Article

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Magnetic Resonance Imaging in Patients With Low-Tension Glaucoma

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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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