**Headache management in concussion and mild traumatic brain injury**


Headache is one of the most common symptoms after traumatic brain injury (TBI), and posttraumatic headache (PTH) may be part of a constellation of symptoms that is seen in the postconcussive syndrome. PTH has no defining clinical features; currently it is classified as a secondary headache based on its close temporal relationship to the injury. A growing number of studies are characterizing PTH by using primary headache classifications. Moderate to severe PTH that is often disabling may be classified as migraine or probable migraine and is found in substantial numbers of individuals. Recent data from civilian adult, pediatric, and military populations all find that PTH may be more of a chronic problem than previously thought, with a prevalence of close to half of the injured population. In addition, if PTH definitions are strictly adhered to, then many cases of PTH may be missed, thus underestimating the scope of the problem. New headaches may be reported well after the 7 days required for diagnosis of PTH by the guidelines of the International Classification of Headache Disorders, 2nd edition. A history of headache before a head injury occurs and female gender are possible risk factors for headache after TBI. Treatment of PTH may be acute or preventive, and recommendations are made for the use of migraine-specific acute therapy when indicated. Preventive therapy may be considered when PTH is frequent, disabling, or refractory to acute therapies. Comorbid conditions should be considered when choosing an appropriate preventive therapy. The symptom of headache as a "return to play" or "return to duty" barrier must be viewed in the context of other symptoms of mild TBI.

**Measurement Properties of Headache-Specific Outcomes Scales in Adolescent Athletes**

Piebes, Sarah K.; Snyder, Alison R.; Bay, R. Curtis; McLeod, Tamara C. Valovich, Journal of Sport Rehabilitation Feb 2011, Vol. 20 Issue 1, p129

Abstract: Context: Recurrent headaches significantly affect health-related quality of life (HRQOL) in adults; the impact of headache on HRQOL among adolescents is unknown, and the psychometric properties of headache-specific outcomes instruments have not been adequately studied in this population. Objective: To evaluate the psychometric properties of the Headache Impact Test (HIT-6) and Pediatric Migraine Disability Assessment (PedMIDAS) in healthy adolescent athletes. Design: Descriptive survey. Setting: High school athletic training facilities during the fall sports season. Participants: 177 high school athletes (89 males and 88 females). Interventions: A survey consisting of a demographic and concussion-history questionnaire, a graded symptom scale, the HIT-6, and the PedMIDAS. Internal consistency (α), test-retest reliability (r<sub>s</sub>), Bland-Altman analyses, and the Mann Whitney U test were used to evaluate psychometric properties and age and gender differences. Main Outcome Measures: The HIT-6 and PedMIDAS item and total scores. Results: Test-retest reliability for the HIT-6 total score was r<sub>s</sub> = .72, and reliability of individual items ranged from r<sub>s</sub> = .52 to .67. The test-retest reliability for the PedMIDAS total score was r<sub>s</sub> = .61, and reliability of individual items ranged from r<sub>s</sub> = .23 to .62. Both scales demonstrated acceptable internal consistency: HIT-6 α = .89-.90 and PedMIDAS α = .71-.75. Conclusions: The authors found moderate test-retest reliability for the HIT-6 and the PedMIDAS in a healthy adolescent athlete population. Research on the applicability and utility of the HIT-6 and PedMIDAS in concussed adolescents is warranted.
Post-Traumatic Headache: Commentary: An Overview

Abstract: The history of post-traumatic headache begins in the middle of the 19th century, and its latest iteration has been defined in the International Headache Classification of 2004. Contrary to the latter, there are instances when mild head injury without symptoms or signs of concussion may evoke the pathophysiological changes of migraine. The mechanisms of chronic post-traumatic headache and the associated syndrome are complex and include pathophysiological, psychological, and socioeconomic factors. Treatment of these headaches is similar to that of the primary headaches with particular attention to nonpharmacological measures.

Headache-Related Disability Reported by Collegiate Athletes

Abstract: Limited data exist regarding the effects of headache on athletes’ quality of life. The purpose of this study was to examine the effects of headache on athletes’ health-related quality of life. A secondary purpose was to examine the association of these effects with self-reported demographic data related to concussion history. A survey instrument, including demographic information, concussion history, and the Migraine Disability Assessment Score (MIDAS), was completed by 251 collegiate athletes (mean age, 19.236±1.81 years). Descriptive statistics were obtained for the MIDAS and demographic information. Less than 10% of athletes reported that headache interfered with athletic participation in the past 3 months. A chi-square test of association suggested that individuals who self-reported at least 1 previous concussion were more likely to report higher headache disability than individuals with no previous concussions ($\chi^2 [1] = 6.63; P = .010$). Headache characteristics and quality of life issues should continue to be evaluated using outcome-based measures.

Headache after concussion

Abstract: Background and purpose: Chronic post-traumatic headache attributed to mild head injury is a somewhat disputed headache diagnosis. A main object of this study was to assess the validity of this diagnosis by studying the headache pattern of concussed patients that participated in one historic ($n = 131$) and one prospective cohort ($n = 217$) study. Methods: Head injury patients were recruited from two hospitals in Kaunas, Lithuania. Controls were recruited amongst patients with minor orthopaedic traumas not involving the head and neck. Results: When data from the two studies were pooled, no difference in any headache category (diagnosis, attack frequency, symptoms) was found one or more years after the trauma, except that photophobia was somewhat more prevalent amongst the concussed patients. In both injury groups, the existence of pre-traumatic headache was a predictor of post-traumatic headache, although pre-traumatic headache seems to have been underreported amongst the concussed patients. There was a significant negative correlation between the duration of unconsciousness and the headache. Conclusions: This negative correlation, and the lack of specificity indicates that headache occurring 3 months or more after concussion is not caused by the head or brain injury. Rather it may represent an episode of one of the primary headaches, possibly induced by the stress of the situation.
Is migraine a risk factor for the development of concussion?