

## **DYNAMICS OF THE NORMAL ASPECT OF TAPETUM LUCIDUM AT DOGS REGARDING AGE**

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### **Summary**

The study purpose was to show the normal dog eye fundus status started with young age, to intercept the evolution and development of tapetum lucidum and make correlation directly with age.

Our observation were made on two lots (first one with age between 15-90 days and the second one with age between 13 month-16 years) of dogs, total number of bottoms was 80. To intercept the appearance, development and evolution of tapetum lucidum the eye fundus examination was made after (following) a certain protocol: for the first lot we made eye fundus examination weekly and for the second one eye fundus examination was made sporadically.

Our observation reveal that the dog tapetum lucidum can't be seen in the first life period (1-35 days), his appearance is after this age. The tapetum lucidum prominence is around 40-a day, like zones of different colors, different granulation, uniform or with ought forms. We must mention the fact that after his appearance, tapetum lucidum suffer aspects and color modifications until the age of 90 days when we saw a stabilization of those elements and tapetum lucidum stops his finalization and became definitive.

The examination use indirect ophthalmoscopy method with indirect ophthalmoscope Heine Omega 2C.

**Key words:** tapetum lucidum, animal eye fundus, dog retina.

### **Materials and methods**

Our observation was made between 2007 - 2009 at the Surgery pathology Clinic from FMV Cluj, on 80 dogs by different breeds, sex and age. Eye fundus exam was made at the age of 15 days until age of 16 years. All 80 dogs were spread in 2 lots, on age criterion. The first lot is composed by 41 subjects with age between 15-90 days, and the second lot is composed by subjects with age between 3 months and 16 years. All the subjects from this study were healthy ophthalmological speaking their complains at Surgery Clinic were different, like fracture and luxation. Eye fundus exam at the first lot was made weekly immediately after the palpebrale span, and continue until age 90. At the second lot, eye fundus exam was made sporadically at different time periods.

The examination use indirect ophthalmoscopy technique: 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 dioptrically 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 imagine by indirect ophthalmoscopy is real and upside down.

In the present study, all patients have been exanimate with and with ought tranquilization, the contention was mad in a good and comfortable position for the animal and examiner too. To every patient we administrated atropine 1% for pupil dilatation with 30 minutes before the examination. To do ophthalmoscopy examination, all the patients have been taken in an 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, choroids). The obtained image can be generally or can fallow in particularly different aspects as vascular aspect, optic disk aspect or retinal endothelium aspect.

### **Results and discussions**

The obtained results at both lots are presented like pictures captured with ophthalmoscope video camera.

At the lot I, the first's examination was made at the age of 15 days, on a number of 9 puppy. After the eye fundus examination, we obtained an eye fundus overview with no signs of tapetum lucidum (fig.1).

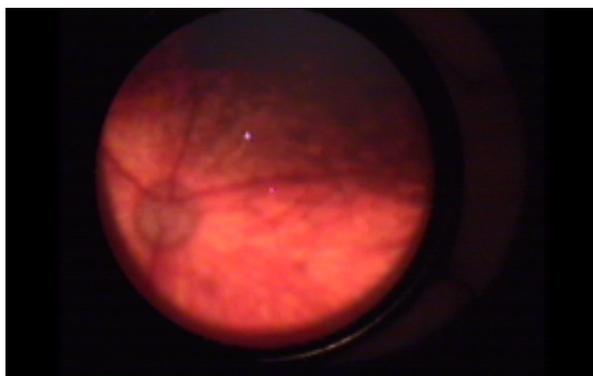


Fig.1. Eye fundus picture at a 15 days puppy

The eye fundus appears red, because of the retinal vascularization, next to four big vessels, which starts from the optic disc. There we can see more thinness vessels, whose way is at the retinal peripheral zone, too. Alongside that, we can see optic disc with round shape, with pale pink color at the inside surrounded by a burgundy color. Retinal epithelium doesn't have uniform color; there are zones with different kind of burgundy.)

We repeat the examination 7 days after (5 cases), then 14 days after (6 cases) and we see no change in eye fundus elements.

Because until the age of 30 days we couldn't see the tapetum lucidum we decided to continue the examination weekly for astonish the moment of his appearance. In our study this moment concurred with age of 37 days (6 cases), when we observed the appearance of a variation of purple and yellow color, with the loss of the blood vessels image from peripheral zone of retina, the whole vascularization is made by 3 big vessels, with ought any papillary modifications (fig.2).

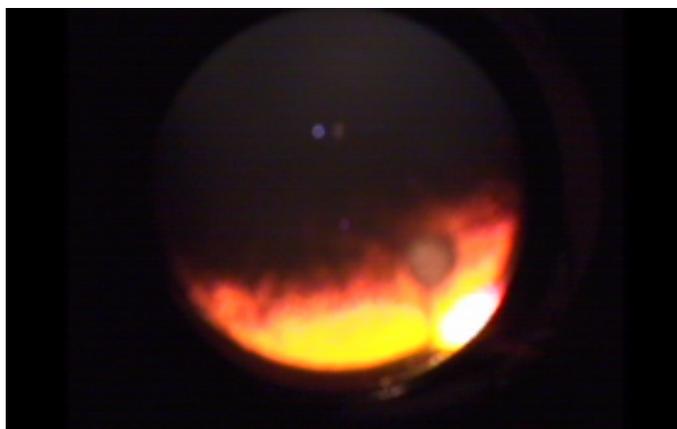


Fig.2. Normal aspect of eye fundus at a puppy with age 44 days

The variations of tapetum lucidum color is more intense starting with age of 65-70 days of puppy life (7 cases) when we find the yellow color and a much more expanse zone of him who include optic papilla (fig.3).

