Spine Management Report

Traumatic Brain Injury and Traffic Collisions

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The diagnosis and management of victims of traumatic events such as motor vehicle collisions can be complex and involve multiple systems in the body. Historically, the focus was on the musculoskeletal system which includes the intervertebral disc and surrounding ligaments. Recently, more attention and research is being directed toward understanding the brain side of the injury involving concussion and mild-traumatic brain injury. **In a recent study Germine et al (2022) titled,** *Neurocognition after motor vehicle collision and adverse post-traumatic neuropsychiatric sequelae within 8 weeks: Initial findings from the AURORA study*, the authors stated, "Previous work has indicated that differences in neurocognitive functioning may predict the development of adverse post-traumatic neuropsychiatric sequelae (APNS)." (pg 58) Clinicians should be aware of the consequences of a traumatic event in the life of the victim. The paper reports, **"A substantial proportion of patients who present to the emergency department (ED) after a traumatic event go on to develop mild to severe APNS as a consequence of trauma exposure."** (pg 58) Understanding both the short and long-term consequences of the injury are a very important part of managing the trauma patient.

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The medical literature is beginning to become aware of the progression of cognitive injury and the authors stated, "Although one-third of all patients presenting to US EDs do so because of a trauma, only 10% are hospitalized (CDC, 2011). **Yet, 90% of those not hospitalized go on to develop APNS.** The most notable of these APNS are post-traumatic stress disorder (PTSD), depression, post-traumatic somatic symptoms (PTSS), and chronic/widespread pain." (pg 58) This is an important statistic since hospitalization rates are not necessarily a leading indicator of risk for post-traumatic cognitive injury.

This recent paper wrote, "Initiated by the National Institute of Mental Health in 2016, the AURORA (Advancing Understanding of RecOvery afteR traumA) study is designed to bridge these gaps through the collection and analysis of prospective genomic, neuroimaging, psychophysical, physiological, neurocognitive, digital phenotype, and self-report data from 5000 trauma survivors recruited from EDs, in the hours and days following trauma exposure and for one year thereafter." (pg 58) The authors reported, "In general, we found that neurocognitive performance was linked with peritraumatic distress, with some initial associations with APNS 2 weeks and 8 weeks post-trauma." (pg 65) This significant as these cognitive injuries can last for some time post-trauma.

In conclusion, the paper states, **"Our results suggest that processing speed and short-term memory may be useful predictors of trauma-related characteristics and the development of some APNS, making such measures clinically-relevant for identifying at-risk individuals."** (pg 58) **It is important to work with a clinician that will evaluate the entire patient and take into consideration the possibility that cognitive injury can occur and can be persistent.**

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REFERENCE:

1. Germine, L. T., Joormann, J., Passell, E., Rutter, L. A., Scheuer, L., Martini, P., ... & Kessler, R. C. (2022). Neurocognition after motor vehicle collision and adverse post-traumatic neuropsychiatric sequelae within 8 weeks: Initial findings from the AURORA study. Journal of affective disorders, 298, 57-67.