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### Convergence insufficiency after traumatic brain injury, A case series

#### Abstract:

Convergence insufficiency, a syndrome characterized by decreased ability to converge the eyes and maintain binocular fusion while focusing on a near target, is a common finding in subjects after traumatic brain injury. However, despite of the availability of several studies suggesting an involvement of the midbrain reticular formation in the control of velocity and amplitude of convergence, the nucleus raphe interpositus with fast vergence movements, and the nucleus reticularis tegmenti pontis during slow vergence movements; our theory is that areas of cognitive association could be involved, specifically, in convergence insufficiency secondary to traumatic brain injury. We present a case series of 45 patients that suffered mild to moderate traumatic brain injury and presented with isolated symptomatic (headaches, difficulty reading, maintaining focus) convergence insufficiency. Occasionally, these were also found when focusing on distant objects. Ten of these patients had follow-up and close to half of these had functional brain imaging that elucidated involvement of areas in frontal and parietal white matter. We noticed a statistically significant difference of the exophoria at near, near point of accommodation and accommodation amplitudes when comparing subjects that had evaluation within a year of the brain injury and subjects that had their evaluation done after one year of the brain injury regardless of the magnitude of the traumatic brain injury. Our goal is to prove the existence of pathways within the white matter of the frontal and parietal lobe and that their involvement possesses a better predictive value in establishing a prognosis in the affected patients.

#### Biography

**Francisco R Sanchez Moreno** has completed his M.D. at the age of 24 years-old from Universidad Autonoma de Tamaulipas, his ophthalmology residency was completed at Fundación Hospital Nuestra Señora de La Luz in 2018 and a neuro-ophthalmology fellowship was completed at the Mayo Clinic School of Graduate Medical Education in 2021. He currently is the leading investigator at Neuroeye Clinical Trials in Houston, Texas. He has published more than 10 papers in reputed journals and, in 2024, he was awarded the prestigious J. Lawton Smith award for the most viewed manuscript in the Journal of Neuro-ophthalmology.