



## Glaucoma: New Diagnostic and Treatment Approaches

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Glaucoma is the second leading cause of blindness in Canadians over the age of 50. It is a group of eye diseases that damages the optic nerve and gradually causes blindness. Often there are no discernable symptoms.

Dr. Marcelo Nicolela is investigating the role of vasospasm in glaucoma. Vasospasm is an unusual constriction in the blood vessels. His research team has hypothesized that in some individuals endothelin-1, a substance released by the endothelial cells of the blood vessels, can cause vasospasm. They theorize that use of a calcium channel blocker, commonly used to treat problems with the heart and circulatory system including high blood pressure, might inhibit the adverse effects caused by vasospasm in glaucoma. Dr. Nicolela's research may prove calcium channel blockers, such as Nimodipine, are a suitable therapy for glaucoma patients who might have progressive disease despite adequate pressure control.

Patients with glaucoma had a mean increase of 33 percent in endothelin-1 in their blood after a specific test called a cold provocation test, which was not observed in the control group. After this cooling test, no change in blood flow to the eyes was observed in either group. Patients with glaucoma with evidence of vasospasm in their fingers were found to have a higher chance of showing reversible deterioration of their visual field after cooling. This evidence supported a significant role of vasospasm in glaucoma.

Dr. Nicolela is currently investigating the possible beneficial effects of two currently used topical medications on blood flow in patients who have abnormally high levels of endothelin-1 after cold provocation. In the future, he foresees the use of endothelin-1 receptor blockers as an added therapy for some glaucoma patients.

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