Post-Traumatic Headache

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Learning Objectives

1. Discuss the historical and current controversies in concussion/mTBI
2. Review the epidemiology of Post-Traumatic Headache (PTH)
1. Highlight the Approach to the Patient With PTH
2. Explore Pearls & Pitfalls in PTH Management


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Post-Traumatic Headache: A look back through the centuries

Historical Aspects of PTH

- 19th Century
  - Psychoneurosis & Compensation Neurosis

    vs
  - Traumatic Neurosis & Railway Spine and Brain

- 21st Century
  - Malingering, Factitious Disorder, Functional Neurologic or Somatic Symptom Disorder

    vs
  - Post-Concussion Syndrome

19th Century View

- **Erichsen, 1866**
  - **“ subacute chemical meningits and arachnitis”**
  - **Noted earlier investigators described the same symptoms in the pre-railway era**
  - **Believed hysteria was over-diagnosed and misdiagnosed**

Courtesy of Dr. Randolph Evans

19th Century View

- **Rigler, 1879**
  - **Compensation neurosis describes the increased incidence of post-traumatic invalidism after a system of financial compensation established to compensate victims of injuries on the Prussian Railway**

Courtesy of Dr. Randolph Evans

Dr. Harvey Cushing on Post-Concussive Symptoms - 1908

- **“Although no objective signs accompany these complaints, they are so uniform from case to case that the symptoms cannot be regarded as other than genuine”.**

Courtesy of Dr. John Edmeads

Dr. Walter Dandy on Post-traumatic Symptoms - 1932

- **“Although the blow is unquestionably the precipitant, the underlying cause is always the patient’s mentally inferior background, largely an hereditary acquisition”.**

Courtesy of Dr. John Edmeads

20th Century View

- **Miller, 1961**
  - **"The most consistent clinical feature is the subject's unshakable conviction of unfitness to work**

    (i.e compensation neurosis)

- **Symonds, 1962**
  - **It is, I think, questionable whether the affects of concussion, however slight, are ever completely reversible**
    (i.e. traumatic neurosis)

Courtesy of Dr. Randolph Evans

How Does a Head Injury Cause PTH?

Mechanism of Concussion - Through the Centuries

- Queyrat 1657 – commotio cerebri
- Littre 1705 – circulatory failure
- Petit 1774 – nerve cell shock
- Baudens 1836 – molecular vibration
- Trotter 1924 – acute compressive anemia

Courtesy of Dr. Randolph Evans

Proposed Mechanisms of PTH

- Injuries to
  - Scalp
  - Skull
  - Dura
  - Specific Nerves of the Head/Neck
  - Discs
  - Facet
  - Bones
  - Ligaments
  - Muscles
  - Sympathetic nerve fibers of the arterial vessels
  - TMJ
- Brain contusion, Diffuse Axonal Injury
- Cortical Spreading Depression
- Release of Excitatory neurotransmitters
- Release of Inhibitory Neurotransmitters
- Increased Intracranial Pressure / Decreased Intracranial Pressure
- Impaired cerebral vascular autoregulation

Whiplash and Headache?

What Factors Maintain and Perpetuate PTH?

What is the Most Important Factor in Perpetuating PTH?

