



Regulation of retinal blood flow in health and disease

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Local control of retinal microvascular perfusion, which has been described as the maintenance of appropriate tissue blood flow despite changes in arterial pressure, changes in local rate of metabolism, changes in nutrient concentrations in the blood, or changes in any other (local) factor that might affect the tissue demand for nutrients. The maintenance of normal retinal structure and function depends on a tightly regulated environment. This requires intact blood-retinal barriers as well as an efficient regulation of blood flow and delivery of oxygen and metabolic substrates to the retinal tissue. To assess this regulation, we need to measure the response of retinal blood flow to various physiological stimuli and try to identify the mechanisms mediating and modulating these responses in the normal eye. We can then investigate how impairments of structure and function of the retinal neural tissue and endothelium during the evolution of various retinal diseases leading to ischemic microangiopathies affect the interaction of the retinal metabolic pathways and alter blood flow regulation.