INFORMATION FOR HEALTH CARE PROFESSIONALS

Concussion and Post-Traumatic Headache

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INTRODUCTION

Recent attention to the consequences of head injury has alerted the public and health professionals to the need for better understanding of concussion. Professional and youth sports, and military Traumatic Brain Injury (TBI) have provided testing grounds for better evaluations and treatments. Headache is amongst the most prominent of the symptoms that may linger after mild TBI. Post Traumatic Headache (PTH) may be the most common and poorly understood of all the lingering symptoms.

SCOPE OF THE PROBLEM

The Centers for Disease Control (CDC) reports that TBI results in nearly 1.4 million emergency room visits, 275,000 hospitalizations and 52,000 deaths per year. Mild TBI accounts for most of the non-lethal events, and motor vehicle accidents are the most common cause of injury.

In youth recreation and sports, an estimated 62,000 injuries occur per year in those 15 – 19 years old. Professional and high school sports associations have instituted educational and evaluation programs. State legislatures are increasingly passing laws mandating rules for return to play.

In the military, it is estimated that more than 350,000 returning service members have sustained mild head injuries. The absolute prevalence of headache is unknown, but amongst those reporting blast injuries, greater than 90% have headaches, mostly of the migraine type.

CLASSIFICATION

The ICHD-II classifies Acute (APTH) and Chronic Post Traumatic Headache (CPTH) Attributed to Mild Head Injury. Both are based upon the standard definition of mild concussion (Criteria B below) and begin within 7 days of the injury. Chronic PTH persists for more than 3 months.

5.2.2 Chronic post-traumatic headache attributed to mild head injury

A. Headache, no typical characteristics known, fulfilling criteria C and D

B. Head trauma with all the following:

1. Either no loss of consciousness, or loss of consciousness of <30 minutes' duration
2. Glasgow Coma Scale (GCS) >13
3. Symptoms and/or signs diagnostic of concussion

C. Headache develops within 7 days after head trauma

D. Headache persists for >3 months after head trauma

Practitioners should be aware of the timing of onset and full constellation of symptoms in the acute period and the expected of recovery for balance, cognitive and reaction times which is typically 7 – 10 days. Failure to return to baseline neurologic status within 30 days requires even more careful evaluation. In youth and professional sports, athletes should not return to play until they are symptom free. CDC recommends the following for the athlete with an acute head injury:

1. Remove the athlete from play
2. Insure that the athlete is evaluated right away by an appropriate health care professional
3. Inform the athlete's parents or guardians about the possible concussion and give them the fact sheet on concussion
4. Allow the athlete to return to play only with permission from a health care professional with experience in evaluating for concussion

For acute mild TBI the Departments of Defense recommends:

1. 24 hours of forced rest after first concussion
2. 7 days of rest after second concussion within 12 months
3. After third concussion in 12 months return to duty must be based upon consultation with qualified medical personnel

Guidelines for assessment of baseline and follow-up evaluations and treatment have not been established for civilians and regular patients.

DIAGNOSIS

Acute post traumatic headache may have features of migraine or tension type headache and typically resolves within 3 months. Within the first 72 hours, the practitioner should assess for more serious complications including intracranial hemorrhage. Specialty evaluation should not be delayed if concerns for neurological symptoms worsen during the acute period.

After the acute period, persistent symptoms may require neuropsychological, vestibular and neuro-ophthalmologic testing to establish the extent of injury. These can be reliably repeated after therapy. Work related disability and litigation may complicate longer term outcomes and specialty evaluations can help to establish the validity of symptom reporting or malingering.

PATHOPHYSIOLOGY AND EVALUATION

The symptoms after TBI are caused by axonal shear causing incomplete neuronal transmission. Patients suffer impaired multitasking, limited cognitive endurance, and executive function, neurobehavioral and mood disturbances. Routine imaging with CT and MRI scans are typically normal. Advanced techniques including diffusion tensor imaging show some promise in demonstrating disruptions in white matter tracks. The reports of chronic traumatic encephalopathy with tau protein deposition found in athletes dying from natural causes or suicide have wider implications if present in other populations. Acute serum biomarkers have not yet been found. CPTH, especially the migraine type, may relate to cortical spreading depression. Documented response to triptans and migraine preventives appear to support this hypothesis.

TREATMENT

There have been no randomized clinical trials in Acute or Chronic PTH to date. Acute symptoms are typically self-limited and acetaminophen is the best immediate therapy. For more

chronic symptoms, the clinician should apply clinical "typology" to the headache and associated symptoms. Since the majority of persistent headaches that are of the migraine or tension type, standard medications for treating these entities are employed. Awareness of other accompanying symptoms including sleep fragmentation, balance difficulties and mood changes offers an opportunity to treat multiple problems with one medication. For prevention, reports have shown that amitriptyline, other tricyclic antidepressants, and gabapentin may help; topiramate has also shown benefit, though attention to persistent cognitive complaints may limit its use. For acute treatment, triptans work for migraine type and NSAIDS are mainstay treatments after an appropriate interval of observation for possible hemorrhage. Opioids are not indicated. Behavioral therapies may be helpful to treat multiple symptoms and attention to sleep hygiene should be considered mandatory. Balance and cognitive assessments and treatment may require specialty referral including occupational, physical or speech therapists. Though experts still question whether persistence of headaches is a marker for permanent or additional injury, in all cases, prevention of recurrent TBI is paramount.

REFERENCES:

Seifert TD, Evans RW. Posttraumatic headache: a review. Curr Pain Headache Rep. 2010;14(4):292-298.

For Athletes and families: http://www.cdc.gov/concussion/headsup/
For Service Members and families: www.dvbic.org