A. Physical Factors

B. Medical Factors

A. Psychological Factors

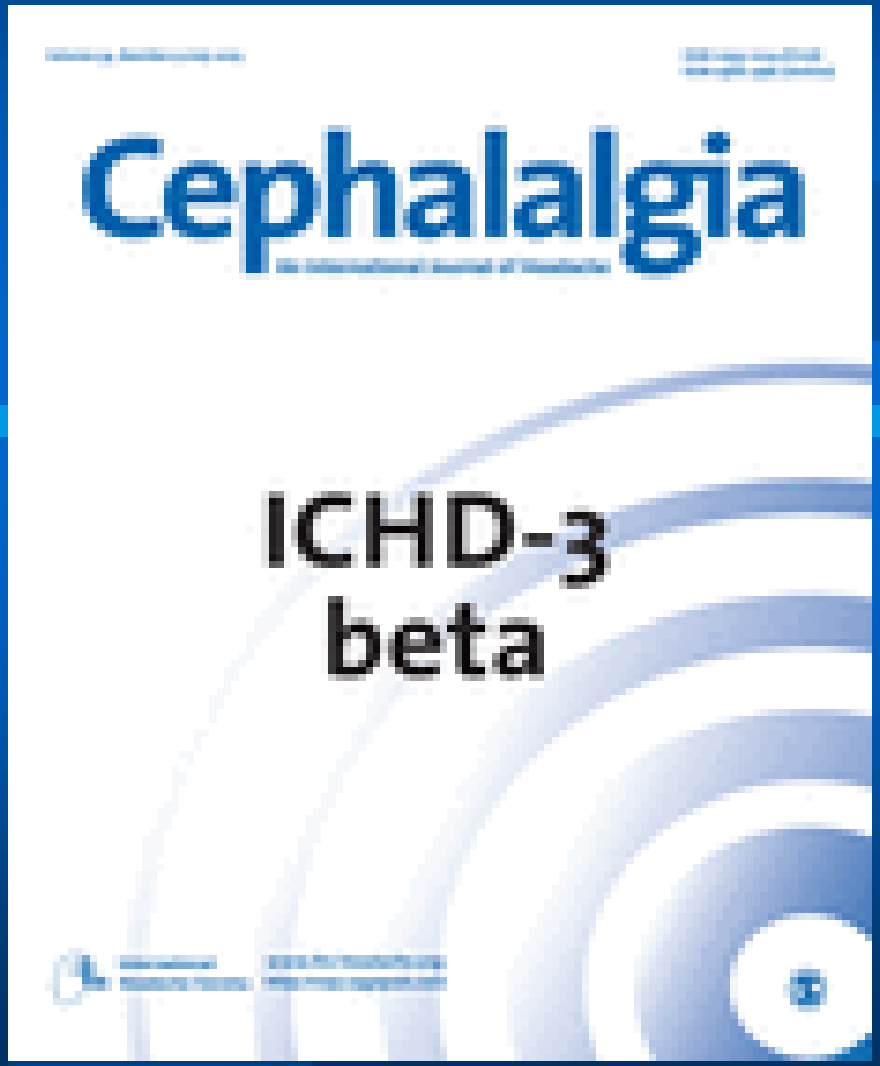
B. Compensation Factors

Proposed Mechanisms of PTH

- Initiation
  - Physical Factors
- Maintenance or Perpetuation
  - Physical Factors
  - Situational Factors
  - Psychological Factors
  - Medical Factors
  - Compensation Factors

Diagnostic Criteria for PTH

ICDH-3 Classification of PTH



Headache attributable to head and/or neck trauma

"Headache ***Attributed*** to Head ***and/or Neck*** Trauma"

- 5.1 Acute post-traumatic headache
  - 5.1.1 acute PTH attributed to moderate or severe head injury
  - 5.1.2 acute PTH attributed to mild head injury
- 5.2 Chronic post-traumatic headache
  - 5.2.1 mod or severe head injury
  - 5.2.2 mild head injury
- 5.3 Acute headache attributed to whiplash injury
- 5.4 Chronic headache attributed to whiplash injury

According to ICHD-3, to meet criteria for PTH, the headache must begin within what time frame from the Head Injury?

A. 24 hours

B. 72 hours

A. 1 week

B. < 30 days

5.1.2 Acute PTH Attributed to Mild Head Injury

- **A- headaches, no typical characteristics known**
- **B- head trauma with** all **of :**
  - **Either no loss of consciousness, or if it occurred < 30 min in duration**
  - **Glasgow Coma Scale 13 or more**
  - **Symptoms and/or signs diagnostic of concussion**
- **C- headache develops within** 7 **days of trauma**
- **D- headache resolves within** 3 mos **of trauma**

What % of Individuals Develop Chronic Headache After a HI?

What are the Risk Factors for Developing Chronic PTH?

What is the Biggest Risk Factor for Chronic PTH?

A. Severity of the Injury

B. Priory history of head injury

A. Prior migraine history

B. Older age

Risk Factors for PTH

- Milder Trauma ?
- Older Age ?
- Female Sex ?
- Lower SES, Intelligence?
- Previous hx of primary headache disorder ?
- Family hx of primary headache disorder ?
- Previous head injury ?
- History of psychiatric disease ?
- Abnormal neurologic examination ?

What Types of Headaches Develop after a Head Injury?

Why Types of Headache Occur in PTH?

- NEW headache
- EXACERBATION of underlying headache

What Are the Important Secondary Causes of PTH?

PTH – Important Secondary Causes

- Subdural Hematoma
- Intracranial Hypotension
- Venous Sinus Thrombosis
- Arterial Dissection

What Headache Phenotype is Most Common in PTH?

A. Migraine

B. Tension-Type

A. Cervicogenic

B. Unclassifiable

Types of PTH

- Migraine
- Tension-type headache
- Unclassifiable
- Cervicogenic
- Occipital Neuralgia, Supraorbital Neuralgia, Infraorbital Neuralgia
- Other (cluster, hemicrania continua)

Tension-Type Headache

- Recurrent similar headache
- Last from 30min – 7 days
- At least 2 of:
  - *pressing/tightening*
  - *mild/mod intensity*
  - *bilateral*
  - *no change with exercise*
- Both of the following
  - *No N/V*
  - *only 1 of photo/phonophobia*

Migraine

- Recurrent headaches
- Last 4-72 hrs untreated
- > 2 of the following
  - unilateral
  - pulsating
  - mod-severe intensity
  - aggravated by (or causes avoidance) of exertion
- > 1 of the following
  - nausea +/- vomiting
  - photo- + phonophobia
- No evidence on history or physical of another cause

