Ocular Neoplasia

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Neoplasia affects virtually every tissue of the eye and while many tumors can be found elsewhere in the body, several types of cancer have specific features found only in and around the eye. Forms of neoplasia vary from discreet masses of ocular tissue (i.e limbal melanoma) to diffuse cellular infiltrate (i.e. feline iridal melanoma) or extensions of systemic disease (i.e. lymphosarcoma).

Eyelids
Eyelid masses are common in older dogs and are typically benign proliferations involving the meibomian glands (adenoma, papilloma, epithelioma). However, more aggressive masses of the skin should be ruled out. Possibilities include melanoma and mast cell tumors in both dogs and cats and squamous cell carcinoma in cats. Fine needle aspirate can help make the distinction so that recommendations for monitoring (watch and wait) or surgery can be made. Surgery should be recommended if the mass is contacting the globe causing irritation or ulceration or if the size approaches 1/3 of the length of the eyelid. Masses that exceed this length cannot be removed with a simple wedge resection or debulking and adjunctive cryotherapy. Advanced reconstructive surgery to preserve functional lid margin is often necessary.

Nictitating Membrane
Masses of the third eyelid are more common in older animals and must be distinguished from prolapse or cysts of the third eyelid. The large pink swellings that involve the gland of the third eyelid can be alarming to owners regardless of malignancy, especially when the appearance is sudden. The most common types of cancer of the third eyelid in the dog are papillomas, adenocarcinomas and malignant melanomas. Lymphosarcoma has also been reported, both as an extension of systemic involvement and as a focal, isolated primary mass. While excision is curative for papillomas, the adenocarcinomas and melanomas run a higher risk of local recurrence after surgery as well as distant metastasis. Surgery for adenocarcinomas and melanomas often involves removal of the entire third eyelid to achieve margins. Conjunctival tissues can be closed with 5-0 to 6-0 absorbable suture.

Cornea and Conjunctiva
Corneal neoplasia is rare in the cat and dog and masses of tissue that appear on the cornea are more commonly granulation tissue in response to a chronic ulcer, a perforation (with possible iris prolapse) or an immune-mediated proliferation of tissue such as pannus in the dog or eosinophilic keratitis in the cat. While a biopsy of the corneal tissue may be necessary to differentiate the benign diseases from a cancerous process such as squamous

cell carcinoma, medical treatment is often initiated first. If an ulcer is suspected, antibiotics and lubrication coupled with sterile swab debridement should be initiated. If no ulcer is present, a trial of topical steroids or Tacrolimus 0.03% can quiet the corneal inflammation. If no improvement occurs, biopsy should be recommended.

Limbal (epibulbar) melanoma is a benign pigmented lesion that appears at the junction of the sclera and the cornea. If this can be distinguished from extension of an intraocular melanoma, monitoring for growth is an appropriate approach. If the lesion grows quickly, surgical excision (using a scleral graft if the lesion is deep) with adjunctive cryotherapy or diode laser therapy can be curative.

Nodular Granulomatous Episcleritis (NGE) is actually an immune-mediated process but it is often confused with neoplasia. Patients present with pink, elevated, fleshy masses at the limbus and Collies, Cocker spaniels and Shetland Sheepdogs show a predisposition. Biopsy is consistent with chronic inflammation (histiocytes, lymphocytes and plasma cells). Treatment involves topical and oral steroids and occasionally additional immunosuppressing agents including Azothioprine and Cyclosporine as recurrence is common.

Iris

Neoplasia of the iris differs significantly between dogs and cats. In canine patients, masses in the iris and ciliary body most commonly include benign adenomas, adenocarcinomas or melanomas. They tend to be slow growing and have less than 4% chance of metastasis. In light of the low rate of metastasis and the complications of attempted mass removal, most owners opt for monitoring. However, sudden rapid growth, hyphema, secondary glaucoma would warrant a recommendation for enucleation after chest radiographs and abdominal ultrasound. Should owner elect to remove the mass, uveal surgery can include extraction through an incision in the cornea or sclera, cryosurgery or laser surgery. Complications such as hemorrhage or retinal detachment are higher when uveitis was present prior to surgery.

In contrast, iris melanoma in the cat can be an aggressive, invasive tumor with a metastatic rate reaching 65%. While there are histopathology findings that correlate with likelihood of metastasis (iris stroma invasion or invasion of the scleral vessels), the disease lacks concrete clinical findings to help owners decide when to remove an eye with pigment changes. Rules of thumb include raised nature of the pigmented lesions, distortion of the pupil shape and movement, or secondary glaucoma. In select cases with focal, discreet lesions, diode laser photocoagulation can be used to shrink the lesions and halt regrowth.

Lens

Feline Ocular Sarcoma involving the lens is the second most common neoplasia in the feline eye. This tumor is both locally invasive (often extending to the optic nerve) and highly metastatic. It is believed that a traumatic injury to the lens causes a malignant transformation of the lens epithelium. Average time from the trauma to the time of tumor detection is 5 years. If a cat presents with a penetrating ocular trauma involving the lens, early enucleation should be offered. If a cat presents with a mass-like lesion involving the lens, enucleation following a metastatic check including chest radiographs, abdominal ultrasound and lymph node aspirates should be recommended.

Orbit

Orbital neoplasia patients present with evidence of a space-occupying lesion behind the globe including anterior displacement of the globe (exophthalmos), pain on opening the jaw or elevation of the third eyelid. A thorough oral exam should be performed to rule out swelling of the roof of the mouth or the soft tissue behind the last molar. Further diagnostics such as skull radiographs, orbital ultrasound, fine-needle aspirate or MRI are then useful to rule out an abscess or mucocele and to determine type of cancer and extent of the disease. Without this information, prognosis and treatment plans cannot be accurately offered. If owners decline diagnostics, a course of antibiotics and anti-inflammatories can be instituted for 2-4 weeks with recommendation to pursue further diagnostics if signs return after cessation.

Approximately 90% of feline orbital tumors are malignant (often epithelial in origin) so when a cat presents with suspicion of a mass around the globe, it is important to differentiate neoplasia from a retrobulbar abscess or rare mucocele. Fine needle aspirate, ultrasound and MRI may be the most useful modalities to determine whether treatment options are available.