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# Magnetic Resonance Imaging in Patients With Low-Tension Glaucoma

Gesa A. Stroman, MD; William C. Stewart, MD; Karl C. Golnik, MD; [et al](#)[» Author Affiliations](#)*Arch Ophthalmol.* 1995;113(2):168-172. doi:10.1001/archopht.1995.01100020050027

## Abstract

**Objective:** To study diagnoses and anatomic findings found on magnetic resonance imaging in patients with low-tension glaucoma.

**Patients:** We included in this study magnetic resonance images of 20 consecutive patients with low-tension glaucoma. We individually matched each patient with low-tension glaucoma to a control with normal ocular findings who had magnetic resonance imaging for reasons unrelated to the visual pathway.

**Design:** We studied axial and coronal images of the orbit and optic nerve with digitizing software (Image-Pro Plus, Media Cybernetics, Silver Spring, Md). Statistical evaluation was with a Wilcoxon Signed Rank Test for anatomic findings and a McNemar Test for diagnosis.

**Results:** We found no difference between groups in the optic nerve diameter or length, the carotid artery area, or the distance from the optic nerve to the carotid artery ( $P > .05$ ). Left optic nerve area was greater in the control patients than patients with low-tension glaucoma ( $P = .026$ ). The prevalence of intracranial abnormalities, including meningioma, aneurysm, and arteriovenous abnormality, was similar between groups ( $P > .05$ ). However, diffuse cerebral small-vessel ischemic changes were found more in patients with low-tension glaucoma ( $n = 8$ ) than control patients ( $n = 1$ ) ( $P = .0196$ ).

**Conclusions:** This study proposes a hypothesis that cerebral small-vessel ischemia is more common in patients with low-tension glaucoma and potentially reflects indirectly a vascular cause of the optic nerve head damage at least in a subgroup of patients. Importantly, further research still is required to provide direct evidence for a vascular cause involved in low-tension glaucoma.



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