

2. Summary

The choroid is an anatomical structure with the primary function of supplying oxygen and nutrients to the retina. In human medicine, a correlation has been observed between the choroid dimensions and patient characteristics such as age, sex, refractive error, axial length of the eye, and corneal refractive power. Canine retinal degenerative diseases are differentiated between the hereditary, progressive retinal atrophy (PRA) and the non-hereditary, postinflammatory retinal degenerations. The telltale symptoms of PRA observed during ophthalmoscopic examinations of the fundus include hyperreflectivity – observed in the early stages of the disease – followed by initially localized, and later general, reduction in thickness and atrophy of blood vessels, abnormal retinal pigmentation, and atrophy of the optic disc. Spectral domain optical coherence tomography (SD-OCT) is a non-invasive, non-contact method that provides real-time *in vivo* imagery of the retina and the choroid. In the scientific literature in the field of veterinary medicine, there were no reports on the influence of physiological parameters or eye diseases on the morphometric parameters of the choroid.

The aim of the study was to assess the influence of age and gender on the thickness of the canine choroid, to determine the thickness of the choroidal layers in different regions of the fundus in dogs, and to assess the morphology and morphometry of the choroid in individual regions of the fundus in dogs suffering from retinal atrophy in the type of progressive retinal atrophy using SD-OCT. Mesocephalic, mixed breed dogs were qualified for the study and divided according to individual research objectives. The first group was used to assess the influence of age and gender on the thickness of the choroid in individual regions of the fundus. The group included 41 clinically healthy dogs divided into two subgroups: 17 middle-aged dogs (MA), 4–7 years old, and 24 senior dogs (SN), 8–13 years old (article 1). In the second group, SD-OCT was used to examine the thickness of individual choroid layers in different regions of the fundus. The group consisted of 45 clinically healthy dogs, divided into two subgroups based on age: 21 middle-aged dogs, 4–7 years old, and 24 senior dogs, 8–13 years old (article 2). In the third group, morphological and morphometric examination of the choroid in individual regions of the fundus was performed using SD-OCT in dogs suffering from retinal atrophy in the progressive retinal atrophy type. Electroretinography (ERG) was also performed. 50 dogs were qualified for the study, divided into two subgroups: 25 dogs diagnosed with retinal atrophy - with symptoms

typical of PRA (RA group) aged 2–12 years, and 25 healthy dogs aged 2–12 years as a control group (Control) (article 3).

Studies have shown that the thickness of the choroid in the dorsal region was the greatest in both older (SN) and middle-aged (MA) dogs. The choroid was subsequently the thickest in the temporal region and the thinnest in the ventral region. No significant changes in the thickness of individual choroid regions were observed in relation to age. The thickness of the choroid was significantly greater in males than in females in the ventral region. In the nasal region, it was significantly lower in males than in females (article 1). In all dogs studied, the retinal pigment epithelium–Bruch’s membrane–choriocapillaris complex (RPE-BmCc) in the dorsal region and the medium-sized vessel layer (MSVL) in the nasal tapetal region were significantly thicker than in the other regions. Furthermore, the RPE-BmCc layer was significantly thicker in the temporal tapetal region than in the ventral region. Moreover, the MSVL layer was thinner in the ventral region than in the dorsal, temporal tapetal and nontapetal, and nasal tapetal regions. The MSVL layer was significantly thinner in the nasal nontapetal than in the dorsal region. The thicknesses of the large vessel layer with lamina suprachoroidea (LVLS) and whole choroidal thickness (WCT) were significantly greater in the dorsal and temporal tapetal than in the other regions and smaller in the ventral region than in the other regions (article 2). In mixed-breed dogs diagnosed with retinal atrophy with symptoms of progressive retinal atrophy, there was a decrease in the large vessel layer with lamina suprachoroidea and whole choroidal thickness in the nontapetal fundus, as well as in the medium-sized vessel layer in all fundus regions, which may be associated with impaired blood supply to the outer retinal layers (article 3).

Keywords: choroid, canine ophthalmology, optical coherence tomography, retinal atrophy