

Let It Flow

The vascular theory suggests that ischemia plays a role in the obstruction of axoplasmic flow in response to elevated IOP.

—M. Bruce Shields, MD

The preceding statement, taken from the 1992 edition of the classic *Textbook of Glaucoma*, seems clinically relevant and so logical that I often

wonder why we cannot validate it. Why else would patients who have no history of elevated IOP develop characteristic glaucomatous cupping and visual field loss? Certainly, individuals with low-tension glaucoma must have poor perfusion! If only we could enhance the vascular environment that feeds the ganglion cell of the nerve fiber layer, we would solve this problem. Or would we?

Over the past 30 years, numerous well-designed studies of blood flow have used various hemodynamic techniques, ranging from hands simply dipped into cold water to the Heidelberg retina flowmeter to color Doppler ultrasound with elegant animal models of perfusion. Investigations have uncovered a few risk factors associated with vascular disease such as migraine, diabetes, hypertension, smoking, and—currently the most discussed—ocular perfusion pressure. Nevertheless, when it comes to clinical application and therapy for patients with glaucoma, the research on blood flow has been a big disappointment. We can show diminished (or enhanced) blood flow, but what does it mean? Performing vasoconstriction or

vasodilation alters circulation. How do we relate the quantity of flow to the more important quality? Medications available to systemically “improve circulation” seem to have little benefit for the glaucoma patient. Vascular autoregulation is a wonderful concept, but why can’t we put it to use clinically to help our patients?

To paraphrase Mark Twain’s comment about the weather, everybody talks about ocular per-

fusion pressure, but nobody does anything about it. Will the efforts of scientists studying perfusion of the optic nerve aid our patients, or as with neuroprotection, is the complexity of the task too great, our understanding too limited, and our therapeutic options too few?

Obviously, we are far from truly understanding the relationship between perfusion of the optic nerve and the devel-

opment and progression of glaucoma. Research continues, and the studies on perfusion pressure remain appealing. This edition of *Glaucoma Today* will bring readers up to date on the field. On my wish list for improved therapeutic options in glaucoma, methods for enhancing blood flow rank alongside a better surgical procedure and a neuroprotective/regenerative drug. Someday, we will do more than just talk. □



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