Idiopathic Stabbing Headache

- Head pain occurring as a single stab or volley of stab
- Stabs may last for up to a few seconds and recur irregularly
- No accompanying symptoms

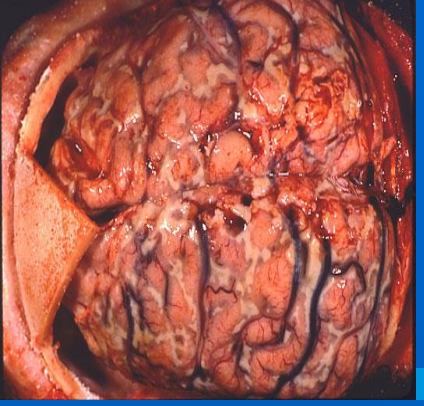
Exertional Headache

A. Pulsating headache meeting B and C

B. Lasting from 5 minutes to 48 hours

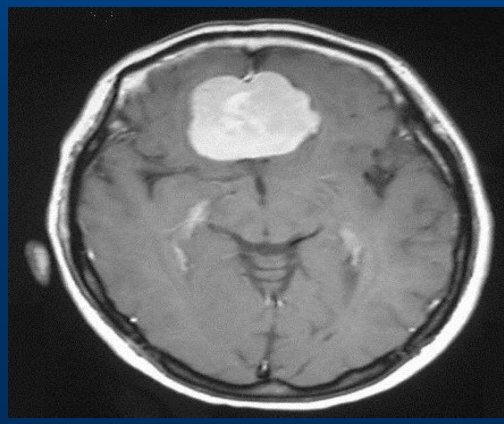
C. Brought on by and occurring only during or after physical exertion

How Do You Approach PTH?



PTH: A Challenging Situation

- Can't see it
  - CT, MRI, EEG typically all normal
- Can't touch it
  - Physical examination typically normal
- Can't quantify it
  - Purely subjective



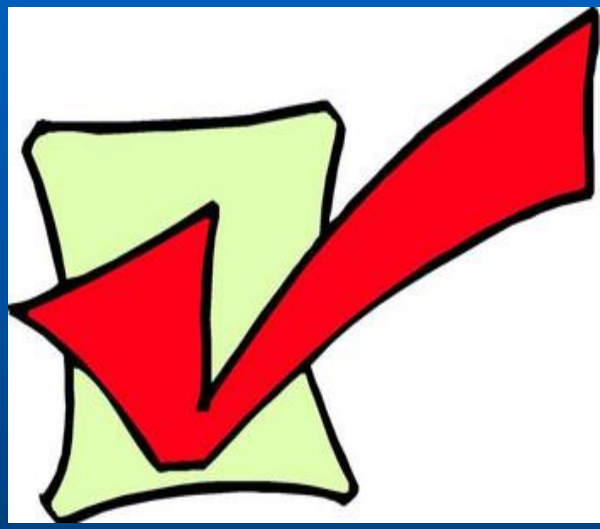
How Do You Approach PTH?

- Take a Good History
- Review Medical Brief and Obtain Ancillary Info
- Screen For and Address
  - Insomnia, Depression, Anixety, PTSD
  - Medication Overuse
- Look for Malingering/Compensation Issues
- Understand and address patient's concerns
- Normalize, Validate, Emphasize, Encourage

Pearls and Pitfalls in the Management of PTH?

