Diagnostic of the Retinal Inflammatory Status in Dogs and Cats Through Indirect Ophthalmoscopy Technique

Alina DONISA, Aurel MUSTE, Florin BETEG

University of Agricultural Sciences and Veterinary Medicine
Calea Mănășturi 3-5 Cluj-Napoca, donisaalina@yahoo.com

Abstract. The purpose of this study was identification of the retinal inflammatory process and establishing his aggressively and possible complications. Combining all the results we try to establish a prognostic of the diseases too, a very important aspect for the next step in diseases development.

Our study material contained 97 dogs and 86 cats, by different breed, age and sex and last 2 years (2007-2009).

The obtained results show that retinopathy process starts his evolution with an inflammatory process and continue until the final level: retinal detachment. Of course, the symptoms is different, the animal vision evolutes by normal to blind.

We used indirect ophthalmoscopy technique and indirect ophthalmoscope Heine Omega 2C.

Key words: dog retina, animal retinopathy

INTRODUCTION

Is well knowing the fact that animal retinopathy is classified in two groups by etiology: congenital retinopathy (4 in dogs and 2 in cats) and retinopathy generally unknown(idiopathic ).

On the ophthalmoscope examination, the inflammation situated on retinal epithelium appear with change of color (the existence of some darker or contrary, lighter areas), retinal scars and changes of the retinal shape and surface.

MATERIALS AND METHOD

In the present study, the material used is composed by animals from canine and feline species; we used 97 dogs and 86 cats, by different breed, sex and age. In both groups the population was composed by subjects with all ages (young age, middle age, old age).

The examination was made in Surgery Clinic from Veterinary Medicine Faculty from Cluj, and in private veterinary clinic (Sanvete).

We exam all animals, with or without ocular symptoms.

In the canine species, 26 dogs from 97dogs tacked in the study were considerate young animals with the age 1 year or less, and the rest of 71 dogs had the age between 1 year and 16 years and became in that way the other group.

In the feline species, with 86 cats, 24 cats had the age 1 year or less, and 62 cats had the age between 1 year and 13 years, all cats were divided in two groups: young and adults.

Indirect ophthalmoscopy technique in dogs and cats results from the method principle, obtaining finally an real and upside imagine.

The principle of this method is the examination of animal ocular globe, an examination made with indirect ophthalmoscope (with light source and video camera
incorporated) and with a lent between examiner (ophthalmoscope) and patient. The lent is not incorporated in ophthalmoscope so, in the time of examination she must be hold with a hand by the examiner. The lent dioptically power is 20 D and we can obtain 4-5x magnification field of view. This lent must be settle at 4-5 cm from the patient eye and at 0.5 - 0.75 m from the examiner (this in an advantage for the examiner because he keep distances from the animal).

The obtained image by indirect ophthalmoscopy is real and upside down. In the present study, all patients have been examine with ought tranquilization, the contention was mad in a good and comfortable position for the animal and examiner too. To every patient we administrated tropicamide 1% for pupil dilatation with 20 minutes before the examination. To do ophthalmoscopy examination, all the patients have been taken in a especially dark room, used in that purpose.

The next step is the ophthalmoscopy technique, where the examiner take the lent with one hand and put her between light source and animal, at the same distances as we are talking before. Then with easy movements nearly and beyond, he, will show the tapetal reflex of the posterior pole, than very carefully, with ought losing tapetal reflex, he will move the lent until will obtain a generally view of eye fundus (retina, optic disc, chorioids). The image obtained can be generally or can follow in particularly different aspects as vascular aspect, optic disk aspect or retinal endothelium aspect.

RESULTS AND DISCUSSIONS

After the ophthalmoscope exam in both species, we find retinal lesions from inflammatory process category (retinitis and chorioretinitis) and retinal epithelium form and aspect modifications like scars and finally retinal detachment.

The symptoms are different and depend by process evolution, missing In simple cases of retinal inflammations but with blind in case of retinal detachment. In dogs with age 1 year or less, we did not find cases of hereditary retinopathy or other forms of retinitis, although they presents clinical signs of conjunctivitis: epifora, conjunctiva congestion, small deposit in internal eye angle with ought visual impairment.

In all cases the prognostic is favorable, the animal get his comfort back after an treatment protocol who interest the inflammatory or eventually microbial process.

At the adults subjects, from 97 cases, in 48 dogs we find pathological process in different develop status. (tab.1).

<table>
<thead>
<tr>
<th>Nr. crt.</th>
<th>Species</th>
<th>Ophthalmoscopic Diagnosis</th>
<th>Number of diagnoses animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>canina</td>
<td>Retinal hemorrhage</td>
<td>16</td>
</tr>
<tr>
<td>2.</td>
<td>canina</td>
<td>Chorioretinites</td>
<td>21</td>
</tr>
<tr>
<td>3.</td>
<td>canina</td>
<td>Retinal detachment</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>canina</td>
<td>Retinitis pigmentosa</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Total animals</td>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>
In the studied cases from 48 dogs with retinal modifications, a number of 16 dogs had the diagnostic retinal hemorrhage, and represents 33.33%.

Ophthalmoscope symptoms: in the eye fundus imagine we observe a spot (fig.1), localized at the periphery, characterized by a big area, with dark red up to brown color, in this portion the vascular process is no more distinguish, we see only darkness or lightest spots with ought a well vascular area.

