Prior studies have found a reduction in contrast sensitivity in eyes with amblyopia using sinusoidal gratings,1-3 whereas minimal loss has been reported with Pelli-Robson charts.3,4 Most studies have evaluated contrast sensitivity at the time of diagnosis of amblyopia or after short-term treatment. A follow-up study of an earlier randomized trial provided us the opportunity to evaluate contrast sensitivity using Pelli-Robson low-contrast letter charts at age 10 years, several years after treatment of amblyopia.5

Figure. Clinical, ultrasonographic, and histopathologic findings. A, Focus of the tan tumor extending through the iris root and appearing in the anterior chamber angle (arrow). B, Right gaze, showing a cortical cataract overlying the ciliary body mass. The underlying tumor cannot be clearly photographed because of the cataract. C, Ultrasound biomicroscopy showing the ciliary body mass (arrow). D, View of the exposed tan tumor at the time of iridocyclectomy. E, Photomicrograph showing the mass arising from the pars plicata of the ciliary body. The linear basophilic areas represent cells of the ciliary epithelium, and the pink area represents basement membrane material elaborated by the nonpigmented ciliary epithelium (hematoxylin-eosin, original magnification ×10). F, Another section through the tumor showing more typical cords of nonpigmented ciliary epithelium cells that are separated by basement membrane material (hematoxylin-eosin, original magnification ×75).
Contrast sensitivity was measured using Pelli-Robson charts (Richmond Products, Albuquerque, New Mexico) in 86 subjects (mean age, 10.3 years) who at ages 3 to 6 years had participated in a randomized treatment trial comparing atropine vs patching for moderate amblyopia. Institutional review boards approved the study, and written consent was obtained from parents. Details of the randomized trial and the examination results at age 10 years have been reported. The low-contrast letter identification score for each eye was the lowest contrast triplet for which the child correctly identified at least 2 of 3 letters on the first attempt, reading from highest to lowest contrast. Monocular visual acuity was measured with the Electronic Early Treatment of Diabetic Retinopathy Study visual acuity testing protocol.

Results. Mean visual acuities in the amblyopic and fellow eyes at the time of the examination were 0.17 logMAR (approximately 20/32) and −0.04 logMAR (approximately 20/20), respectively. The mean log low-contrast letter identification score was slightly worse in the amblyopic eye than in the fellow eye (1.75 vs 1.78, respectively; P=.04 with a paired samples t test) (Table 1). There was a weak correlation between the interocular contrast sensitivity difference (Table 2) and the interocular visual acuity difference (Spearman correlation=0.27; 95% confidence interval, 0.08 to 0.47). Contrast sensitivity scores in the amblyopic eye (Spearman correlation=−0.21; 95% confidence interval, −0.42 to −0.01).

Comment. Our results confirm the finding of other studies that the loss of contrast sensitivity after treatment of strabismic and anisometropic amblyopia is slight in the intermediate spatial frequencies tested with the low-contrast letters of the Pelli-Robson charts. The distribution of contrast sensitivity in the amblyopic eye nevertheless was similar to that reported for monocular testing of healthy children aged 10 years.

The suggestion that patients who were younger at enrollment into the randomized trial (aged 3 to <5 years compared with those aged 5 to <7 years) were more likely to have slightly better contrast sensitivity in the amblyopic eye at age 10 years is consistent with what we have reported for visual acuity. This effect, if substantiated, could be due to a number of factors. One possibility is a younger age at treatment allowing more complete cortical development, and another is a shorter duration of the vision deficit. Each of these circumstances might allow a more complete treatment effect or alternatively a shorter and thus less profound insult to the developing visual sensory system.

The Pelli-Robson chart is limited in that it is a measure of low-contrast letter identification that correlates with contrast sensitivity in the medium spatial frequency range. Losses at high spatial frequency have been reported for all types of amblyopia. Thus, although we found a slight reduction in Pelli-Robson chart scores, there could be greater contrast sensitivity loss at other spatial frequencies or prior to treatment. Nevertheless, it seems likely that mild residual amblyopia, which was present in most cases, is associated with only a mild reduction in contrast sensitivity after treatment of moderate amblyopia from strabismus, anisometropia, or both combined.

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COMMENTS AND OPINIONS

Blind Eyes With Occult Malignant Melanoma

The article by Eagle et al.1 and the editorial in reference to it2 are most important, and obviously will change the surgical management of blind, painful eyes. This article has far wider clinical implications than just indicating the danger in eviscerating eyes with occult neoplasia.

An intraocular malignant melanoma is also life threatening when no evisceration is performed. Thus, it should be stressed that all patients with blind eyes should undergo monitoring for occult neoplasm periodically, not only before surgery. B-scan ultrasound should be used whenever the media is opaque. Moreover, when the results are inconclusive, the possibility of occult intraocular neoplasia may be an indication for enucleation, even when the blind eye is not painful.

The same evaluation should be performed before enucleation as before evisceration. Leaving a malignant tumor in the orbit is as dangerous after enucleation as after evisceration. Enucleated eyes should be carefully inspected after they are removed, and any areas suspected of extraocular tumor extrusion should be examined by frozen sections. If findings are positive, orbital biopsies are indicated, and even exenteration, according to the results.

It is most important to collect data on hidden neoplasm in blind eyes so their prevalence will be known.

Personally, I prefer performing evisceration over enucleation in all cases when the possibility of hidden intraocular tumor is excluded. Evisceration is shorter in duration than enucleation, and the results are good. In patients who could not undergo surgery with general anesthesia, evisceration was performed using retrobulbar anesthesia, though I would not suggest this for enucleation.

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Evisceration After Complete Evaluation an Acceptable Option

We read with interest the article by Eagle et al.1 While the authors appropriately remind the readership that blind, painful eyes may harbor an occult melanoma, they offer conclusions and recommendations based on substandard care and flimsy data.

Standard care calls for suspicion of an occult neoplasm in all blind eyes with opaque media.2 Cases 2 and 3 did not undergo preoperative imaging despite likely opaque media. Case 1 showed a large melanoma that escaped diagnosis by a retinal specialist. Case 6 underwent evisceration despite a history of uveal melanoma. These 4 cases received substandard care.

Even Case 7 is a poor example, given the misinterpretation of a large melanoma on imaging. However, it does illustrate the type of tumor that the evisceration surgeon performing standard care fears: a small uveal melanoma undetected by diligent imaging and funduscopic examination. Most of these rare cases would fall under the small melanoma classification by the Collaborative Ocular Melanoma Study criteria, having a Kaplan-Meier estimate of melanoma-related mortality of 1% (95% confidence interval, 0-3) at 5 years.3 It is unclear how evisceration might affect patient mortality in this setting.

The authors’ belief that surgeons have underreported occult melanoma after evisceration is without scientific basis. Their discussion of sympathetic ophthalmia is unrelated to their presented data. Their dismissal of any perceived cosmetic advantages of evisceration is at odds with the experience of a significant percentage oculoplastic surgeons4,5 and most oculists.6 Evisceration obviously results in less orbital disruption, which should improve cosmesis and function. The challenges in measuring cosmetic outcomes after eye removal do not negate the experience of practitioners and anatomic advantages.

Regardless of the physical result, oculoplastic surgeons understand our patients’ reluctance to have surgery that removes the entire eye. Our patients care a great deal about their facial cosmesis as well as their health. We should respect our patients enough to discuss all op-