Statement #1

Most doctors don’t how
To diagnose and treat
Post- traumatic headache



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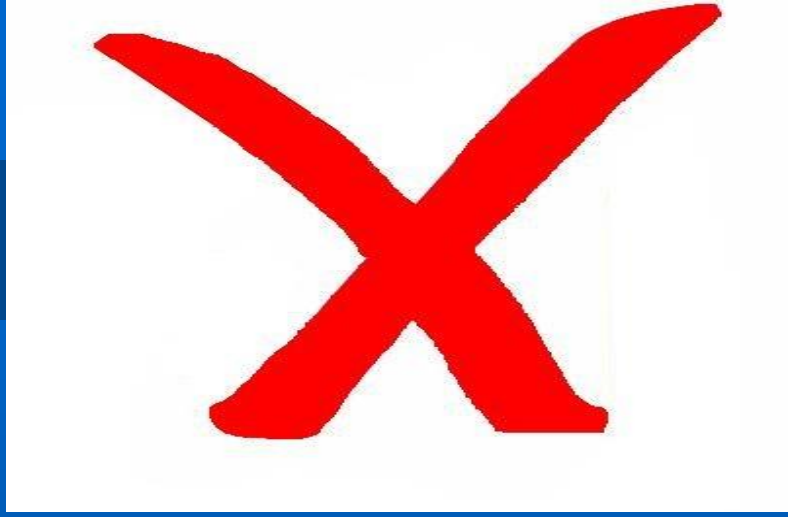
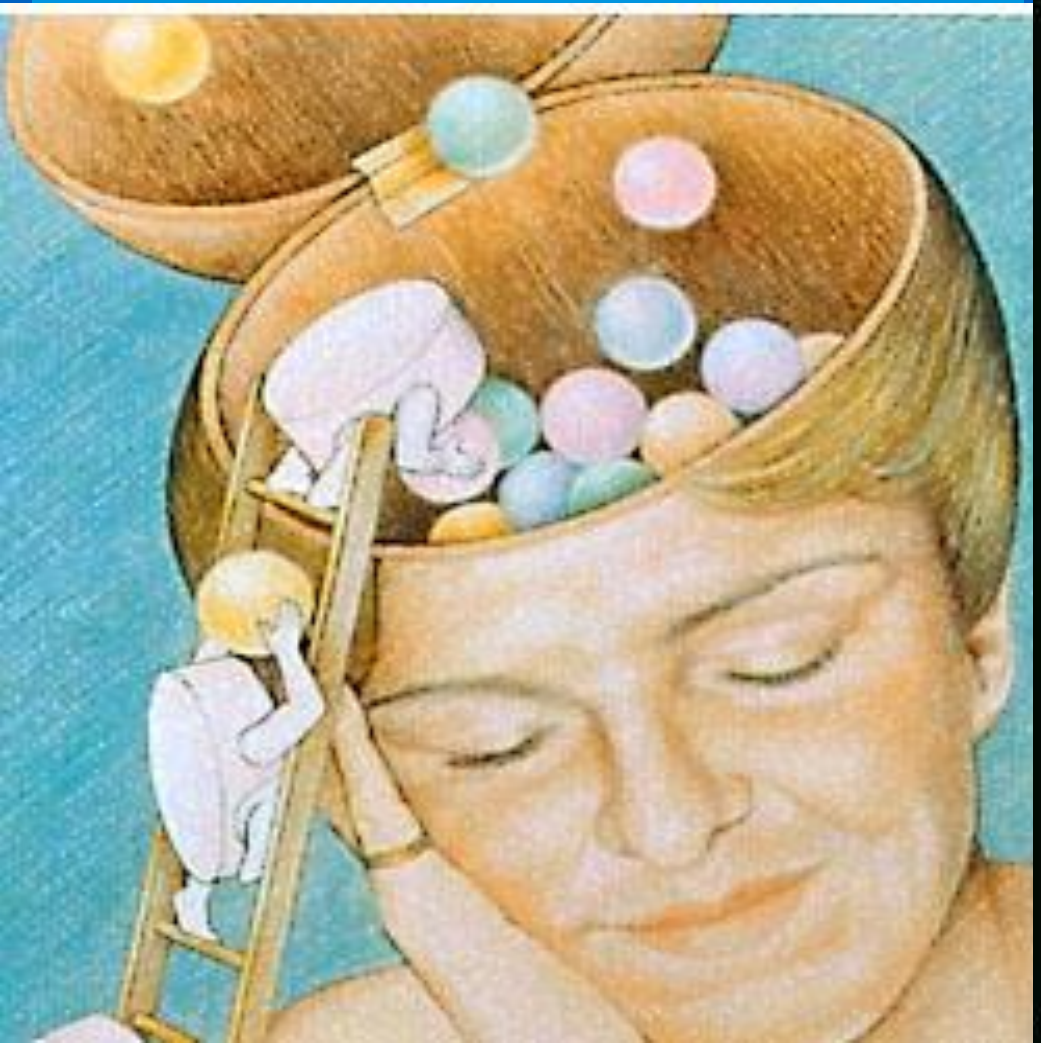


Chronic Pain Clinics Are Usually an Excellent Option to Assist Individuals with Post-Traumatic Headaches

1. Physicians Cause Much of the Problem – Pain Does NOT Need to be Medicated to 0/10

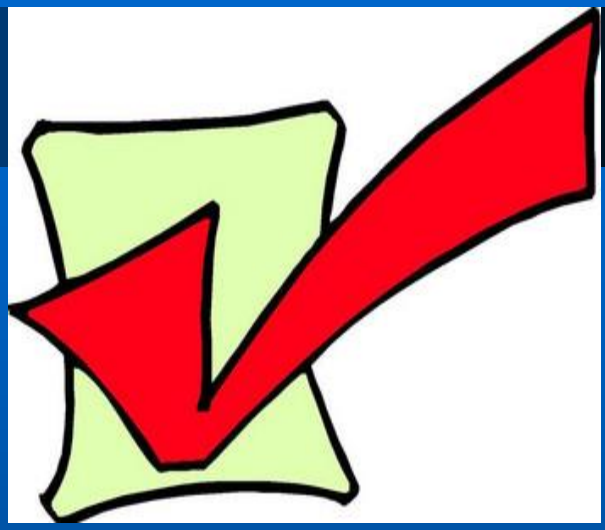


Post-Traumatic Headache & Medication Overuse Headache?

