The Natural History of the Oculo–Visual Anomalies Associated with Traumatic Brain Injury (TBI): A Case Report

Dominic M Maino, OD, MEAL, FAAD, FCOVD-A, Darren G. Schlange, OD, DOS, FAAD
Illinois College of Optometry, Chicago, IL

INTRODUCTION
The Center for Disease Control and Prevention reports that traumatic brain injury (TBI) occurs in 1.7 million individuals in the United States each year. The vision problems routinely reported for those with TBI include bilateral visual loss, accommodation and convergence dysfunctions, reduced visual acuity, visual field loss and vision information processing anomalies, as well as oculo-vestibular, medial peripheral vision, and attentional issues. We know little, however, about the long-term natural history of the oculo–visual–neuromotor anomalies associated with TBI. After an extensive PubMed/Google Scholar search, this case report appears to be the very first of its kind to appear in the literature.

CASE REPORT

Case History
TB is a 31 y/o W/F who has a history of TBI after falling out of a window at age 2. She has been evaluated for oculo-visual anomalies and a psychiatric illness voicing fewer complaints has been documented by recently published research. She is currently living somewhat in a residential setting with her mother and receives services during the day.

The examination sequence varied and different tools were used over the years as advances were made in developing examination instrumentation and techniques. Visual acuities were taken using Teller Cards, HOTV, Lea Symbols, Snellen and VEP. Objective examination procedures were frequently utilized because of the behavior that would interfere with the standard subjective examination techniques.

VISION THERAPY
Post-surgical strabismus vision therapy for remaining bilateral vision dysfunctions, oculomotor anomalies, amblyopia and vision information processing (VIP) anomalies was instituted. VIP problems diagnosed at 10 years 11 months of age included visual discrimination, memory, spatial relations, form constancy, sequential memory, figure-ground and closure. Vision therapy can be an effective treatment for those with TBI. During vision therapy, TB did achieve 2nd and 3rd degree fusion. Lenses were prescribed to provide VA and binocular vision.

DISCUSSION
Research has noted that those adults with intellectual disability and a psychiatric illness tend to offer few complaints when taking a case history even though they are often on numerous medications and exhibit frequent visual and systemic anomalies. This acceptance of visual disabilities was the case for this patient as well. The longitudinal findings seen here suggest that those with TBI may demonstrate variable findings over their lifetimes and require close monitoring of these changes so that appropriate and timely intervention can be provided.

It also appears that surgery for strabismus may be of limited intermediate and long term value. Optometric vision therapy appears to have moderate success at least initially. Vision therapy may need to be re-instituted with this now adult patient to help her regain the 2nd degree fusion and stereopsis that TB demonstrated after the initial therapy program some years earlier.

The numbers of medications increased significantly as additional diagnoses were added for various systemic and psychiatric problems. Visual acuities fluctuated significantly, but usually were around 20/40 – 20/50. As a child, her refractive error showed a small amount of hyperopia and astigmatism which later developed into myopia. She also had a tendency to exhibit accommodative esotropia which could have played a role in the myopia seen as she became older. The oculomotor assessment post-surgical intervention for esotropia also varied from orthophoria to a constant esotropia with a accommodative excess which could have played a role.

Medications

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