

Diagnostic Ophthalmology

Ophthalmologie diagnostique

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History and clinical signs

A 2-year-old, female, coton de Tulear dog was referred to the ophthalmology service at the Western College of Veterinary Medicine. The menace responses, and the palpebral, oculocephalic, and direct and consensual pupillary light reflexes were present in both eyes. Schirmer tear test (Schirmer Tear Test Strips; Alcon Canada, Mississauga, Ontario) values were within normal reference ranges in both eyes. The intraocular pressures were estimated with an applanation tonometer (Tonopen XL; Biorad Ophthalmic Division, Santa Clara, California, USA) and found to be within the lower normal reference ranges. The pupils were dilated with tropicamide (Mydracil; Alcon Canada, Mississauga, Ontario). Biomicroscopic (Osram 64222; Carl Zeiss Canada, Don Mills, Ontario) and indirect ophthalmoscopic (Heine Omega 200; Heine Instruments Canada, Kitchener, Ontario) examinations were completed. The caudal segments of the each eye were photographed and they were similar. The photograph of the left fundus is provided for your assessment (Figure 1). What are your clinical diagnoses, therapeutic plan, and prognosis?

Discussion

Our ocular diagnosis was multifocal bullous retinopathy of coton de Tulear dogs. This retinopathy is a unique developmental disorder of these dogs and the etiology is currently unknown. This disorder is likely inherited; we are currently examining a pedigree and test bred litters of these dogs. The age of manifestation is also unknown, although we have confirmed coton puppies to be affected with lesions as young as 4 mo old (1). The fundi of affected dogs have some similarities to those in Great Pyrenees retinopathy. Both conditions manifest with focal serous retinal detachments at a young age. However, Great Pyrenees retinopathy manifests with retinal pigment epithelium (RPE) detachments, which have not been documented in coton de Tulear dogs (2,3). Fluorescein angiography has confirmed that the blood ocular barriers are intact in affected dogs. The serous detachments of coton de Tulear dogs are often extensive, and the bullae extend into the vitreous, and involve significant areas of the tapetal fundus. However, discernable effects on vision of affected dogs have not been documented. Photopic and scotopic electroretinography of affected and age-matched control dogs are similar (1).

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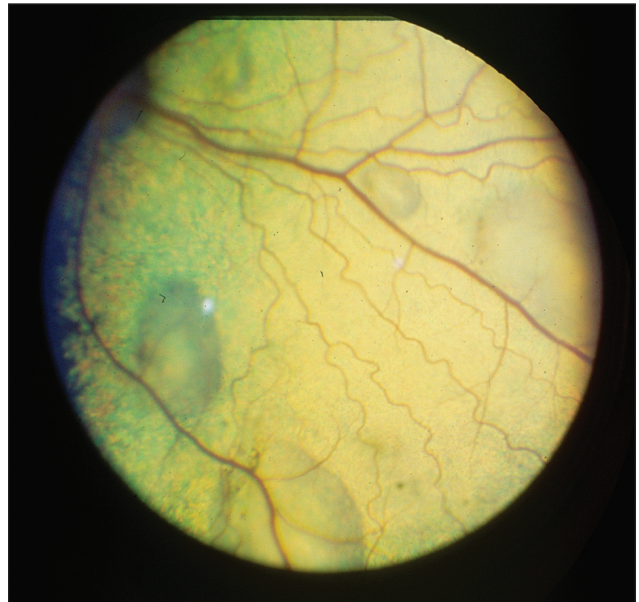


Figure 1. Photograph of the left fundus of a 2-year-old female coton de Tulear dog.