Medication Overuse Headache

- Simple analgesic >15 days month
- Combination meds >10 days/month
- Opiods >10 days/month
- Ergotamine >10 days/month
- Triptans > 10 days/month

Statement #3



There are published guidelines to assist doctors when treating a patient with PTH

- Ontario Neurotrauma Guidelines for the Management of Persistent Symptoms Following Concussion / mTBI

How Do You Treat PTH?

1. Education & Goal Setting

2. Screen for Co-morbidities
   - Mood, Anxiety, Insomnia

3. Non-pharmacologic
   - Lifestyle strategies
   - Mindfulness, Relaxation
   - Psychotherapy, CBT
   - Physical

4. Medical
   - Acute
   - Prophylactic
   - +/- Interventional

ACUTE MEDICATIONS

- **Nonspecific**
  - NSAIDs, Acetominophen, ASA
  - Combination analgesics (with caffeine)
  - AVOID T#1, T#2, T#3, Percocet, Oxycocet !!!
  - AVOID Tramacet, Tramadol, Oxycontin, Fiorinal !!!
- **Migrainous**
  - Triptans
  - Anti-emetics

ACUTE MEDICATIONS

Over-the-Counter:

- Advil or similar ≤ 3 days per week
- Tylenol ≤ 3 days per week
- Aspirin/Alka-Seltzer ≤ 3 days per week
- Obey daily limits!
- Alternate OTC analgesics
- Combine Alka-Seltzer/ASA/Advil with Tylenol to avoid excessive consumption of any 1 analgesic

ACUTE MEDICATIONS

Triptans

- ≤ 10 days per month
- Axert 12.5 mg, Maxalt 10 mg, or Relpax 40 mg
- Oral, Wafer (Maxalt/Zomig),
- Nasal Spray (Imitrex, Zomig), Injection (Imitrex)
- May combine with NSAIDs/ASA
- May combine with anti-emetics (Gravol, Metoclopramide, Ondansetron)

Preventive Medications

- **Antidepressants**
  - TCAs (amitriptyline, nortriptyline)
- **Beta blockers**
  - Propranolol
  - Nadolol
- **Anticonvulsants**
  - Topiramate
  - Gabapentin
- **Interventional**
  - Botulinum toxin A (BOTOX)
  - Nerve Blocks
- **“Natural” Options**
  - Riboflavin, Magnesium
- **Miscellaneous**
  - Sibelium
  - Sandomigran

Pearls for Preventing Headache

- Prescribe reality
- Prevent aggressively
- Primum non nocere
- Try for “two for’ s”
- Start low; go *very* slow
- Persist, persist, persist

Amitriptyline: Common Potential Side-Effects

- Weight Gain
- Fatigue
- Dry Mouth
- Constipation

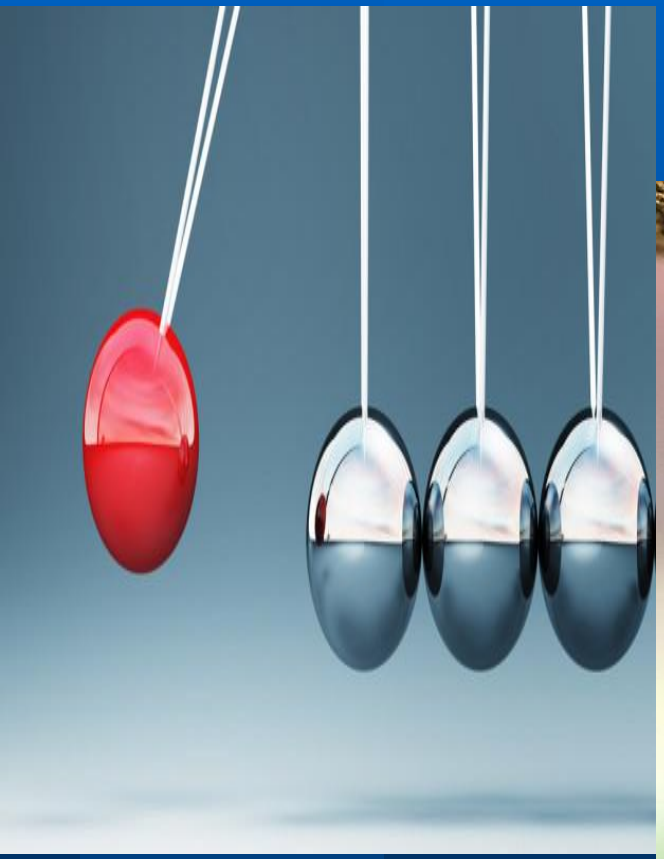
Beta-Blocker: Common Potential Side-Effects

