Dynamic Chiropractic

WHIPLASH / NECK PAIN

Navigating the Impact: Whiplash and Traumatic Brain Injuries (TBI)

Ronald Feise, DC

WHAT YOU NEED TO KNOW

- Front-line health care professionals should consider screening to identify post-concussion syndrome in patients following a motor-vehicle collision.
- About 80% of all traumatic brain injury cases are categorized as mild, so chiropractors are likely to encounter these patients.
- Vestibular rehabilitation, cervical spine physiotherapy, supervised aerobic exercise and delayed screen use constitute a good therapeutic package for patients with TBI.

More than 2.8 million people sustain traumatic brain injuries (TBI) in the United States every year. Research from the CDC shows that car accidents are one of the most common causes, accounting for about 25 percent of all brain injuries.[1]

Effects of Traumatic Brain Injuries

The adverse events associated with traumatic brain injuries are serious and far-reaching. Psychiatric and neurological disorders are common in TBI patients. Researchers have found a positive association between persistent post-concussion symptoms and depressive symptoms.[2] They have also found more than a 200% increase in the incidence of post-traumatic epilepsy in TBI patients.[3] Additionally, a case-control study reported that depression (3.0-fold) and psychosis (6.0-fold) were higher in the concussion group.[4]

The serious issues do not stop with psychiatric and neurological conditions. A noted study assessed the incidence among post-TBI patients of cardiovascular and endocrine comorbidities and

mortality.[5] Individuals with traumatic brain injury had increased hypertension risk (over 2-fold), diabetes risk (1.9-fold), and risk of ischemic stroke or transient ischemic attack (over 2-fold). Those with moderate to severe traumatic brain injury, compared with unexposed patients, also had a higher risk of mortality (9.9% vs. 5.7%).

Evaluating Traumatic Brain Injuries

Front-line health care professionals should consider screening to identify post-concussion syndrome in patients following a motor-vehicle collision by administering questionnaires and assessing cognition. Management should then incorporate principles from both whiplash and concussion guidelines, and harmonize with available imaging guidelines for suspected spine and head trauma.

Whiplash and Concussion

Whiplash and concussion may have similar presenting symptoms, biomechanical mechanisms, and neurophysiological sequelae, but neither enjoys a gold-standard diagnostic test. Guidelines for whiplash and concussion are developed and implemented separately. This disparate process may contribute to misdiagnosis, delay appropriate primary care management, and impair patient outcomes.

It is recommended that all acute whiplash patients be screened for traumatic brain injury. The SCAT6, the most recent iteration of the Sport Concussion Assessment Tool, provides a range of cognitive tests, symptom checklists, and functional exams. This instrument, published in the *British Journal of Sports Medicine*,[6] represents a landmark development in concussion management. It is a thoroughly researched, standardized, and evidence-based tool to assess and manage concussions in athletes.

Concussion signs and symptoms may evolve over time, so it is important to consider repeat evaluation and assessment. Ultimately, the diagnosis of a traumatic brain injury requires careful clinical judgment.

Chiropractic Care

About 80% of all traumatic brain injury cases are categorized as mild, so chiropractors are likely to encounter these patients.[7] In fact, research supports the use of our chiropractic package of care to treat these conditions.

Rehab and Physiotherapy

A randomized, controlled trial was conducted to determine the effects of vestibular rehabilitation and cervical spine physiotherapy in individuals with prolonged post-concussion symptoms.[8] In the treatment group, 73% of the participants were medically cleared within eight weeks of initiation of treatment, compared with 7% in the control group.

Aerobic Exercise

Another randomized clinical trial assessed the effectiveness of sub-symptom threshold aerobic exercise vs. a placebo-like stretching program for adolescents in the acute phase of recovery from sport-related concussion.[9]

Exercise group participants were instructed to exercise at home or in a gym with supervision each day for 20 minutes on a treadmill or stationary bike at the prescribed heart rate (80%), with a five-minute warmup and a five- to 10-minute cooldown. They were instructed to stop exercising if symptoms were exacerbated or after 20 minutes, whichever came first.

Aerobic exercise participants recovered four days sooner and experienced a lower incidence of delayed recovery (4% in the aerobic group vs. 14% in the placebo group).

Before the results of this aerobic exercise trial were published, the standard of care for sport-related concussion was prescribed rest until symptoms resolved, the exact opposite of aerobic exercise training. But the rest-is-best approach was based on animal research and consensus guidelines. This groundbreaking randomized human trial provides the latest cutting-edge guidance for health care professionals.

However, it must be emphasized that the aerobic exercise intervention is not equivalent to a return to sport-specific play. Rather, it is an early active intervention intended to speed recovery to the point that it is safe for the athlete to begin the return-to-sport process.

Screen Time Deprivation

Given the widespread use of computers and cell phones, a recent randomized clinical trial was conducted to determine whether screen time in the first 48 hours after a concussion has an effect on the duration of concussive symptoms.[10] The screen time-permitted group had a longer median recovery time: 8.0 days compared with 3.5 days in the screen time-abstinent group.

Practitioners would be wise to advise patients with concussion symptoms to refrain from screen time in the first few days after injury.

Clinical Takeaway

Vestibular rehabilitation, cervical spine physiotherapy, supervised aerobic exercise and delayed screen use constitute a good therapeutic package for patients with traumatic brain injury.

References

1. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2023.
2. Lambert M, Sheldrake E, Deneault AA, et al. Depressive symptoms in individuals with persistent postconcussion symptoms: a systematic review and meta-analysis. *JAMA Netw Open*, 2022 Dec 1;5(12):e2248453.
3. Burke J, Gugger J, Ding K, et al. Association of posttraumatic epilepsy with 1-year outcomes after traumatic brain injury. *JAMA Netw Open*, 2021 Dec 1;4(12):e2140191.
4. Izzy S, Tahir Z, Grashow R, et al. Concussion and risk of chronic medical and behavioral health comorbidities. *J Neurotrauma*, 2021 Jun 1;38(13):1834-1841.
5. Izzy S, Chen PM, Tahir Z, et al. Association of traumatic brain injury with the risk of developing chronic cardiovascular, endocrine, neurological, and psychiatric disorders. *JAMA Netw Open*, 2022 Apr 1;5(4):e229478.
6. Sport Concussion Assessment Tool 6 (SCAT6). *Br J Sports Med*, 2023;57:622-631.
7. Georges A, M Das J. *Traumatic Brain Injury.* StatPearls [Internet]. Treasure Island, FL: StatPearls Publishing, January 2023.
8. Schneider KJ, Meeuwisse WH, Nettel-Aguirre A, et al. Cervicovestibular rehabilitation in sport-related concussion: a randomised controlled trial. *Br J Sports Med*, 2014 Sep;48(17):1294-8.

9. Leddy JJ, Haider MN, Ellis MJ, et al. Early subthreshold aerobic exercise for sport-related concussion: a randomized clinical trial. *JAMA Pediatr*, 2019;173(4):319–325.
10. Macnow T, Curran T, Tolliday C, et al. Effect of screen time on recovery from concussion: a randomized clinical trial. *JAMA Pediatr*, 2021;175(11):1124-1131.

JULY 2024