

Abstract

BACKGROUND: To date, no specific therapy is available for optic glioma (OG)-induced visual loss.

OBJECTIVE: To evaluate the effects on visual function of murine nerve growth factor (NGF) eye drop administration in children with severe visual impairment due to low-grade OGs.

METHODS: Five patients with OGs and advanced optic nerve atrophy were assessed before and after a single 10-day course of 1 mg murine NGF topical administration by clinical evaluation, visual evoked potentials (VEPs), and brain magnetic resonance imaging (MRI). VEPs, the main functional outcome measure, were recorded at baseline and 1, 30, 45, 90, and 180 days posttreatment. MRI examinations were performed at baseline and at 180 days after NGF treatment. Six untreated control patients with OGs also underwent serial VEPs, clinical testing, and MRI assessments.

RESULTS: After NGF treatment, median VEPs amplitude showed a progressive increase from the baseline values (P < .01). VEPs reached a maximum amplitude at 90 days (170% increase) and declined at 180 days, still remaining above the baseline level. Perception of spontaneous visual phosphenes was noted in all patients after NGF administration. MRI showed stable tumor size. In controls, clinical findings and VEPs did not show any significant change over the observation period.

CONCLUSIONS: The findings from the study show that NGF administration may be an effective and safe adjunct therapy in children with optic atrophy due to OGs. The beneficial effect on optic nerve function suggests a visual rescuing mechanism exerted by murine NGF on the residual viable optic pathways.

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