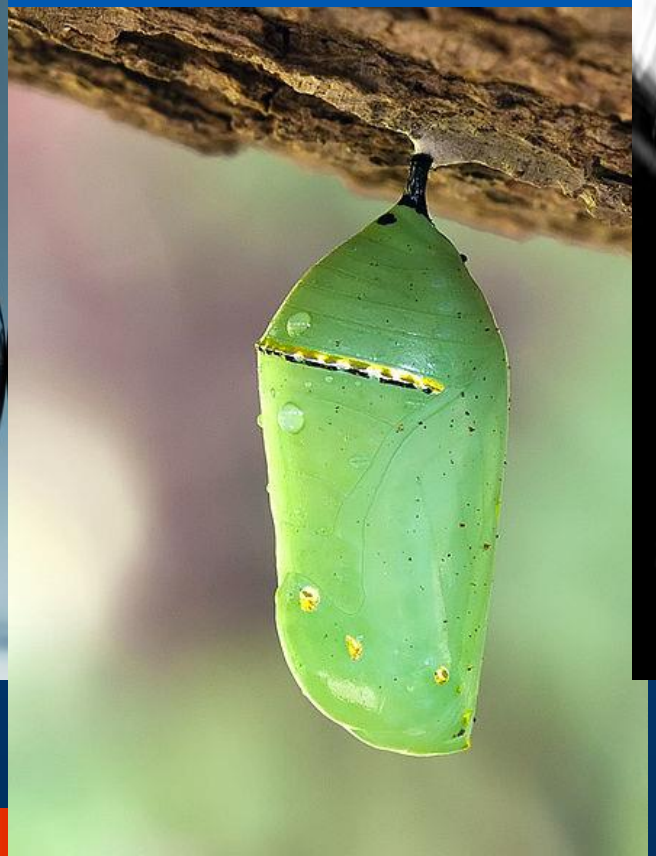
- Decreased Heart Rate and Decreased Blood Pressure
  - Light-headedness
  - Pre-syncope
  - Syncope
- Fatigue, Exercise Intolerance
- More vivid dreams

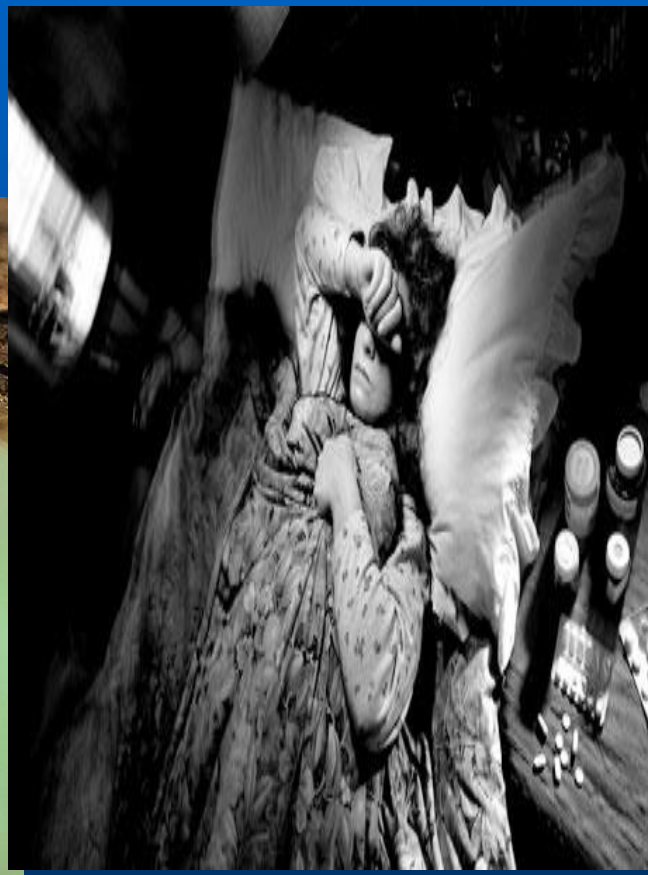
Topamax: Common Potential Side-Effects

- Cognitive slowing
- Word-finding difficulties
- Tingling in the fingers and toes
- Decreased appetite and weight

