

Pituitary hormone problems common in soldiers with moderate to severe blast-related brain injuries

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A study by Medical Research Council-funded researchers has shown that traumatic brain injuries from explosions can cause hormonal problems. Soldiers who, as a result of their injuries, have problems with their pituitary gland may suffer psychological and metabolic symptoms which impede their recovery. Identifying these sufferers will enable them to receive appropriate hormone replacement therapy. The paper is published in the journal *Annals of Neurology*.

The study looked at 19 UK soldiers with moderate to severe brain injury caused by blasts from Improvised Explosive Devices (IEDs) while on duty in Afghanistan, and a group of 39 individuals with moderate to severe traumatic brain injuries caused by [road traffic accidents](#), falls and assaults, rather than explosive blasts. They found that a much higher proportion of soldiers with [blast injuries](#) were likely to have pituitary hormone problems (32 per cent) than in the non-blast control group (2.6 per cent). One in five of the soldiers ended up receiving hormone treatment with growth hormone, testosterone and/or hydrocortisone (replacing the [stress hormone cortisol](#)).

The study also showed that the soldiers who had pituitary dysfunction following blast injury had more severe damage to white matter connections within the brain, and more severe cognitive problems, such as being slow in processing information, than those who did not have hormone problems.

The recent conflicts in Iraq and Afghanistan have seen rapid advances in [personal protective equipment](#) and in the medical management of [severe trauma](#). These gains have meant that increasing numbers of soldiers are surviving previously fatal and complex injuries.

Injuries caused by IEDs are so numerous that they have been called the 'signature injury' of these conflicts. Just between December 2009 and March 2012, 183 UK soldiers survived a moderate-severe blast traumatic brain injury TBI in Afghanistan. The total number of such injuries amongst US troops is much higher. The complex physical forces involved in a blast have led to much speculation about how the blast wave itself causes brain injury.

The patients were treated in the multi-disciplinary [traumatic brain injury](#) clinic at the Imperial Centre for Endocrinology at Imperial College Healthcare NHS Trust by Dr Tony Goldstone, Consultant Endocrinologist, and they were scanned at the Computational, Cognitive and Clinical Neuroimaging Laboratory at Imperial College London, by Prof David Sharp, Consultant Neurologist and Major David Baxter, Military Neurosurgeon.

Dr Tony Goldstone from the MRC Clinical Sciences Centre says:

"This study was set up to see if there were facets unique to the kind of trauma caused to the brain by IEDs. We found that there was a high prevalence of hormonal problems in soldiers with these kinds of injuries. This study involved a relatively small number of soldiers, and so assessment of additional patients will be needed to confirm such a prevalence rate. However the results do emphasise the importance of actively screening for pituitary problems in all soldiers and others who have had moderate to [severe brain injury](#) from exposure to blast. This will enable identification of those who may benefit from hormonal treatments to aid their rehabilitation, recovery and quality of life."

The *Annals of Neurology* study is entitled 'Pituitary Dysfunction after Blast Traumatic Brain Injury: the UK BIOSAP Study.'

More information: www.ncbi.nlm.nih.gov/pubmed/23794460

Provided by Medical Research Council

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