Medicine for Managers

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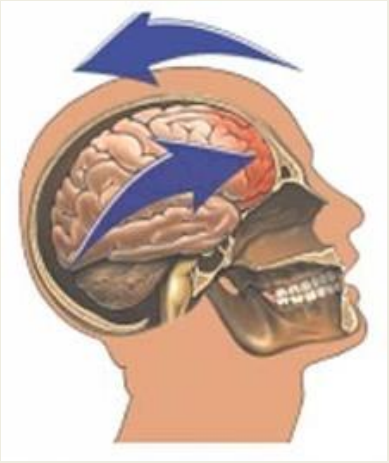
Concussion

Concussion is a non-specific and difficult-to-define disturbance in mental function following a head injury. The term is being replaced by 'mild traumatic brain injury' or 'minor brain trauma'. It is the most common type of brain injury but is generally the least serious, though it is sometimes difficult to make a distinction between concussion and more serious brain injury.

The brain is very sensitive to traumatic injury. The actual consistency of the brain is rather similar to semi-set jelly and it is surrounding by tough fibrous sheets between which is cerebro-spinal fluid (CSF) which acts as a shock absorber.

The CSF absorbs minor blows to the head as a result of light trauma but more severe injury results in the creation of shock waves which spread through the gelatinous brain substance. Depending on the force of the blow, the head will suddenly move in response to the shock received.



> The brain is not a solid cream-coloured organ as seen in *CSI* or *Silent Witness* but is more like a translucent semi-set jelly which is pale grey in colour.

Therefore, as shown in the diagram, a blow to the front will forcibly push the head backwards resulting in a corresponding shockwave which tends to push the brain forward potentially resulting in damage to the front of the brain.

A similar effect may be observed, for example, in a road traffic accident where a whiplash injury occurs and, if the vehicle is hit from behind, the passenger's head is thrown forcibly backwards and then forwards (the acceleration-decelera -tion injury). The concussion may be relatively worse if the head injury is associated with some sort of rotational movement.

Of course head injuries are very common; banging the head on the underside of an open cupboard door in the kitchen, or on the car as one gets in, or on a low door beam in a quaint old fashioned pub. They occur commonly in games such as rugby, cycling and, of course, boxing. Up to nine in every ten head injuries are of this minor nature. At its mildest the

symptoms are short-lived pain in the head and neck, seeing stars, disturbed vision, transient giddiness and loss of balance. They quickly resolve

In more serious concussion, there may be loss of consciousness, memory loss for events both before and after the trauma, vomiting since the incident, behavioural disturbances, visual and balance problems, persistent headache, drowsiness, lethargy and confusion, failure to communicate with or understand what is being said, and sudden sensory losses, such as unilateral visual loss or deafness.

Serious findings include bleeding from one or both ears, deafness in one or both ears, weakness in the arms or legs, persistent vomiting, difficulty speaking, double vision, focal weakness, onset of fits or the loss of clear fluid from the nose or ears. Of especial significance is the steady worsening of symptoms after the event.

An immediate 999 call is appropriate for unconscious patients and those with recurrent fitting, bleeding of ears or nose, persistent vomiting or progressive deterioration since the incident.

A patient with any significant symptoms or signs of concussion should be referred for medical assessment in case the injury is not a reversible concussion but a more serious and potentially irreversible brain injury.

Patients who suffer a blow to the head have an increased rate of complications if they are over 65 or who have had any previous brain injury, such as a stroke, or brain surgery, for example, to remove a brain tumour. Increased risk of bleeding because of anticoagulation or disease is also a significant risk.

Boxing and fighting generally is of course a significant cause of concussion. ***Dementia pugilistica*** is a term used to describe recurrent concussion in boxers and brawlers is also called 'punch-drunk syndrome'. There is gradually worsening speech and memory problems, slow mental activity, tremor, disordered behaviour and development of Parkinson's disease. Eventually the individual may end as a shuffling, confused, amnesic drop out

Making the decision about the seriousness of the condition may be a real challenge. If the patient is conscious clear and unconfused responses to questions about time, date, location and memory of the incident may assist in deciding that the injury is minor.

Like most things in medicine it is not quite as simple as that sometimes and head injuries with a slow bleed inside the skull may be missed because the patient may display a ***lucid period*** during which everything appears normal.

Those patients who are referred to an accident and emergency department with persisting symptoms of concussion will normally have a CT scan in order to exclude a bleed or other physical injury, particularly if they have risk factors for complications.

Those patients with mild concussion for whom hospital referral is inappropriate should be treated symptomatically.

Best advice is that the sufferer should have complete rest for 24 hours with avoidance of stress, avoidance of alcohol and the use of ***mild*** analgesia.

Driving a car should also be avoided. After the first day or so there should be a gradual return to normal activity but activities such as contact sports should be avoided for three weeks

(although most sportsmen completely ignore that advice!). People with concussion who experience a recurrence of any of the symptoms as they increase activity should slow down again and seek medical advice.

A proportion of patients who have concussion develop or retain symptoms that may last for weeks or months after the acute event.

They may be physical, such as nausea, sensory disturbances, dizziness or fatigue, cognitive, such as loss of concentration or memory and struggling to apply reasoning (for example in the workplace) or psychological such as anxiety or depression, insomnia or loss of appetite.

There is no specific treatment for the condition but a variety of medications have been tried. Some have been directed at specific symptoms, such as anti-depressants, anti-dizziness products, migraine treatments or hypnotics. Sometimes psychotherapy appears to have been helpful.

Almost all sufferers have recovered within the year.

The ancient Greeks defined concussion (which was probably all too common at that time) as ***commotio cerebri*** (commotion of the brain).

The term remained until the dark ages but by the sixteenth century 'concussion' was used alongside 'brain commotion' or 'brain shaking'. In 1839 it was the Baron Dupuytren (he of the hand contracture fame) an Austrian physician who identified the difference between concussion and contusion of the brain, differentiating the latter from the former by the presence of physical injury.

It was not until the 1940s that experiments showed there was no physical brain injury in concussion.

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