2. The Pendulum Has Swung Too Far Towards Rest







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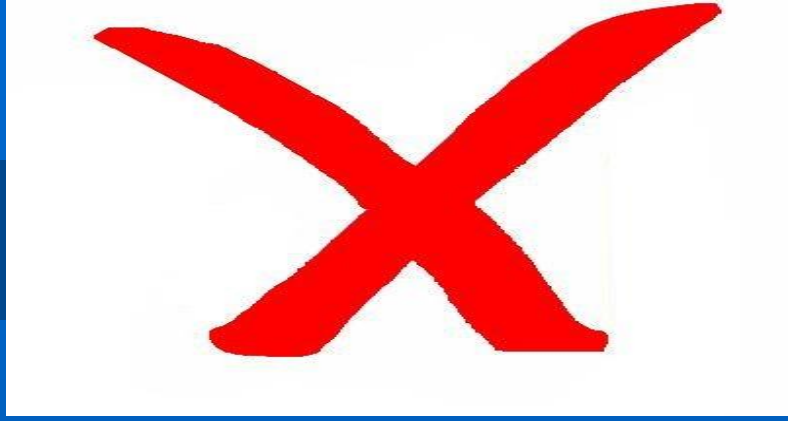
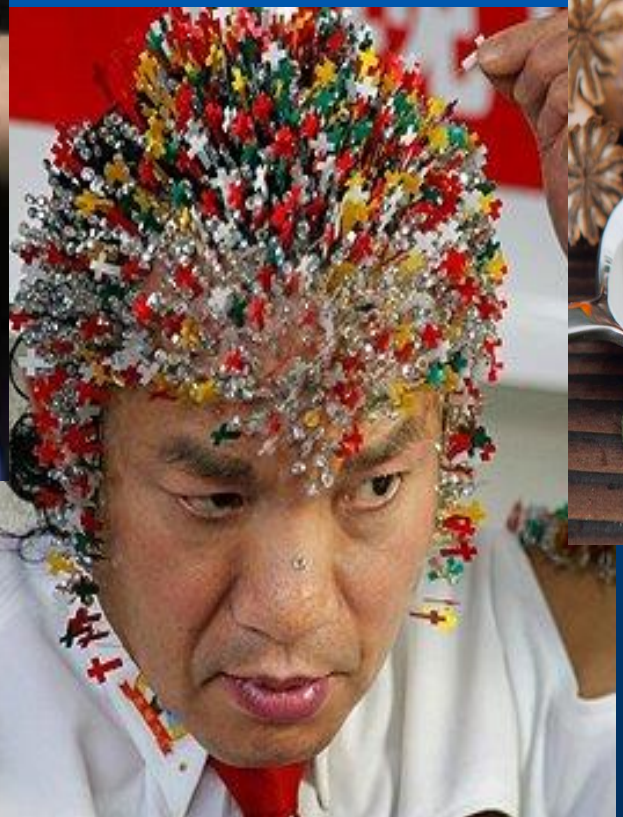
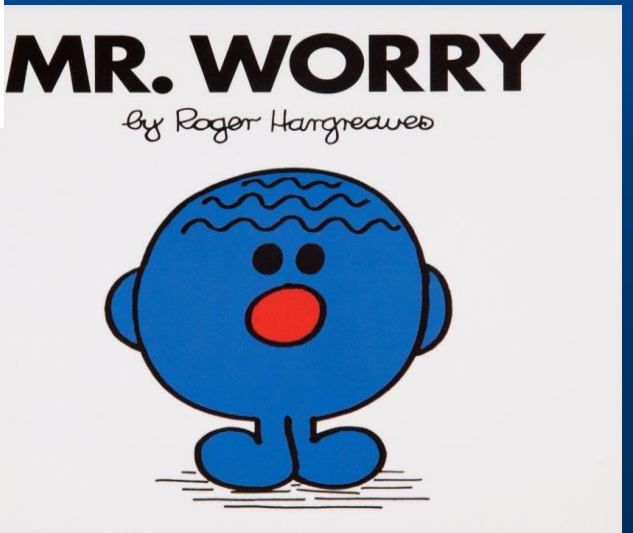


All health-care professionals are caring, compassionate individuals with patient's best interests at heart

3. Concussion Has Become a Business

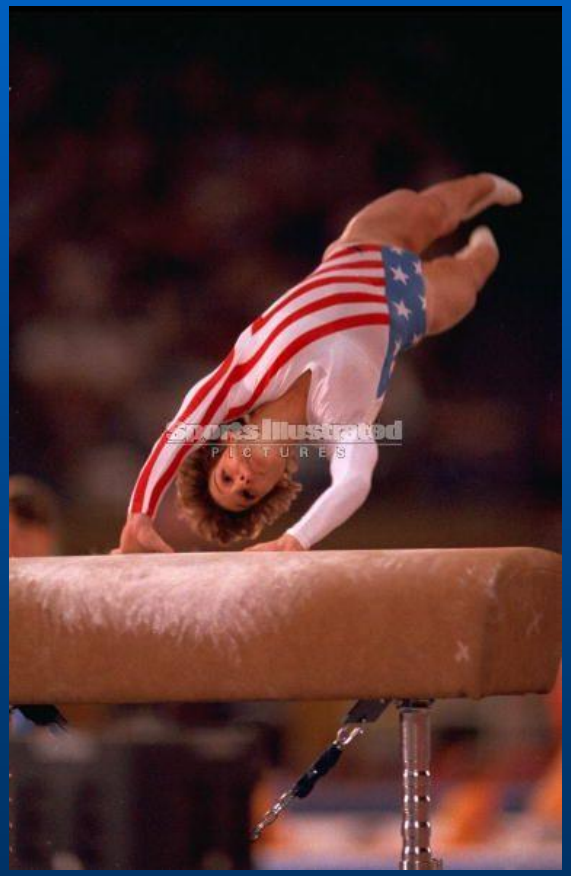


The Person To Whom the Injury Happens May Be More Important Than The Severity of the Injury



Case #1 – PTH is real and, *for a minority*, can be long-lasting!

