TREATING PINNAL VASCULITIS
by Lori Thompson, DVM, ACVD

Vasculitis, in the truest form, means “inflammation of the vessels”. When we refer to a vasculitis in dermatology, we’re most often referring to a condition in which there is destruction of vessel walls by inflammatory cells. This destruction results in disruptions in blood flow, and finally hypoxia of the affected tissues.

Histologically, the various forms of vasculitis are classified as neutrophilic, eosinophilic, lymphocytic, granulomatous, mixed forms and cell-poor forms. The focus of this article is on the neutrophilic form that results in thrombosis and eventually tissue ischemia. The pathomechanism of most cutaneous vasculitides is presumed to be primarily a Type III hypersensitivity reaction, although Type I hypersensitivity reactions appear to be important in the initiation of the immune complex deposition in the walls of the blood vessels.

CLINICAL PRESENTATION
Vasculitis has many clinical faces. This article focuses on the ischemic necrosis of the pinnal margins, which is one of the most common forms of vasculitis. The skin covering the extremities (pinnae, tip of tail, etc) is more susceptible to cold and environmental influences. Lesions commonly begin on the apical margin of the pinnae and then begin to spread along the concave surface. A necrotic ulcer can often be found in the center of the lesion. The ulcer is often surrounded by a layer of thick scale and a rim of hyperpigmentation. In later stages, untreated areas of ulceration undergo complete necrosis (from the lack of tissue perfusion) and result in a deformed pinnal margin. There is a breed predisposition in Jack Russell Terriers, Yorkshire Terriers, German Shepherd Dogs, Greyhounds, Dachshunds, and other toy breeds (this is especially true for the vasculitides that are vaccine induced).

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Animal Dermatology Clinic expands to Auckland, New Zealand

This February, Animal Dermatology Clinic began receiving cases in Auckland, New Zealand. Dr. Danielle Hoolahan, Diplomate American College of Veterinary Dermatology and Dr. Debbie Simpson, Fellow of the Australia and New Zealand College of Veterinary Scientists will be making alternating visits to Auckland to offer regular and consistent support to local veterinarians and pet owners. Both are excited to join Animal Dermatology Clinic.

Auckland is the largest city in New Zealand with the urban population of 1.4 million with an additional 100,000 in the surrounding suburbs.

Licensing and registration of pets is required and according to 2012 estimates, there were 107,000 dogs in the Auckland area.

In the specialized area of veterinary dermatology, the Drs. Simpson and Hoolahan strive to provide the highest level of care of pets they see in our new market of Auckland.
TREATING PINNAL VASCULITIS, continued

DIAGNOSIS

Most cases of vasculitis result from antigen-antibody response. The subsequent immune complexes get trapped in vessel walls and provoke the inflammatory response (the vessel walls are really “innocent bystanders”). With this in mind, it’s important to realize that any foreign antigen (real or perceived by the immune system) can provoke this immune response. Thus, the list of potential causes includes infectious (bacteria, rickettsial, fungi, viruses), drugs, food, neoplasia, and other auto-immune diseases (lupus erythematosus, rheumatoid arthritis, etc).

Definitive diagnosis is made via biopsy and review by a dermatohistopathologist. Once the diagnosis is made, the search for the underlying etiology begins. A minimum database includes a complete blood count (with a differential), serum chemistry, and urinalysis. Infectious etiologies (such as rickettsial diseases in dogs or retrovirus diseases in cats) should be ruled out by serology. Other diagnostics such as bacterial cultures and autoantibody tests (Coomb’s, rheumatoid factor) can be considered if serology is negative. A careful history should include any recent drug therapy or vaccinations administered within the previous 4-5 months. Many of these cases end up being idiopathic, but this is of course, a diagnosis of exclusion.

TREATMENT

Treatment of pinnal vasculitis consists of correcting the underlying cause (whenever possible) and immunomodulatory drug therapy. Since we are often left with “idiopathic”, it is reasonable to start with the immunomodulatory agents. For many years, prednisone (at immunosuppressive dosages) was the mainstay of therapy for vasculitis. I prefer to start with immunomodulatory drug therapy and only progressive to immunosuppressive therapy if needed. First line treatment typically consists of a combination of oral pentoxifylline and topical tacrolimus (0.1%).

1. **Pentoxifylline**: 10 mg/kg orally every 8 hours, or 20 to 30 mg/kg every 12 hours. Pentoxifylline is a methylxanthine derivative with immunomodulatory activity. Pentoxifylline has been shown to decrease cytokine production and responsiveness of leukocytes. It also increases the deformability of red blood cells thus allowing for better perfusion of the affected tissues.

2. **Tacrolimus 0.1% (Protopic)**: Tacrolimus is related to cyclosporine. It inhibits T-cell activation and cytokine production by blocking calcineurin. This is not an inexpensive medication (a tube is typically around $165 at the time of writing these notes), but the owners will only be applying a small amount daily to the affected areas on the pinnae. This tube will last them a very long time. Owners should apply with a q-tip or wear gloves when applying to the affected area.

   If the combination of pentoxifylline and tacrolimus is not effective, immunosuppressive therapy becomes an alternative to consider. Immunosuppressive therapy often involves the use of prednisone and azathioprine, chlorambucil, or cyclosporine. Another alternative is to try a combination of doxycycline or minocycline along with niacinamide and high dose fatty acid therapy as outlined below.

