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Factors influencing retinal venous pressure

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Background: The introduction of ophthalmodynamometric measurement of retinal venous pressure (RVP) now permits the quantification of the real pressure in the retinal veins. A variety of factors and ocular diseases are suspected to be influencing factors of retinal venous pressure which directly impacts retinal perfusion pressure.

Methods: A series of studies including glaucoma, diabetes, primary vascular dysregulation (Flammer syndrome) and hypoxia were conducted and retinal venous pressure were measured and compared to healthy control groups.

Results: Diseases like glaucoma, diabetes as well as factors like environmental hypoxia and the Flammer syndrome increase retinal venous pressure, lowering retinal perfusion pressure at the same time to sometimes physiological critical low levels close to the lower limit of auto-regulation.

Conclusion: Regardless of the cause, a marked increase in RVP in eye diseases is clinically relevant, as it reduces perfusion pressure and increases transmural pressure. The reduced perfusion pressure contributes to local hypoxia, and the increased transmural pressure can facilitate retinal edema. Diabetes and glaucoma are an increasing burden and lead to severe complications. Strategies to recognize the risk for increased retinal venous pressure and lower retinal perfusion pressure are essential to develop personalized prevention and therapy, therefore have major implications. Ophthalmodynamometry is a clinically and scientifically valuable, precise, quick and cheap method to measure retinal arterial and venous pressure to calculate retinal perfusion pressure.

Biography

Michael Baertschi has completed his PhD in Biomedicine from SALUS University and earned a Master of medical Education degree from the University of Bern, Departement of Medicine in Switzerland and MSc in Clinical Optometry from Pennsylvania College of Optometry in Philadelphia, USA. He is the Director of Eyeness AG, a medium sized group practice in Bern. He has published several papers in reputed journals about the topic and has lectured around the world since 25 years.

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