TAKE-HOME NOTES:

The assessment of traumatic brain injury

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Some facts to remember
On average 200 to 300 per 100 000 population attend hospital with traumatic brain injury every year. Those at the highest risk are men (15 to 25 year olds) with risk factors including alcohol misuse and lower socio-economic status. The largest single cause is road traffic accidents and assault. Sporting accidents and self-harm also constitute a significant proportion of persons sustaining traumatic brain injury.

Assessment and classification of injury
One of the first tasks when assessing a patient with mental symptoms after head injury is to identify the severity of brain injury, i.e. how much the brain was damaged. The clinical indicators of head injury severity are: retrograde amnesia, GCS, the duration of coma and changes on neuroimaging or EEG. The duration of post-traumatic amnesia and loss of consciousness are probably the best markers of outcome; the duration of the retrograde amnesia has less value. Witness information and hospital records are vital to determine duration of loss of consciousness.

Classification of brain injury severity is commonly based on the lowest rating of the GCS following injury: mild –GCS score 13 to 15; moderate - GCS score 9 to 12; and severe –GCS SCORE 3 to 8.

Neuroimaging and cognitive assessment
While there are some limitations, modern neuroimaging has transformed the investigation of head injury. Skull radiographs are rarely performed nowadays. CT brain scanning is good at picking up acute bleeding and MRI is better in the post acute setting and superior to CT in detecting diffuse axonal injury (white matter appears normal on CT), and has better image resolution. Gradient Echo sequences may be particularly valuable for demonstrating residual haemosiderin in areas that have suffered haemorrhagic contusions, but are not visible on T2
MRI images. EEG is not a good predictor of post-traumatic epilepsy.

Cognitive assessment, including neuropsychological testing, is important for planning rehabilitation. The assessment of executive function is particularly important, especially in situations when standard neuropsychological test results are normal, but where there is clinical evidence of behavioural changes. Questionnaires, rating scales and family interviewing can further aid the assessment of the patient with traumatic brain injury.

Conclusion
A variety of psychiatric and psychological manifestations may follow brain injury. These include cognitive impairment, personality change, mood disorders, psychosis and post-traumatic epilepsy, among many others.

The brain injury checklist for psychiatrists (provided at the end of this document) is a useful aide-memoir for psychiatrists assessing a patient with a history of traumatic brain injury. This aide-memoir addresses both the assessment of injury severity and the common sequelae of brain injury..

Reflection
(1.11) It is important to realise that in traumatic brain injury it may be difficult to predict outcome from the location and size of intracerebral haemorrhage. What late effects may occur that clinicians should be aware of?

(2.2) Think about the clinical indicators that can be used to assess head injury severity. What do you know about these?

(3.6) List the areas that a cognitive assessment of a patient with a history of traumatic brain injury should cover.

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Psychiatric sequelae to traumatic brain injury

The following list outlines the psychiatric problems associated with traumatic brain injury.

Depression

Depression is very common following traumatic brain injury and may represent both biological and psychological factors. The diagnosis of depression relies heavily on identifying a depressive mood. Associated self-deprecation and guilt are very helpful in diagnosis. Apathy, anhedonia and slowness secondary to brain injury may resemble depression.

Be careful to distinguish demoralisation, grief reaction or emotional lability, that occur commonly after brain injury, from depression. Emotional lability, however is often associated with depression. It is important to establish if there was an episode of depression prior to the accident, in which case the brain injury might have occurred as a result of depression or suicidal ideation.

Suicide

Studies consistently report increased risk of suicide in this population. (Achte et al, 1970, Harris & Barraclough, 1997).

Bipolar disorder

The occurrence of manic illness after brain injury is less frequent than that of depression, but nevertheless brain injury can result in mania. Careful evaluation is required to distinguish between disinhibition and fatuous behaviour that may follow frontal injury. Mania is particularly associated with aggressive and assaultive behaviour following brain injury. Some patients develop rapid-cycling bipolar disorder.

