie to Wandering Jew), bathing before isolating can reduce this time) then walk the dog on a lead to the suspect plant and allow the dog to lie there for a short time. Watch for erythema and signs occurring, usually within hours, but up to 24 hours.

The usual method of patch testing is to mix the allergen in petrolatum and apply to the skin in a Finn chamber (small aluminium hollow cup sticky-taped to the skin), remove and check for erythema at 24 and 48 hours. However, false positives occur due to the occlusion inducing infection. A simplified version for wandering Jew and other sticky sapped plants is to apply to non-affected skin and observe for 48 hours. Select a non-inflamed skin site, (usually the non-haired ear or a clipped area of neck skin) attach and remove several strips of sticky-tape to strip off the stratum corneum, which then allows penetration of the chemical antigen to the immune system. Apply the plant sap. I like to make a cross to ensure the reaction is caused by the applied material. Observe for 48 hours.

The reaction can be subtle and missed by the owner so you should re-examine the test area in good lighting and if in doubt, biopsy and have assessed by histopathology.

The atopic patch test is used for contact atopy. In practice it is essentially the same method as outlined for the modified patch test but requires aggressive tape stripping, even scalpel scraping to the point of slight blood release. However the selection and preparation of the pollen antigen is not practical in the veterinary clinic.

TREATMENT

When identified, contact allergy is usually curable, as removal from the cause will result in complete resolution of signs. However if that is not possible or the owners are unable to remove the offending plant then corticosteroids are the only option.



Frequent bathing in **Natural Shampoo** or **Aloveen Shampoo** will keep the allergen load low and lessen the cortisone dose required.

Veterinarians must be aware of cross-reacting drugs and medicaments to ensure accidental re-exposure to similar chemicals does not occur.

Pentoxifylline at 10mg/kg QID has been reported to prevent clinical signs of contact allergy developing on re-exposure, but this is impractical in most circumstances.

Hyposensitisation has not been rewarding. At present the preferred cure to an atopic reaction implicated by a grass species, is to remove the offending species.

WELCOME TO DERMOCARE

Yvette Lim is our new Territory Sales Representative for NSW and ACT. Yvette has a Bachelor of Business (Marketing & Management) as well as an Advanced Certificate in Vet Nursing. If you have any Dermcare enquiries within these states please give her a call on Mob: 0418 294 961.

Sally McPherson is our NSW Sales & Marketing Consultant (B.Sc. Ed) and is helping Yvette get settled into repping as well as consulting to Dermcare about all things Sales & Marketing in NSW. If you have any Sales & Marketing, or sponsorship enquiries in NSW contact Sally on Mob: 0438 274 548.



From left Yvette Lim & Sally McPherson

Correction to last edition printing error. The dose of Cyclosporine should be 5mg/kg SID not just 5mg as was implied in the article on Eosinophilic Granuloma. We apologise for the error.

AUSTRALIAS ITCHIEST DOGS

Or as we like to refer to them
around the office, **MALASEB** Lifers.

- 1 POODLE
- 2 WEST HIGHLAND
WHITE TERRIER
- 3 COCKER
- 4 SILKY TERRIER
- 5 SHIH TZU