The differential diagnoses include multifocal exudative detachments, secondary to infectious uveitis due to *Blastomyces* spp., *Cryptococcus* spp., and other infectious organisms; metastatic neoplasia; and serous detachments, secondary to systemic hypertension. Exudative retinal detachments involve inflammation and breakage of the blood ocular barriers and may manifest with aqueous flare, uveal hemorrhage, and cellular and protein infiltration into subretinal fluid within detachments. These result in opaque detachments and leakage of fluorescein will be present in angiograms, which is not present in affected coton dogs. Exudative detachments are progressive and are usually accompanied by systemic signs, as the primary disease often involves other body systems. The etiologic diagnosis is usually confirmed by serologic, cytologic, and histologic examinations. Metastatic neoplasia also manifests with exudative retinal detachments and progressive physical debilitation. The confirmation of the diagnosis of metastatic neoplasia involves physical examination, diagnostic imaging, serology, fine needle aspiration and cytologic examination, and biopsy with histologic examination. Metabolic disorders that induce systemic hypertension also induce multifocal serous retinal detachments; however, they are usually accompanied by multifocal retinal hemorrhage and systemic signs of the primary metabolic disorder (renal, endocrine). The diagnosis of hypertension is confirmed by examination of

the systolic and diastolic blood pressures, followed by confirmation of a systemic abnormality that induced the hypertension. Occasionally the hypertension is idiopathic.

Systemic abnormalities have not been detected in affected coton de Tulear dogs and therapy is not currently available. They also represent excellent animal models to investigate the pathophysiology and therapy of serous retinal detachments.

References

1. Grahn BH, Sandmeyer LS, Breaux CB. Retinopathy of coton de Tulear dogs. *Proc Am Col Vet Ophthalmol* 2005;36:20.
2. Grahn BH, Philibert H, Cullen, CL, Houston DM, Schmutz S. Multifocal Retinopathy of Great Pyrenees. *Vet Ophthalmol* 1999;1: 211–221.
3. Grahn BH, Cullen CL. Great Pyrenees Retinopathy: Fluorescein angiography, light microscopy, transmitting and scanning electron microscopy. *Vet Ophthalmol*, 2001;4:191–199.

Answers to Quiz Corner Les réponses du test éclair



1. c) Urine is high in potassium and low in sodium and chloride, therefore serum reflects these changes as it equilibrates with the retained urine.
c) La teneur de l'urine en potassium est élevée, alors qu'elle est faible en sodium et chlorure. Ainsi le sérum reflète ces valeurs puisqu'il s'équilibre avec l'urine qui est retenue.
2. e) The other conditions listed require time to develop.
e) Les autres problèmes énumérés prennent plus de temps à apparaître.
3. d) *M. ovinus*, often referred to by owners as the sheep tick, is actually a wingless fly.
d) *M. ovinus*, souvent appelé le poux du mouton par les propriétaires, est en fait une mouche sans ailes.
4. b) The abomasopexy should reposition the organ in its normal anatomic position (the greater curvature of the body should be adjacent to the ventral abdominal wall).
b) L'abomasopexie a pour but de replacer l'organe dans sa position anatomique normale (la grande courbure doit être adjacente à la paroi abdominale ventrale).
5. d) Idiopathic laryngeal hemiplegia is the most common disease producing these signs.
d) L'hémiplégie laryngée idiopathique est l'affection la plus commune causant ces signes.
6. c) Alkalinization from sodium bicarbonate administration shifts ionized calcium to the bound (non-ionized) form of calcium. The total serum calcium level is not affected, but the level of ionized calcium is reduced.
c) L'alcalinisation provenant de l'administration de bicarbonate de sodium change le calcium ionisé en forme liée (non ionisée) du calcium. Le taux total de sérum n'est pas affecté, mais il y a réduction du taux de calcium ionisé.
7. a) The adult cat has 30 teeth.
a) Le chat adulte possède 30 dents.
8. d) Portosystemic shunts typically have minimal effect on serum bilirubin levels or enzyme activities.
d) Le shunt portosystémique a de façon caractéristique un effet minime sur le taux de bilirubine sérique ou sur l'activité enzymatique.
9. d) The mandibular artery is ligated as it enters at the caudal end of the mandible, medially.
d) L'artère mandibulaire est ligaturée lorsqu'elle passe médialement à la portion caudale de la mandibule.
10. e) Delayed closure of this wound would minimize scarring. Débridement and leaving the wound open until a healthy bed of granulation tissue develops would minimize infection.
e) Le fait de retarder la fermeture de cette plaie réduirait au minimum sa cicatrisation. Le débridement et le fait de laisser la plaie ouverte jusqu'à ce que du tissu de granulation sain se développe diminuerait grandement les risques d'infection.