

## Managing post traumatic headache.

- Traumatic brain injury (TBI) is an acute neurophysiological event related accelerational, decelerational or rotational forces to the brain. Whiplash injuries predominate.
- Over 95% of headache phenotypes will reflect a primary headache with migraine the most common.
- Over 90% of headaches will occur within the first week and the majority will resolve by three to six months but can be a problem up to five years or longer.
- *No prognostic indicators.* Post injury problems are not related to severity of injury and can occur with mild TBI.
- *Limited evidence base.* One small uncontrolled study that found amitriptyline beneficial<sup>1</sup>.
- Other behavioural, emotional and cognitive problems may be present.
- Headache and other problems arise from an inappropriate response to healing of damaged tissue.
- Figure 1 helps us to clarify our thoughts

Classification	Current terms	Time to onset	Length of symptoms	Insult	Predominant clinical feature	Pathophysiology
Traumatic brain injury with immediate effects	Concussion	Immediate	Days	Single episode of trauma	Alteration in consciousness	Direct axonal damage
Traumatic brain injury with early effects	Traumatic brain injury	Hours to days	Weeks to months	Single episode of trauma	Headache	Inappropriate inflammatory cascade
Traumatic brain injury with late effects	Chronic traumatic encephalopathy	Years	Years	Multiple small traumas E.g. boxing, heading of the football	Cognitive dysfunction	Inappropriate inflammatory cascade

Figure 1 - pragmatic classification of traumatic brain injury with associated features.

## Guidance

The aim of management is to exclude a headache caused by secondary pathology, treat a primary headache and exclude medication overuse headache.

Secondary headache can be caused by:

- *Unlikely but watch out for dissecting carotid artery.* 80% of all dissections occur after trauma which can be mild. The majority will occur within 72 hours and 2% of patients can experience pain for months. The pain is ipsilateral to the injury and can be associated with neurological signs or a Horner's syndrome due to damage of the sympathetic plexus associated with the artery.
- *Intra-cranial hematoma.* 7% of people with minor head injury will demonstrate intracranial pathology with CT.

- *Intracranial hypotension due to dural tear.* Although rare, post traumatic intracranial hypotension is described particularly after injuries to the neck. Headache is relieved by lying flat.
- *Hypopituitarism*  
Hypopituitarism following a head injury is largely unrecognised and may be as high as 27%. TBI can cause damage to the hypophyseal vessels, direct trauma to the gland or transection of the pituitary stalk. Undiagnosed pituitary adenoma can also be a precipitating factor.

So:

*At presentation*

- i) Take a headache history including previous headache history and a history of headache relief lying flat. Patients with connective tissue disorders may be at higher risk of dissection and dural tear.
- ii) Undergo a basic clinical examination. This would include palpation and movement of skull and neck, funduscopy and blood pressure as a minimum.
- iii) If there are symptoms suggestive of hypopituitarism or if the patient was admitted for more than 48 hours, check pituitary function.
- iv) Offer a simple explanatory model to the patient. e.g. - “post-traumatic headache is a common manifestation of an initially protective inflammatory response that becomes inappropriately prolonged.” Reassure that symptoms will settle with time and the majority of cases will resolve by six months. Explore and reassure for other symptoms associated with TBI.

v) Exclude medication overuse headache and advised patient of this potential problem. This will occur if analgesics or NSAIs are consumed on more than 15 days of the month over a three month period.

vi) Offer simple analgesics or NSAIs bearing in mind the potential for medication overuse headache. If further pharmacological treatment is indicated then treat to the nearest phenotype. Triptans can be used if the phenotype is migrainous. If the phenotype is unclear use Amitriptyline.

vii) Emphasise the importance of sleep hygiene and reduction or elimination of alcohol intake.

viii). Review the patient at three and six months as a minimum requirement. Monitor for clinical depression, medication overuse headache and the development of new symptoms or signs.

*At three months*

i) If there is no improvement at three months consider CT or MRI. Benefits would be the identification of undiagnosed subdural haemorrhage and reassurance for the patient. There is also the chance of a coincidental space-occupying lesion that is causing the pain. Counsel the patients on the possibility of incidental cerebral abnormalities or non-specific findings secondary to trauma, the significance of which will not be known.

ii) Explore other post-traumatic symptoms. Professional consensus guidelines are available for their management.<sup>2</sup>

*At six months*

i) Undertake CT/MRI and pituitary function if not previously done. Consider referral to headache specialist or community-based neuro-rehabilitation as appropriate.

## References

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<sup>1</sup> Watanabe K, Bell R, Walker W et al. A systematic review of interventions for post-traumatic headache. *physical medicine and rehabilitation*.  
<https://doi.org/10.1016/j.pmrj.2011.06.003>.

<sup>2</sup> Guidelines for concussion/mild traumatic brain injury and persistent symptoms. Ontario neuro trauma foundation.  
<https://braininjuryguidelines.org/concussion/fileadmin/media/adult-concussion-guidelines-3rd-edition.pdf>.