- 20 year old female
- Club-level gymnast
- Vault injury
- Constant 24/7 headaches for 5 years



Case #2
Headaches *Can* Be Disabling

- 35 year old male
- Slip and fall in driveway
- No LOC
- Chronic disabling headaches
- Unable to work

Case #3 – It is Difficult to Predict Recovery Based Upon Injury Severity

- 26 year old baseball player
- On-field collision with another player (elbow to jaw)
- Persistent symptoms
- Eventual resolution in 6+ months

What is the Best Way to Evaluate +/- Manage Persisting Symptoms Following mTBI?

A Team-Based Approach is Optimal to Evaluate and Manage Persisting Symptoms Following mTBI

Work-Related Injuries

- Toronto Rehabilitation Institute
  - Neurology Service
  - Complex Injury Outpatient Rehabilitation Program

- Physician or health professional writes to/speaks with patient's WSIB case manager to request TRI for expedited Brain injury multidisciplinary evaluation (+/- treatment)

MVA-Related Injuries

- **Toronto Rehabilitation Institute**
  - **Complex Injury Outpatient Rehabilitation (CIOR)**
  - **3rd Party Funded Multidisciplinary Evaluation and Treatment Program**
- **Fax referral to CIOR**
  - **Contact Josie Tome for referral**
  - **Tel: 416-597-3422 ext. 3486**
  - **Fax: 416-597-7164**

Neurology Service

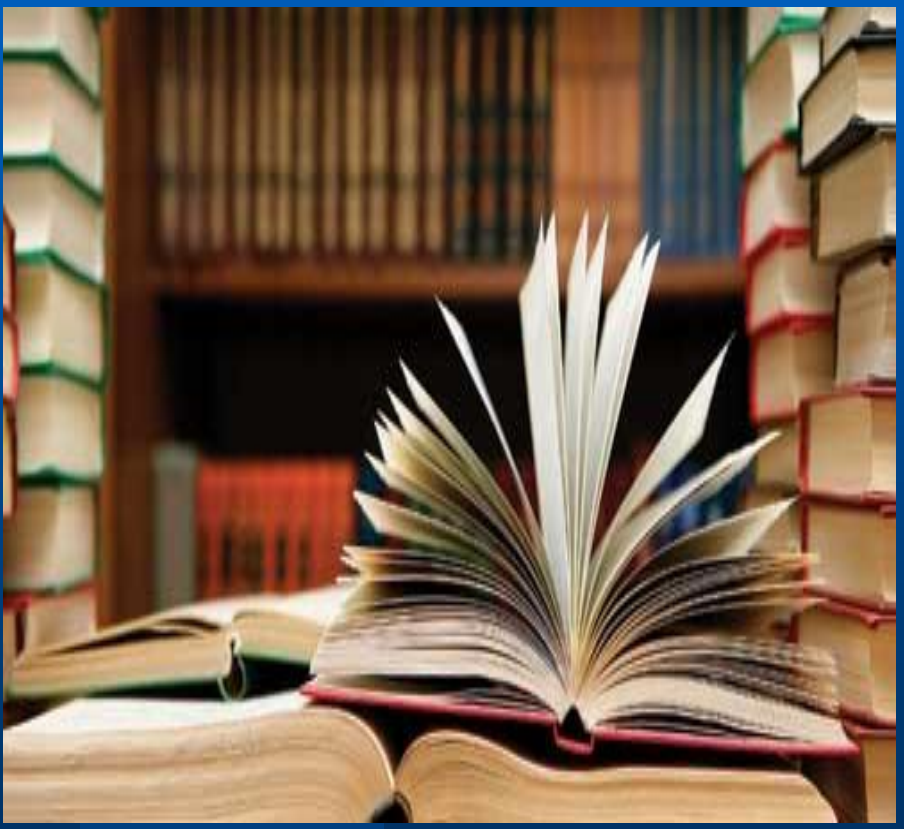
- Neurologist
- Psychiatrist
- Physiatrist
- Neuropsychologist
- Psychometrist
- Occupational Therapist
- Physiotherapist

- Neuro-otologist (ENT)
- Neuro-ophthalmologist
- Sleep Medicine
- Neurosurgery
- Diagnostic Investigations (Neuroimaging, Sleep Study, EMG/NCS, EEG)

CIOR TEAM

- Neurologist
- Physiatrist
- Occupational Therapist
- Physiotherapist
- Rehabilitation Therapist
- Kinesiologist
- Psychological Associate
- Neuropsychologist
- Pharmacist
- Neuro-otologist (ENT)
- Psychiatrist
- Neuro-ophthalmologist
- Return to Work Coordinator

Evidence-Based Best Practices and Broad Depth of Clinical Experience Required



Return to Activities and Return to Work is Important

QUESTIONS?


Questions:
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