Post-concussional syndrome

- The Influence of Menstrual Cycle Phases on Postconcussion Outcomes and Symptom Reporting: A Scoping Review
- Post-Concussion Syndrome Following Blast Injury: A Cross-Sectional Study of Beirut Blast Casualties
- Characterising Postural Orthostatic Tachycardia Syndrome (POTS) triggered by a viral illness compared to concussion or trauma
- Factors Associated With Persisting Symptoms After Concussion in Adults With Mild TBI: A Systematic Review and Meta-Analysis
- Purpose Renewal in Adults With Persisting Symptoms After Concussion: Results of a Non-Randomized Feasibility Trial
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- Depression Symptoms Associated With Clinical Symptoms, Disability, and Functional Connectivity After Traumatic Brain Injury
- The Polytrauma Clinical Triad Among Women with a History of Intimate Partner Violence

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Neck pain in a concussion population is an emerging area of study that has been shown to have a negative influence on recovery. This effect has not yet been studied in collegiate athletes.

Hypothesis: New or worsened neck pain is common after a concussion (>30%), negatively influences recovery, and is associated with patient sex and level of contact in sport.

Study design: Cohort study; Level of evidence, 2.

Methods: Varsity-level athletes from 29 National Collegiate Athletic Association member institutions as well as nonvarsity sport athletes at military service academies were eligible for enrollment. Participants completed a preseason baseline assessment and follow-up assessments at 6 and 24 to 48 hours after a concussion, when they were symptom-free, and when they returned to unrestricted play. Data collection occurred between January 2014 and September 2018.

Results: A total of 2163 injuries were studied. New or worsened neck pain was reported with 47.0% of injuries. New or worsened neck pain was associated with patient sex (higher in female athletes), an altered mental status after the injury, the mechanism of injury, and what the athlete collided with. The presence of new/worsened neck pain was associated with delayed recovery. Those with new or worsened neck pain had 11.1 days of symptoms versus 8.8 days in those without ($P < .001$). They were also less likely to have a resolution of self-reported symptoms in ≤7 days ($P < .001$). However, the mean duration of the return-to-play protocol was not significantly different for those with new or worsened neck pain (7.5 ± 7.7 days) than those without (7.4 ± 8.3 days) ($P = .592$).

Conclusion: This novel study shows that neck pain was common in collegiate athletes sustaining a concussion, was influenced by many factors, and negatively affected recovery [1)].

It's important to note that the clinical presentation of a concussion can vary widely from person to person and can be influenced by factors such as the severity of the impact, individual susceptibility, and previous history of concussions.

Here are some common clinical features associated with concussions:

Physical Symptoms:

Headache Dizziness or balance problems Nausea or vomiting Sensitivity to light and noise Fatigue or drowsiness Blurred vision or double vision Cognitive Symptoms:

Confusion Difficulty concentrating Memory problems Slowed thinking or processing information Feeling “foggy” or “dazed” Emotional Symptoms:

Irritability Mood swings Anxiety or nervousness Depression Emotional lability (rapid shifts in emotions) Sleep Disturbances:

Trouble falling asleep Sleeping more than usual (hypersomnia) Disrupted sleep patterns Communication and Speech:

Slurred speech Difficulty finding words or forming sentences Sensory Symptoms:

Ringing in the ears (tinnitus) Changes in sense of taste or smell Physical Signs:

Loss of consciousness (though this only occurs in a minority of cases) Amnesia regarding the event that caused the injury Coordination problems Inability to balance or walk steadily Delayed Onset Symptoms:

Some symptoms might not manifest immediately after the injury but could develop hours or even days later. These can include mood changes, cognitive difficulties, and sleep disturbances. It's important to stress that while many of these symptoms are common in concussions, they are not exclusive to them. Other conditions, such as other types of brain injuries, neck injuries, or psychological conditions, can present with similar symptoms.

Post-concussional syndrome (PCS) refers to a complex set of symptoms that may persist for weeks, months, or even years after sustaining a concussion or mild traumatic brain injury (mTBI). It is important to note that not everyone who experiences a concussion will develop post-concussional syndrome, and the severity and duration of symptoms can vary widely among individuals.

