

Blast-Related Traumatic Brain Injuries Turning Up In Civilian Practice

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DENVER – Civilian physicians can expect to encounter numerous cases of blast-related traumatic brain injury, the signature wound of the wars in Iraq and Afghanistan.

That's because more than half of military personnel returning from those conflicts use civilian medical services rather than the Veterans Affairs health care system, Dr. Evan D. Murray said at the annual meeting of the American Neuropsychiatric Association.

"You will see these patients. It's important to be able to recognize the clinical manifestations and choose appropriate treatments," added Dr. Murray, a neurologist at McLean Hospital and Harvard Medical School, Boston.

The government estimates that in excess of 150,000 troops in Iraq and Afghanistan have experienced traumatic brain injury since the start of conflict. In 2009, 79% of the nearly 28,000 traumatic brain injuries sustained by U.S. military personnel in those two countries were mild. These injuries are thought to be due largely to the powerful shock wave of high pressure that radiates from an improvised explosive device and reverberates through the skull. Moreover, the injured troops are often physically thrown as well, with resultant acceleration injury.

Dr. David X. Cifu, national director of the VA [Physical Medicine and Rehabilitation Office](#), said he would like to see lots more returning troops utilize the totally free health care they are entitled to through the VA system for 5 years after coming home. He stressed that civilian physicians should steer ex-military patients with blast-related traumatic brain injury (TBI) to the VA, whose [national TBI program](#) is unequalled.

"This is not your grandfather's VA. This is a pretty amazing place. I've worked in academia for more than 20 years, and at the VA, we provide way better brain injury services than our university – and our university is extremely good," said Dr. Cifu, professor and chairman of the department of physical medicine and rehabilitation at Virginia Commonwealth University, Richmond.

With congressional prodding, the VA has organized from scratch a comprehensive system of care for active duty military personnel and veterans with TBI. All veterans of the wars in Iraq and Afghanistan who show up at any VA clinic for any reason must undergo a mandatory four-question screen for mild TBI (see box). If they answer all four questions affirmatively, they get scheduled for a comprehensive TBI evaluation within 30 days by a multidisciplinary



Photo credit: Bruce Jancin

Pictured left to right: Dr. Pollanen, Dr. French, and Dr. Cifu

team at one of the more than 100 specialized rehabilitation sites in the VA system. Each of these teams consists of a neurologist or psychiatrist with TBI expertise, a physical medicine and rehabilitation physician, a psychologist, a speech and language pathologist, and occupational, physical, and recreational therapists. Telemedicine consults are available.

The most challenging cases are referred to one of four statewide polytrauma rehabilitation centers. A fifth polytrauma rehabilitation center is due to open in San Antonio this fall.

Of nearly 470,000 veterans screened for mild TBI through the VA's mandatory program between April 2007 and Sept. 2010, roughly 20% answered all four questions affirmatively, indicating they had been exposed to a TBI. Follow-up evaluation at one of the more than 100 specialty clinics showed that 39% of those with a positive screen – or 8% of all returning service personnel – had a symptomatic TBI at that time.

Dr. Cifu coauthored a joint Department of Veterans Affairs and Department of Defense [clinical practice guideline](#) on the management of mild TBI. He recommended it as highly useful for non-VA physicians as well.

Polytrauma is a term used within the VA to describe individuals with TBI and another physical injury or psychological trauma. Particularly common is the constellation of chronic pain, post-traumatic stress disorder, depression, polysubstance use, and residual TBI symptoms such as headache, fatigue, and mental slowness.

"These are folks that aren't getting well the way you read in the textbooks," Dr. Cifu observed.

Indeed, while in the civilian world roughly 97% of individuals who sustain a mild brain injury such as a sports concussion will be well a year later, that figure is substantially lower – more like 80% – for polytrauma patients in the VA system.

Among the factors contributing to poor outcomes in military personnel with polytrauma are the abundant physical and psychological stressors of the combat zone, delayed diagnosis of TBI, and the common occurrence of exposure to multiple TBIs.

"We have lots of folks who report 3, 5, 7, 10, 15 [TBIs]. We really don't know what multiple blast injuries mean in terms of outcome. We have to understand this better," according to Dr. Cifu.

Pre-exposure factors may also contribute to polytrauma. About half of troops in Iraq and Afghanistan are volunteers, often fresh out of high school. Some have had a difficult upbringing that may render them less resilient to injury. The National Guard reservists are generally far older and often not optimally physically fit, he continued.

Louis M. French, Psy.D., said that he and his coinvestigators have found that among military personnel with mild TBI and bodily injuries, those with more severe bodily injuries reported less TBI-related neurobehavioral symptoms such as headache, forgetfulness, anxiety, and depression than did those with relatively minor bodily injuries.

It's a paradoxical finding. One possible explanation is that people who are very seriously injured are happy to be alive and simply ignore minor neurobehavioral symptoms. Also, it's easier for people who are more seriously injured to see tangible improvement resulting from their rehabilitation program, as when they start to walk again or get a prosthetic device, said Dr. French, director of the traumatic brain injury service at Walter Reed Army Medical Center in Washington.

In a recent study, Dr. French and coworkers found that 55% of service members with mild TBI reported symptoms consistent with the diagnosis of post-concussive disorder 12 months later.

"These are very different trajectories than you'd expect to see in a civilian population," he observed.

Dr. Michael Pollanen of Toronto, who is chief forensic pathologist for Ontario, said that his emerging hypothesis is

that blast-related TBI might be a variant of diffuse axonal injury that leads to a distinctive syndrome of neuropsychiatric impairment. He has seen such injuries at the cellular level under the microscope at autopsy; now the search is on for a means of identifying diffuse axonal injury in blast survivors.

Four Items Screen for Mild TBI

- **Question 1:** Were you exposed to a trauma or blast while in Operation Enduring Freedom/Operation Iraqi Freedom?
- **Question 2:** As a result of the trauma or blast did you have a loss or alteration in consciousness (see stars, have bell rung, feel disoriented or confused)?
- **Question 3:** Did you develop problems with headache, insomnia, dizziness, thinking, or behavior immediately to soon after the trauma or blast?
- **Question 4:** Do you still have the problems with headache, insomnia, dizziness, thinking difficulties or behavior that you developed immediately to soon after the trauma or blast?

None of the speakers reported any financial conflicts.

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