The vascularization is more evident in the center, the big vessels follow the way to the peripheral zone when them make many branches, and gradual became small and very small vessels.

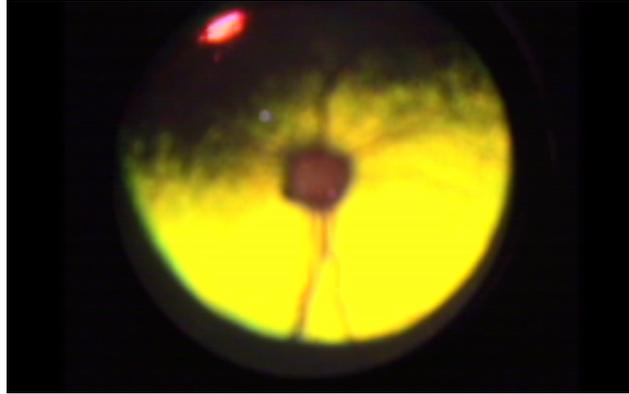


Fig.3. Normal aspect of eye fundus at a puppy with age 65-70 days

Starting with age of 70-80-90 days of life(8 cases), the tapetum lucidum suffer a major transformation, the color aspect changes and became a variation of mauve and dark mauve to green mauve (fig.4 and 5) We do not see other circulatory or papilla differences.

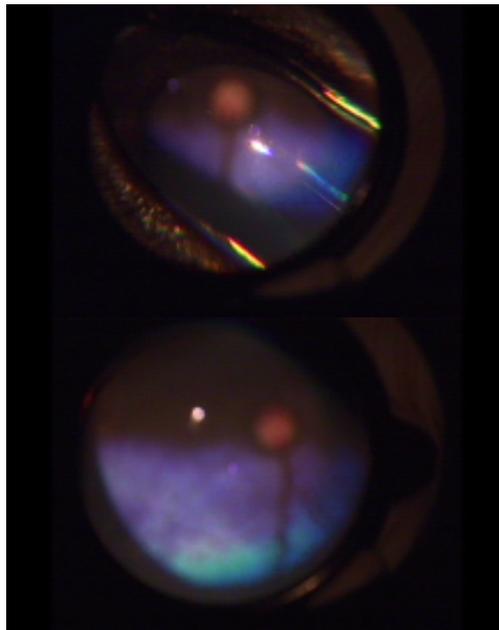


Fig.4 and 5. Normal aspect of eye fundus at a puppy with age of 70-80 days

Starting with age of 90 days, tapetum lucidum vary until the different green nuance became yellow with green as is the adults final color.

At the lot II, we made eye fundus examination at the subjects with age after 3 mounts, with different occasions, and the vascular, color and configuration differences are insignificants no matter of breed, sex or age.

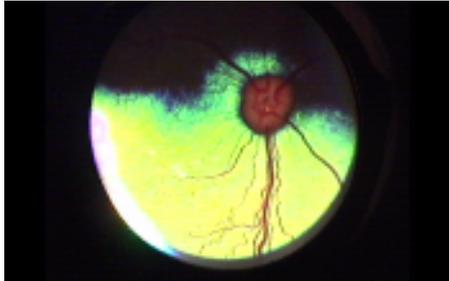


Fig.6. Normal aspect of eye fundus an adult dog

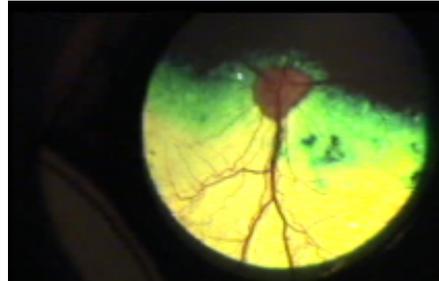


Fig.7. Normal aspect of eye fundus an adult dog

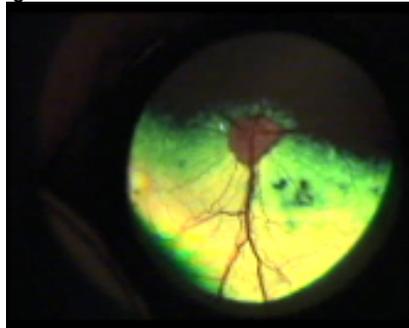


Fig.8. Normal aspect of eye fundus an adult dog

At the adult dog, the normal aspect of eye fundus is not changing so long as the health status is not affected, and from this point of view tapetum lucidum have yellow green color, his expanse include the area next optic disk, surrounding them.

The optic papilla is evident, by pink color in center with different nuance of red bound. The circulation is composed by 3-4 big vessels with branches in the periphery zone.

### **Conclusions**

Dog puppy don't have tapetum lucidum at birth, his development starts at age 37 days and suffer color and consistence modifications until the age of 90 days of life.

Since the third month of life, the puppy healthy eye fundus is similar with the adult eye fundus.

Eye fundus particularities with age, are shown trough major modification in circulatory area, optic papilla but specially by the absence or presence of tapetum lucidum and his characteristics.

In the adults, normal eye fundus doesn't suffer modifications with age, and for that similitude is obvious between subjects with age of 1year and age of 8-9 years.

The eye fundus view is an important clue for the appreciations of healthy ocular globe and animal organism status.

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