The typical features of post-concussional syndrome may include a combination of physical, cognitive, emotional, and behavioral symptoms. These symptoms often interfere with daily functioning and can significantly impact a person's quality of life. Some common symptoms of post-concussional syndrome include:

Headaches: Persistent or recurrent headaches are a common symptom of PCS.

Dizziness and Balance Issues: Feeling lightheaded, unsteady, or having difficulty maintaining balance.

Cognitive Difficulties: Problems with concentration, memory, and attention. Mental fatigue and slower processing speed may also be observed.

Sleep Disturbances: Changes in sleep patterns, including difficulty falling asleep, staying asleep, or experiencing excessive sleepiness.

Sensitivity to Light and Noise: Increased sensitivity to light (photophobia) or noise (phonophobia).

Mood Changes: Emotional symptoms such as irritability, anxiety, depression, or mood swings may be present.

Fatigue: Persistent feelings of tiredness or exhaustion, even with minimal physical or cognitive exertion.

Nausea and Vomiting: Some individuals may experience ongoing nausea or vomiting.

Visual Disturbances: Blurred or double vision, difficulties with focusing, or other visual disturbances.

It's essential to recognize that the diagnosis of post-concussional syndrome is clinical, based on the persistence of symptoms beyond the expected recovery period from a concussion. Management often involves a multidisciplinary approach, including rest, cognitive and physical rehabilitation, medications to address specific symptoms, and psychological support.

Individuals with post-concussional syndrome should work closely with healthcare professionals to develop a personalized treatment plan that addresses their specific symptoms and helps facilitate recovery. Additionally, ongoing research is contributing to a better understanding of the underlying mechanisms and effective interventions for post-concussional syndrome.

Case series

Retrospective analysis of hospital Emergency Department (ED) presentations and hospital admissions from all Western Australian hospitals for all patients with an ICD-10-AM diagnosis code for concussion and post-concussional syndrome (PCS) over the period 2002-2018. Data pertaining to concussion and PCS presentations were extracted from the WA Department of Health Emergency Department Data Collection (EDDC). Total case numbers were aggregated by year (2002-2018) and regions of WA.

Main outcome measures: The rates of diagnoses were calculated based on the population in the specific region and expressed as incidence rate per 100,000 person-years. The overall trends of diagnoses across the regions were analysed using negative binomial regression models and expressed as incidence rate ratio (IRR) with the corresponding 95 % CI, whilst adjusting for region. Tests for linearity were also performed.

Results: The rate of concussion diagnosis had significantly increased linearly over the years (p for trend: $p < 0.001$) whilst the rate of PCS diagnosis had significantly declined linearly over the same period (p for trend: $p < 0.001$).

There was significant increase in all-cause ICD-10-AM concussion diagnoses in WA emergency departments. To further clarify the incidence and prevalence of all-cause concussion in Australia, investigation must focus on truly reflective S06.0 codes and include data linkage to primary care data. Conversely PCS ED presentations reduced; whether this relates to a change in where presentations occur for management of such a diagnosis, improved early intervention or an alternative explanation warrants further investigation [2)].

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King JA, Nelson LD, Cheever K, Brett B, Gliedt J, Szabo A, Dong H, Huber DL, Broglio SP, McAllister TW, McCrea M, Pasquina P, Feigenbaum LA, Hoy A, Mihalik JP, Duma SM, Buckley T, Kelly LA, Miles C, Goldman JT, Benjamin HJ, Master CL, Ortega J, Kontos A, Clugston JR, Cameron KL, Kaminski TW, Chrisman SP, Eckner JT, Port N, McGinty G. The Prevalence and Influence of New or Worsened Neck Pain After a Sport-Related Concussion in Collegiate Athletes: A Study From the CARE Consortium. Am J

Sports Med. 2024 May 14:3635465241247212. doi: 10.1177/03635465241247212. Epub ahead of print. PMID: 38742422.

2)

Thomas E, Chih H, Thorne J, Fitzgerald M, Cowen G. A retrospective analysis of concussion and post-concussional syndrome diagnoses in Western Australian emergency departments. Injury. 2024 Jan 20;55(3):111333. doi: 10.1016/j.injury.2024.111333. Epub ahead of print. PMID: 38280260.