

would be no perfusion anymore.

**Therapy consequences:** Pay attention to antihypertonic therapy. Treat only in case of cardiovascular risk or

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**“Inner retinal layers are to be supplied by the central retinal artery, and in 30% of individuals by the supplemental cilioretinal artery.”**

**— Dr. med. Richard Eder-Schmid**

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present cardiovascular damages. Twenty-four-hour blood pressure control is obligatory to avoid nocturnal blood pressure dips.

**Vessel radius:** This is the most important item. Blood flow depends on vessel radius in the fourth power. Ten percent vessel radius reduction causes an oxygen deficit of 34%.

Therapy consequences include decrease of plaques, hyperlipoproteinemia therapy, attention to steal

phenomenon, increase of vessel radius and tone by sports and physical therapy, treatment of vasospastic disease.

#### **RGC layer**

Let us contemplate retinal oxygen perfusion in regard to the retinal ganglion cell layer. Inner retinal layers are to be supplied by the central retinal artery, and in 30% of individuals by the supplemental cilioretinal artery. Nasal and temporal arterioles supply, by their superior, inferior and macular junctions, the whole inner retinal layers.

Perfusion is managed by these ves-

sels: arteriola temporalis superior, arteriola temporalis inferior, arteriola nasalis inferior, arteriola nasalis superior and the arteriola cilioretinalis (in 30%).

Radii of retinal arterioles can be approximated by fundus photography. Inner radii of temporal arterioles are about 0.075 mm, of nasal arterioles about 0.062 mm and of the central artery about 0.076 mm. We can calculate oxygen volume flow of the inner retinal layers as 0.000064 ml O<sub>2</sub>/h. Oxygen demand per optic ganglion cell is to be calculated as  $5.3 \times 10^{-11}$

ml O<sub>2</sub>/h.

This kind of perfusion geography of the retina explains sufficiently the retrograde atrophy of optic elements and the sequence of perimetry defects we are all familiar with. Vessel diameter has the most important influence on microperfusion.

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#### **For your information:**

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