The form of the modification is different, generally is oval or round, with irregular borders and the surface can be homogeny when the exam is made immediately after the beginning of the process, or the surface can be heterogeneous with interruption of the retinal epithelium and other color signs when the ophthalmoscopic exam in made after a long time since the beginning. Tapetum lucidum and optic disk are with ought modifications.

From 48 dogs, with retinal modifications, 21 dogs (45.75%) were diagnostic with chorioretinitis.

Ophthalmoscope signs: the image differ from the level of the diseases: in chronic chorioretinitis we see a tapetum hiperreflectivity, with the loss of blood vessels in the affected area, the appearance of a darker zones by different size(fig.3), generally localized at the periphery.

In acute chorioretinitis, although we see tapetal hiperreflectivity and the loss of vessels, exists some lighter zones, with a defined darker border(fig.3).

On 14, 58% dogs with retinal modification, we find retinal detachment.

Ophthalmoscope signs: retinal detachment appear like waves. In fig.4 and 5 the affected area is situated at the periphery, with large size, with a border finished suddenly.
A small percent, 8.33% is represented by the dogs with retinitis pigmentosa.

Ophthalmoscope signs: the retinal field is lighter, with ought pigmentation, yellow grey color, the optic disk have a pale color, like wax, with velvet border and blood vessels appear thin.

At the retinal periphery we find black spots, pigment deposit, sometimes appear fine other times appear dense. Most of the time this spots are dispose on the vascular way and form a pigmentation robe.

In the feline species, in our study, none of 24 cats with age less that 1 year presented hereditary retinopathy, but all of them had modification of the anterior ocular pole generally conjunctivitis.

We didn’t find eye fundus modifications.

In the adult cats (1-13 years) from 62 in totally, at 22 of them we don’t identifiedeye fundus modifications, but at 40 cats we find retinal hemorrhage, chorioretinitis and in one cases vitreous hemorrhage.

Tab. 2

<table>
<thead>
<tr>
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<th>Species</th>
<th>Ophthalmoscope diagnoses</th>
<th>Number of diagnoses animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>felina</td>
<td>retinal hemorrhage</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>felina</td>
<td>Corioretinitis</td>
<td>19</td>
</tr>
<tr>
<td>3.</td>
<td>felina</td>
<td>Vitreous hemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>
From all 27 cats taken in this study, 8 cats had retinal hemorrhage diagnostic, meaning 29.62%.

Ophthalmoscope signs: we observed vascular way irregularities, the blood vessels are winding, the vessels caliber is not the same on the way, in some regions the caliber is small, and in other the vessels have ectasie(fig.7) and the blood is away from the vascular tissue for a big area. In fig.7. we observe small hemorrhage areas, with dots forms, but we find and big hemorrhage areas like spots.

![Fig.7.Retinal hemorrhage.](image)

A 39.53% of the cats with retinal modification, had chorioretinitis.

Ophthalmoscope signs: we see a round zone, with a dark red bourbon color, the inside is transparent. in that area we can’t distinguish the blood vessels, because them avoid the affected area.

![Fig.8.Chorioretinitis](image)

From 27 cats in our cases In one cat we find vireos hemorrhage.

Ophthalmoscope signs: we can’t distinguish eye fundus components, but in the vitreous room we find hemorrhage (the clods float in the vitreous like cotton wool, but we saw hemorrhage too).
In 33, 33% off 48 dogs, in our study, and 29, 62% off 28 cats have been diagnostic with retinal hemorrhage.

The retinal hemorrhage appear because of the hypertensive Syndrome (in cats), in dogs appear because of the renal and thyroid disorders

Clinically, the animal vision is not affected, the owner don’t see move impediments and the animal pass the improvised testes who include a few obstacles.

The inflammation of the retina and choroid has a few stages: acute, sub acute, chronically and degenerative.

Acute chorioretinopathy are associated in dogs with Carre disease.

Chronically chorioretinopathy appear because of the existing viruses, parasites or autoimmune diseases.

Usually these diseases are followed by clinical signs: uveitis, keratoconjunctivitis or glaucoma .The visual acuity of the patients recede.

In our study we find in dogs retinal detachment (7subjects) who appear because of untreated chorioretinitis or in an advanced stage of: glaucoma, intraocular neoplasm.

Clinically the animal loss progressive their vision, depending by the affected area, so, at first appear the loss of peripheral vision and after blindness.

We find 4 cases of retinitis pigmentosa, from 48 dogs, is a modification with congenital character, but appear in other cases like: infection diseases, diencephalohipofizar lesions, old age (senility).

Clinically the animal have visual impairment and may present anterior ocular pole disorders.

At the unique case of vitreous hemorrhage in a cat, the etiology is Systemic Hypertensive Syndrome, and the prognostic is not favorable because the animal loss his vision with ought any chance to taken back.,

CONCLUSIONS

1. Indirect ophthalmoscopy is a basic method in diagnostic of all eye fundus disorders including inflammatory stages.

2. In the present study we didn’t find eye fundus modifications at the patients with age under a yeare.

3. From 48 dogs with eye fundus modifications, 21 of them had retinal inflammatory processes like chorioretinitis.

4. From 28 cats, with eye fundus modifications, 19 of them had a retinopathy characterized trough chorioretinitis.

5. Just 4 dogs from 48, had retinitis pigmentosa , one of the cause of the disease is congenital.
6. Vitreous hemorrhage is an uncommon disease, in our study we find only one cat with this disease.

REFERENCES


