An eye on vision screening for children with developmental disabilities

Commentary

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The case for accurate assessments of vision in children with developmental disabilities cannot be overstated. Children with developmental disabilities are more likely to have significant visual system abnormalities than children without disabilities. Those who were preterm may constitute the largest number of such children, but conditions ranging from fetal alcohol syndrome to genetic abnormality all place children at risk for visual system disorders. The reverse is also true. Those with visual system abnormalities are far more likely to have systemic and developmental disorders. Perhaps the best example of this phenomenon holds for myopia, the presence of which in early childhood is highly correlated with other syndromes and developmental disabilities.[1] In some children the vision problem is the presenting sign of another underlying condition.

With this in mind, two studies reported in this issue describe success rates in screening children with developmental disabilities for visual system abnormalities. In the first of these, Nielsen et al. describe their success in screening a large population of children with IQ scores of less than 80. Their study was an ambitious one, and also demonstrates the value and success of a new approach to screening for vision disorders in children with developmental disabilities. While the reader could quibble over a few minor points, such as the relative benefit of stereopsis testing as a vision screening tool, there can be no mistaking the authors' ability to detect vision problems in their study population, and in children with normal intelligence.

In the second study, Stephen et al. explored the occurrence of various eye disorders in children with Down syndrome. We are reminded by the results of this study that this particular population of children is especially prone to develop serious eye disorders. Infantile cataracts were diagnosed in three infants, and we can have no doubt that a screening program spared these children a life of significant vision impairment. Furthermore, the rate of refractive error, nasolacrimal duct obstruction, and strabismus was also very high. Early identification of these ophthalmic disorders can have a significant benefit to children with Down syndrome.

So what are the take-home messages from these two important studies? The first, in my opinion, is that vision screening should be performed in the first days of life, at least in selected populations of children. Congenital cataracts are much more common in certain conditions such as Down syndrome, so every child with this condition deserves a careful evaluation. It is perfectly reasonable for the pediatrician or primary care provider to play the lead role in this process, and to refer the child on whenever concern arises, but the examination for red reflex and fundus abnormalities should not be cursory. Ultimately, children with Down syndrome deserve an evaluation by an ophthalmologist. The rate of refractive errors and strabismus is very high in these children. For the population at large, all infants deserve an examination that includes an examination for the red reflex.

The second important message is that vision screening is feasible in a wide variety of developmental disorders, in fact, in virtually every developmental scenario. This will be familiar to the pediatric ophthalmologist, who, retinoscope and visual fixation toy in hand, can quickly determine the status of almost any child's visual system. Other primary care providers may not realize that non-verbal and emotionally labile children *can* be screened and may benefit from intervention. Screening for refractive errors and strabismus should occur in the first few years of life. It makes no sense to conduct a screening program that targets older children because some causes of vision loss are correctable (e.g. cataracts, amblyopia), but only during a developmentally sensitive and relatively short period.

Finally, vision screening programs have to accept false positives and their resultant 'unnecessary' referrals. False negatives are very undesirable. All children develop in their own unique way, with some amenable to a screening program earlier than others. This is true for children with and without disabilities. Understandably, screening programs for large numbers of children must have screening entry criteria, such as an age at screening, but scattered around this age will be a great deal of developmental variation. Examiners will encounter children who are shy, or non-verbal, or who simply don't want to make a mistake reading small symbols for fear of disappointing the examiner. To conduct screening at an older age, thereby reducing these factors, risks missing the opportunity to treat the very conditions that are being screened.

A healthy functioning visual system is a priority for all children. Not to be overlooked is the benefit to children with disabilities of glasses, amblyopia treatment, or sight-sparing surgery for congenital cataracts. The authors of these two excellent papers have shown that screening is possible in populations of children with developmental disabilities, the very children who need it most.

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Reference

1. Marr JE, Halliwell-Ewen J, Fisher B, Soler L, Ainsworth JR. (2001) The association of high myopia in children. *Eye* **15:** 70–74.