3. **Doxycycline/Minocycline and Niacinamide**: Dogs less than 10 kg receive 250 mg of niacinamide orally every 12 hours. Dogs greater than 10 kg receive 500 mg of niacinamide every 12 hours. Doxycycline is administered at 5 mg/kg every 12 hours or minocycline can be used at a dose of 5-8 mg/kg every 12 hours. Once remission is achieved, the frequency of administration can be tapered to the lowest effective dosage. Vomiting, diarrhea, and anorexia are the most frequently reported adverse events. This can be used in combination with high levels of fatty acids for a synergistic effect.

4. **Essential fatty acid therapy**: Dosage is most frequently based on EPA (eicosapentaenoic acid) content. 20 mg/kg/day is the most commonly used dosage. Hill’s J/D diet is an excellent source of high-level fatty acid supplementation.

   Patience is key with pinnal vasculitis. Many can be difficult to control and different therapeutics may need to be attempted, especially if the diagnosis is that of idiopathic pinnal vasculitis. It is important to educate the owners that this is not a quick fix and may take 3-4 months to get under control. From that point forward, life-long therapy may be warranted.

REFERENCES AND RECOMMENDED READING


About Dr. Thompson: Dr. Lori Thompson received her BS in Industrial Psychology in 1992. After receiving her DVM from Purdue University in 2000, Dr. Thompson practiced small animal medicine for one year before her love of dermatology led her to complete a 3-year residency in veterinary dermatology. Dr. Thompson continued practicing as a board-certified veterinary dermatologist at a local specialty hospital until joining Elanco Animal Health in September 2007. She served as a Veterinary Technical Consultant and helped launch the Companion Animal Health division. Dr. Thompson opened Animal Dermatology Clinic Indianapolis in October 2009.

www.animaldermatology.com
2014 U.S. Pet Industry Expenditures Estimated at $58.5 Billion:
Pet services and items continue to sell

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Americans continue to spend on their pets to maintain the upward trend of expenditures for all pet related services and products. The graph above represents money spent for all pets: small animal, birds, fish, horses and of course, dogs and cats. Costs captured in the graph includes medical care, grooming, food, toys and pet insurance.

The American Pet Products Association, a not-for-profit trade association serving the interests of pet product manufacturers and imports has provided the data through various market research sources. In 1994 combined pet expenditures was recorded at $17 billion, in 2008 that number reached $43.2 billion and the estimated expenditures for 2014 is an eye popping $58.51 billion.

Even during the last recession, growth slowed but exceeded the previous year’s number and revealing that some pet owners were willing to forgo personal wants to maintain the needs of a pet. Pets are increasingly becoming a member of the family and care of those pets mirror the care of a child in the household. A nearly endless array of amenities, products and services are available for pet owners to open their wallets from basic to over-the-top items.

No indication was made of predictions if numbers will plateau or if so, when, if ever.
What’s Your Diagnosis?

This case is a 3-year-old male neutered Shih tzu with an acute history of blepharitis with progressive skin erosion and ulceration over a 2-week period. The patient was moderately painful and pruritic to the face and periocular areas necessitating a collar to prevent self-trauma. There had been no history of previous skin disease or use of any oral or topical medications prior to the onset of lesions. The patient had no response to clindamycin, anti-inflammatory dosages of prednisone and tramadol. There were no other lesions on the rest of the body. Cytological impression smears showed a mixed inflammatory infiltrate consisting of neutrophils, macrophages, plasma cells and lymphocytes. No infectious organisms were noted. You appropriately decide to biopsy this patient. What are your top three differential diagnoses and what additional diagnostics including special stains and cultures would you request for this patient?

Histopathology revealed a mixed pyogranulomatous reaction pattern that would be consistent with either infectious etiologies or sterile type tissue reactions. Tissue cultures (both aerobic and anaerobic) that would be appropriate were negative as were PAS and Acid Fast stains on the biopsy samples. These results with the lack of organisms seen on cytological examination would support a diagnosis of idiopathic sterile pyogranulomatous dermatitis. It has been speculated that an immune dysfunction or aberrant response to unidentified infectious agents or antigens from infectious agents may initiate the response. The lesions are usually firm, painless, nonpruritic dermal papules, plaques, and nodules however they may become alopecic, ulcerated, and secondarily infected. Lesions are usually multiple and typically affect the head (especially bridge of the nose, muzzle, and periocular region), pinnae, and paws. Immunomodulatory therapy including doxycycline/niacinamide, prednisone or other glucocorticoids and in refractory cases medications such as cyclosporine, azathioprine or chlorambucil may be needed to achieve remission and long-term control. Other differentials for this presentation would include erythema multiforme, TEN, cutaneous adverse drug reaction, or numerous infectious etiologies (bacterial, fungal, mycobacterial) allowing for pyogranulomatous tissue reactions. This patient responded partially to prednisone at 1.5 mg/kg BID but began to relapse as the drug was tapered. Cyclosporine (Atopica) was added into the regimen at 5.5 mg/kg per day which allowed for complete remission. The prednisone was tapered and discontinued and the patient is maintaining well on alternate day Atopica.  

(Case submitted by Rusty Muse, DVM, ACVD)