

Chronic high blood pressure increases risk of glaucoma

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Acute angle closure glaucoma of the right eye (intraocular pressure was 42 in the right eye). Credit: James Heilman, MD/Wikipedia

A new study published in *Investigative Ophthalmology & Visual Science (IOVS)* has found that chronic (long term) hypertension increases a person's susceptibility to glaucoma. These results suggest that doctors should consider a patient's blood pressure levels in managing the potentially blinding eye disorder.

Glaucoma, the second leading cause of blindness in the world, is a condition that occurs when too much pressure builds up inside the eye. This excess pressure pushes back against blood trying to enter the eye resulting in vision loss.

"Studies have shown that high [blood pressure](#) is a risk factor for [glaucoma](#). But the reasons for this were never clear," said author Bang Bui, PhD, of the University of Melbourne, Australia, Department of Optometry and Vision Sciences. In the IOVS study, Chronic Hypertension Increases Susceptibility to Acute IOP Challenge in Rats, Bang and his co-authors from the University of Melbourne and School of Medicine at Deakin University, Australia, identify a reason for those observations.

Previously, it was thought that high blood pressure could counteract the high [eye pressure](#) that leads to glaucoma. This theory was supported by past research that had shown raising blood pressure for a short period of time (one hour) offered some protection against elevated eye pressure, as high blood pressure ensured that blood continued to enter the eye.

However, data gathered from large populations of glaucoma patients subsequently suggested that hypertension in young patients protects against the disorder, but is a risk factor in older patients.

One explanation of this phenomenon is that any benefit from high blood pressure counteracting high eye pressure is lost as damage to blood vessels—a consequence of hypertension—becomes more prevalent.

The authors tested this hypothesis by comparing the effect of acute (one hour) and chronic (four week) hypertension in lab rats with elevated eye pressure.

"When we raised blood pressure... for four weeks, we didn't get the same protection against eye pressure elevation as in the [one hour] case," said Bui. "What this means is that having high blood pressure for a longer time has compromised the eye's capacity to cope with high eye pressure. It seems that hypertension might damage the blood vessels in the eye so that they can't compensate for changes in blood flow when eye pressure

increases."

This new understanding of the consequences of [high blood pressure](#) will help doctors treat patients with glaucoma. Instead of viewing hypertension as beneficial in the fight against the disorder, Bui suggests it should be identified as a risk factor. Further studies in this area might better inform how to treat patients with [hypertension](#) who also develop glaucoma.

Provided by Association for Research in Vision and Ophthalmology

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