Optic Nerve Sheath Meningioma: Visual Improvement During Radiation Treatment

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PURPOSE: To describe four patients with optic nerve sheath meningioma in whom visual improvement began to occur even before completion of a standard course of radiation therapy.

DESIGN: Retrospective case review.

METHODS: A review was conducted of 35 patients who received stereotactic three-dimensional conformal radiotherapy for optic nerve sheath meningioma from 1990 to 2005.

RESULTS: Four patients with radiographic confirmation of optic nerve sheath meningioma were identified who had neuro-ophthalmologic assessment, which included perimetry, either while treatment was underway or immediately afterwards. All of the patients showed improvement in visual acuity and visual fields.

CONCLUSION: A rapid response to radiation therapy may occur in some patients with optic nerve sheath meningioma. In such patients, it may be possible to customize the radiation dose by assessing of visual function during the course of therapy. (Am J Ophthalmol 2006;142:343–344. © 2006 by Elsevier Inc. All rights reserved.)

Radiation therapy has become the standard treatment for primary optic nerve sheath meningioma (ONSM). The first major case series, by Smith and associates, included a patient with a visual acuity of 20/80 who reported improvement within 10 days of starting therapy. The day after the final radiation session, the visual acuity was measured at 20/50. Only one other case report has described an immediate effect of radiotherapy. The patient’s acuity improved from 20/20 to 20/15 (Humphrey, 24-2; mean deviation, −11.33 to −2.21 dB) within one week after the conclusion of treatment. Rather than emphasizing immediate results, most studies have focused on long-term outcome, assuming that the benefit of radiation treatment accrues slowly.

With institutional review board approval, a retrospective case review was conducted of all 35 patients who received stereotactic three-dimensional conformal radiotherapy for ONSM from 1990 to 2005 at the University of California, San Francisco, California, USA. There were four patients who underwent neuro-ophthalmologic assessment, which included perimetry, either while treatment was underway or immediately afterwards. All of the patients received a total dose of 54 Gy that was fractionated over the course of six to seven weeks. None received corticosteroids.
The mean age at the time of radiotherapy was 38.5 years (range, 35 to 45 years; SD, ±4.43). The geometric mean pretreatment Snellen acuity at distance was 20/70 (range, 20/30 to 20/200; SD, ±3.4 lines). Humphrey visual field indices revealed an average pretreatment mean deviation of −22.87 dB (range, −17.77 to −29.04 dB; SD, ±5.55) and average foveal sensitivity of 24.5 dB (range, 14 to 33 dB; SD, ±8.10). Visual assessment of two patients was performed within three days after treatment. Examination of the other two patients occurred at approximately one and two weeks before the conclusion of radiotherapy. An improvement in geometric mean visual acuity to 20/24 when radiation treatment should be administered during the natural history of an ONSM to achieve maximum benefit.5

The current “one dose for all” approach does not take into account the severity of visual loss, the amount of optic atrophy, the size of the tumor, or the individual variation in tumor sensitivity to radiation. It also remains unknown when radiation treatment should be administered during the natural history of an ONSM to achieve maximum benefit.5

Our experience highlights a feature of radiation therapy for ONSM that has not been appreciated widely: improvement can start to occur even before the completion of treatment. This was observed in all four patients who were tested during or immediately after radiation treatment. How often such rapid improvement occurs is unknown, because the remaining 31 patients were not tested until several months after radiation therapy. Optic nerve function can be measured with exquisite sensitivity, affording an opportunity to determine how the patient is responding even while treatment is still underway. It may be useful to assess visual function regularly during the course of radiation treatment for ONSM. We predict that those patients who show an early response will have the best long-term outcome. If visual acuity returns to normal or the visual field indices show major improvement during treatment, it may be appropriate to reduce the planned total radiation dosage. Such a strategy would decrease the risk of radiation retinopathy and optic neuropathy.6,7 A randomized trial to determine the optimum radiotherapeutic dose for ONSM remains necessary.

REFERENCES


Temporary Suture Tarsorrhaphy

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PURPOSE: To describe a technique for performing a bolsterless temporary tarsorrhaphy.

DESIGN: Retrospective analysis and surgical technique description.

METHODS: Temporary suture tarsorrhaphy (TST), which consists of a suture through the upper and lower eyelid posterior lamella, was performed after eyelid or socket surgery.

RESULTS: Over 15 years, >1000 patients in the practice of one of the authors (R.L.A.) had TST that successfully maintained corneal coverage without complications in all but four eyes. In two patients, replacement was required because of tissue erosion; in two patients, the suture was placed too posteriorly and caused corneal irritation that required replacement.

CONCLUSION: The TST is functionally equivalent to, or superior to, traditional bolster temporary tarsorrhaphy. The TST is faster and simpler, requires fewer materials,