

Introduction to the Special Issue

Vision Disturbance after TBI

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This special issue of *NeuroRehabilitation* is dedicated to the discussion of vision disturbances after Traumatic Brain Injury (TBI). In this journal, articles will discuss the basic anatomy of the visual system in humans, the pathology of various visual problems, as well as the clinical assessment and treatment of these problems in the setting of the acute inpatient rehabilitation of the brain-injured person. Special articles are dedicated to the neuropsychological assessment of the brain injured person with vision disturbances, as well as the recognition of some vision-threatening issues seen after TBI.

Vision is our dominant sense. More than just sight measured in terms of visual acuity, vision is both a sensory and motor system. It is a complex, learned and developed set of functions that involve a multitude of skills. It is estimated that up to eighty percent of our perception, learning, cognition and activities are mediated at least to some extent through vision.

Vision problems are common in patients who have suffered a traumatic brain injury. According to Gianutsos [1] there is an extremely high incidence (greater than 50%) of visual and visual-cognitive disorders in neurologically impaired patients (traumatic brain injury, cerebral vascular accidents, multiple sclerosis etc.) Zoltan [2] writes, “Visual-perceptual dysfunction is one of the most common devastating residual impairments of head injury”. And, according to Padula [3], “The majority of individuals that recover from a traumatic brain injury will have binocular function difficulties in

the form of strabismus, phoria, oculomotor dysfunction, convergence and accommodative abnormalities”.

One of the brain’s primary functions is to integrate sensory information, analyze it, and determine an appropriate response. This is often referred to as “sensory gating.” [4] This primary brain function is frequently disturbed in people who have sustained a TBI. Patients who have a disturbance in sensory gating often are confused and agitated, as their brains can’t sort out all of the sensory information being received in real time, or process the information fast enough to make sense of it. As vision is the primary sense in humans, vision disorders frequently can contribute to the sense of confusion many patients experience during the early phases of recovery [2].

Among the more common visual problems encountered are double vision, visual field loss, visual inattention, ocular motor dysfunction, spatial imperceptions, perceptual deficits, and medical eye issues. Not only do the various vision problems themselves cause patients symptoms, but they also can affect other domains. For example, a patient with ocular motor deficits and reduced accommodation will have difficulty in speech therapy with reading. A patient with double vision may have problems with depth perception and balance and therefore have difficulty ambulating during physical therapy. A patient with visual field loss and inattention may have visual confusion and difficulty in psychology and behavior.

A coordinated approach with collaboration between members of the rehabilitation team allows for early identification and treatment of eye and vision problems. Identification and diagnosis of vision problems early in the course of rehabilitation following TBI leads to a more effective rehabilitation program and ultimately leads to improved outcomes.

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One of the articles in this journal is devoted to aspects to consider in setting up a "Vision Clinic" for individuals with vision problems following TBI. Included in this article are recommendations for the appropriate team members, how to approach the assessment and treatment of common vision problems, and how to establish lines of communication between the team members.

We hope that you find this journal helpful, and it is our wish that this becomes a useful reference to all of those practicing TBI rehabilitation.

References

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