Anxiety disorders

Anxiety following traumatic brain injury is common. Anxiety symptoms related to post-traumatic stress disorder or travel anxiety may be specific to the trauma. On the other hand many patients show elevated levels of anxiety and agoraphobia may develop in some cases. Although perhaps less common, Obsessive-compulsive disorder has been reported following traumatic brain injury.

Psychosis

Psychosis can occur immediately or may develop long after traumatic brain injury. Early psychosis is usually characterised by delusional misidentification of place, persons, objects and events.

Reduplicative paramnesia is perhaps the most pathognomic of brain injury; patients will often believe that the hospital is changed and is a duplicate of the original or may report that their home is no longer the same. Capgras and Fregoli may also be observed following brain injury. Delusional misidentification syndromes can best be understood as the result of an interaction between organic brain disease and psychological disorder (Fleminger, 1993). Paranoid psychoses may occur relatively early particularly in patients with cognitive impairment and personality change.

Later in the course the patient may develop a typical schizophrenia indistinguishable from idiopathic schizophrenia, though there is uncertainty about the degree to which the risk of schizophrenia is raised after a brain injury.

Other factors which might be associated with traumatic brain injury are as follows:

Drug and alcohol abuse

This is common in some patients and may be related to poor impulse control and anxiety symptoms.

Insight and capacity

Insight (self-awareness) and capacity to treatment in the brain-injured patient, who often lacks awareness of deficits, should be assessed (Prigatano, 2005). Capacity to consent to treatment and capacity to manage finances and affairs should be evaluated independently of one another. Poor self-awareness can have a significant negative effect on rehabilitation outcome.

The brain injury checklist for psychiatrists

Based on the checklist produced by the UK Brain Injury Psychiatrists Group of the Royal College of Psychiatrists, May 2002.

History of injury

- Date, cause, nature and severity
- Death or injuries of others from accident
- Associated injuries

Investigations

- Intoxication at injury
- Lowest Glasgow Coma Scale
- Neurosurgical intervention
- Length of coma (ventilated?)
- Treatment, rehabilitation and advice
- Length of hospitalisation received
- Retrograde and post-traumatic amnesia

Current risk identification

- Self harm
- Potential for exploitation by others
- Assault/violence/threat to others
- Wandering, falling or choking
- Criminal behaviour/fire risk
- Awareness of danger/road safety
- Sexually inappropriate behaviour
- Family cohesion
- Alcohol/drug misuse
- Able to self medicate

Symptoms and signs: sequelae of injury

Physical

- Smell
- Vision
- Hearing
- Speech/intelligibility
- Swallowing (choking)
- Pain
- Neck and back symptoms
- Headaches

Other

- Gait
- Weakness/spasticity
- Dizziness/balance
- Epilepsy (type, frequency and time post injury)
- Other disturbances of consciousness
- Adverse effects of medication, movement disorder
- Skin/autonomic

Cognitive

- MMSE
- Conscious level (fluctuating)
- Perceptual neglect
- Dysexecutive – organisational ability
- Mental capacity (consent to treat/management of property and affairs)

Communication / thinking

- Verbal, non-verbal and social skills
- Confabulation
- Perseveration

Behavioural

- Drive/motivation/fatigue
- Compliance
- Disinhibition
- Perseverative behaviour
- Wandering/absconding
- Irritability/aggression
- Disruptive/noisy

Emotional

- Dysphoria
- Lability/emotionalism
- Catastrophic reaction
- Post-traumatic stress disorder symptoms
- The remainder of the checklist relates to activities of daily living:

Personal

- Mobility
- Eating and drinking
- Continence
- Washing and dressing

Community

- Ability to use transport
- Fitness to drive
- Leisure

Domestic

- Cooking
- Laundry
- Shopping
- Money management

Available support

- Relatives/friends
- Headway
- Day centres
- Social worker/benefits/legal representation