Diabetes and Its Effect on Ocular Health

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Diabetes is a very prevalent disease in our canine and feline populations. For unknown reasons, cats rarely develop any ocular consequences of diabetes, but complications are common in canine diabetics.

**Cataract formation**
Cataracts are common in diabetics due to shunting of glucose into the lenticular aldose reductase pathway resulting in insoluble sorbitol accumulation and an osmotic gradient drawing fluid into the lens.

**How big is the risk?**
Some dogs will have cataracts at diabetic "onset" 75% diabetic dogs will get cataracts within 1 year, 80% within 18 months.¹ No effect of gender or age, but nonsporting dogs (brachycephalic and sharpei) and terriers may progress more rapidly.

**Clinical presentation:**
- most likely: Diabetic, sudden onset vision loss (loss of menace, bumping into things), bilateral mature intumescent (swollen) cataracts (no tapetal reflection), PLR/dazzle intact.
- possibly: signs of inflammation - conjunctival hyperemia, discomfort, discharge, fibrin/pigment on lens - UVEITIS? Lens capsule rupture is possible with rapid intumescence, resulting in significant uveitis. Mild lens induced uveitis also possible with non-ruptured cataracts.
- worst-case: retinal detachment or secondary glaucoma bc of preceding inflammation - poor surgical candidates.

**What to do**
- Start topical NSAIDS (flurbiprofen, diclofenac etc.), frequency related to severity of diabetes (not steroids)
- Stabilize diabetes as much as possible
- Control any ancillary disease - Cushings, UTI, dental disease, ear disease, etc.

If surgery is not an option (financial etc), continue to control lens-induced uveitis with topical NSAIDs indefinitely. Monitor regularly with IOP to check for secondary glaucoma. Prognosis for vision poor.

**Surgery outcomes**
85–95% success rates published, but relatively short-term follow-up (6–12 months)
Posterior capsular opacification (cataract "regrowth) risk unknown. Big risks post-surgery are glaucoma and retinal detachment. Smaller risks of infection, wound dehiscence, corneal disease, other complications
The future is bright

Corneal disease and dry eye
Proposed mechanism = corneal neuropathy leading to reduced corneal sensation and reduced reflex tearing.
Post-phacoemulsification KCS incidence in diabetics = 35.7%
Diabetic dogs have reduced corneal sensitivity.

What to do
Tear supplementation - never a bad idea - genteal gel/ointments
regular monitoring of STT
consider cyclosporine
  if persistently (or progressively) low STT or
  if <10mm/min or
  if clinical for KCS (keratitis, discomfort, discharge)
Beware diabetic ulcers - glucose rich tears!

Lipid and the eye
Diabetics at increased risk of hyperlipidemia. Ocular consequences include uveitis (lipid aqueous), corneal disease (lipid keratopathy).

Diabetic ocular neuropathy
Neuropathies are usually subclinical. Horner's syndrome may have an increased incidence in diabetics.

Diabetic retinopathy
Although this is a very common complication in people, companion animals rarely develop retinal complications of diabetes related to microvascular disease.

References