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LETTER

Validation of the Birefringent Amblyopia Screener (Retinal Polarization Scanner), the Rebion Blinq.™ [Letter]

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Dear editor

I write to clarify some of the conclusions made by Dr. Arnold in his study of the blinq.™ vision screener.[1] The goal of vision screening is early detection of amblyopia and strabismus, which until now, due to limitations in technology, could only be achieved by detecting refractive risk factors. Unfortunately, risk factor screening results in under-detection of patients with strabismus and over-referral of children who would not benefit from treatment.[2] The blinq. device was not designed to detect refractive risk factors; instead, the device detects amblyopia directly by performing a binocular retinal polarization scan to identify reduced binocularity, microstrabismus, and fixation instability without regard to refractive status.[3] In his study, Dr. Arnold evaluated the ability of blinq. to detect amblyopia risk factors, but the performance of blinq. and all vision screening technology should be evaluated in the context of how well it identifies patients who meet diagnostic criteria for amblyopia and strabismus.[4] Out of concern that his study design might create confusion among readers, I contacted Dr. Arnold, who kindly provided his de-identified data to allow me to determine which patients had referral-warranted disease, not just risk factors.

Dr. Arnold's total cohort included 87 patients. However, on review of the spreadsheet available to me, 37 of these patients did not have sufficient best-corrected visual acuity or prism-and-cover testing data recorded to determine whether they met diagnostic criteria for amblyopia or strabismus. Of the remaining 64 patients, 39 had referral-warranted disease (met clinical criteria for amblyopia or had manifest strabismus), while 25 did not (no referral-warranted disease).

Of the 39 with referral-warranted disease, 38/39 were referred, for a sensitivity of 97%. This includes 38 with strabismus, unilateral or bilateral amblyopia, nystagmus, or monocular suppression. The 1 patient who received an incorrect "pass" result had >2 lines of visual acuity asymmetry (but this may or may not have been best-corrected acuity). Of the 25 who had no referral-warranted disease, 23 passed, for a specificity of 92%. Patients who passed included 22 with ≤1 line of visual acuity difference, fusion, stereopsis, and no strabismus, and 1 with a well-controlled intermittent exotropia at distance with equal visual acuity and good stereopsis. The 2 false referrals had normal visual acuity and stereopsis.

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In conclusion, when the blinq. device is evaluated according to its intended use, which is the detection of referral-warranted amblyopia or strabismus, we found a remarkable 97% sensitivity and 92% specificity using Dr. Arnold's own data. This performance is considerably higher than that reported for detecting amblyopia risk factors, for which the device was not designed, and which would be expected to give a lower yield of patients with referral-warranted disease. I hope that future studies of blinq. and of any vision screening technology will focus on detection of referral-warranted disease, which will allow for accurate assessment of the cost and benefit of a vision screening program.

Disclosure

The author owns stock in Rebion, Inc., manufacturer of the blinq. device and, as inventor, has patents related to retinal polarization scanning technology.

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