Focus

Eye, Eye! Corneal Wound Healing in Diabetic Patients

An 8-year-old spayed Shih Tzu was presented with a 1-week history of ulcerative keratitis in the right eye. Diabetes mellitus was diagnosed 3 months earlier and was reasonably well controlled. A referring veterinarian prescribed liquid paraffin ointment and fusidic acid drops, but the eye worsened. Ophthalmologic examination revealed a large paracentral melting corneal ulcer extending to 50% of the corneal depth. Chemosis, reflex uveitis with mitosis, and blepharospasm were present. Corneal scrape revealed degenerate neutrophils with a mixed bacterial population. Schirmer tear test revealed low tear production in the left eye; it was not measured in the right eye.

Initial treatment included bandage contact lens placement and topical ophthalmic drops (ie, autologous serum, chloramphenicol, ofloxacin) OD q2h; atropine sulfate drops OD q12h on day 1, then q24h; liquid paraffin OU q12h; cyclosporine 0.2% OS q12h; oral oxytetracycline and carprofen; and Elizabethan collar placement. The right eye responded to treatment, but the deep corneal stromal defect remained. A corneaconjunctival transplantation graft was performed; the dog was discharged on the same medication regimen, with atropine reduced to q48h and cyclosporine given OU q12h. The graft was stable and fully vascularized 7 days postoperatively. On day 28, the eye was visual, corneal scarring and pigmentation was moderate, and tear production was normal bilaterally. Aggressive multimodal treatment aimed at inciting causes, paired with timely surgical intervention, was critical in saving the eye.

■ Commentary
This case illustrated the potential difficulties a diabetic patient can have with corneal wound healing. Corneal innervation may be impaired and corneal sensitivity decreased, which may delay healing when a corneal ulcer develops. This is worse in brachycephalic animals that have decreased corneal sensitivity. In addition, diabetic patients may not exhibit the same degree of discomfort with a corneal injury as nondiabetic patients, leading to delayed presentation and more advanced disease at diagnosis. Also, keratoconjunctivitis sicca (common in diabetics and brachycephalic breeds) should be a consideration whenever a diabetic (or brachycephalic) patient presents with a corneal problem. Impaired corneal sensitivity, keratoconjunctivitis sicca, and a propensity for infection can lead to a corneal ulcer and can have disastrous consequences.

Initial microbiological cytology culture and sensitivity results would not have informed the choices of drugs used empirically; however, these tests are still warranted and should be considered. If an ulcer fails to stabilize or the clinical response with initial medical therapy is not as expected, different antimicrobial medications are needed. Laboratory results, if available from the initial evaluation, can allow for directed therapy, and this is especially important for patients prone to infections.—Caryn E. Plummer, DVM, DACVO

■ Source

Copper: Not Enough or Too Much

The Labrador retriever has a genetic predisposition to copper-associated hepatitis (CAH). Affected dogs accumulate copper in the liver to levels that (untreated) can cause liver cirrhosis. The most common treatment is chelation therapy with the metal chelator d-penicillamine, which promotes copper excretion in urine and can be used for long-term treatment. Many dogs, however, develop adverse effects (eg, anorexia, vomiting, copper and zinc deficiency).

This study aimed to determine if nutritional management could be used as an alternative treatment for CAH. Labrador retrievers (n = 16) previously treated successfully with d-penicillamine were put on a low-copper (1.3 ± 0.3 mg/1000 kcal) and high-zinc (64.3 ± 5.9 mg/1000 kcal) diet. Copper levels and histological samples were evaluated via liver biopsy every 6 months, as were alkaline phosphatase, alanine transaminase, and serum albumin levels. Twelve dogs maintained hepatic copper concentration below 800 mg/kg dry weight liver on the diet; 4 dogs required retreatment with d-penicillamine. A low-copper and high-zinc diet can be an effective therapy for CAH, but long-term monitoring protocols must be in place as the reaccumulation rate of copper in individual dogs varies. Study supported by Royal Canin

■ Commentary
CAH has become a more widely recognized primary and secondary disease. Nutritional versus medical management aside, the biggest take-home from this study is that we should repeat biopsies in dogs with CAH to monitor their therapy. A large amount of individual variation to therapy was documented—and this was just within one breed. Owners and veterinarians are often reluctant to collect a biopsy a second, let alone a third, time, but we do our patients no service by committing to a chronic course of therapy without follow-up.—Jessica Markovich, DVM, DACVIM (SAIM)

■ Source