Newsweek

The Warrior's Brain

One family's terrifying medical mystery could represent the military's next big crisis.

by Andrew BastNovember 08, 2010

Video muted: click volume for sound Standing By Her Man Brooke Brown, the wife of Marine Lance Cpl. David Brown, explains how her life changed after her young husband returned home from Iraq with mild Traumatic Brain Injury and PTSD.

The worst was the day Brooke Brown came home to find her husband with a shotgun in his mouth. But there had been plenty of bad days before that: after he returned from a deployment in Iraq, Lance Cpl. David Brown would start shaking in crowded places. Sitting down for a family meal had become nearly impossible: in restaurants he'd frantically search for the quickest exit route. He couldn't concentrate; he couldn't do his job. The Marine Corps placed him on leave prior to discharging him. Brooke quit her job to care for him and the children. The bills piled up.

It sounds like another troubling story of a war vet struggling with PTSD. But Brown's case is more complicated. In addition to the anxiety, he suffered a succession of mild seizures until a devastating grand mal episode sent him to the hospital covered in his own blood, vomit, and excrement. There were also vision problems and excruciating headaches that had plagued him since he'd been knocked to the ground by a series of mortar blasts in Fallujah four years earlier.


Maya Alleruzzo / AP for Newsweek.com

PHOTOS: Four wounded warriors share their tales of dedication and anguish, valor and intense personal victory

The Road Home

Brown, now 23, didn't have any visible injuries, but clearly the man who left for Iraq was not the same man who returned. "Our middle son clings to David; he knows something is wrong," Brooke, 22, explained late this summer. "Our 4-year-old doesn't know what caused it, but he knows Daddy's sick and he needs help."

But what kind of help does Corporal Brown need? His case perplexed civilian doctors and the Department of Veterans Affairs. The headaches and seizures suggest that he is suffering from the aftereffects of an undiagnosed concussion—or, in the current jargon, mild traumatic brain injury (TBI). But some of his symptoms seem consistent with a psychological condition, posttraumatic stress disorder (PTSD). Or could it be both—and if so, are they reinforcing one another in some kind of vicious cycle? The person who knows David better than anyone, his wife, thinks it was hardly a coincidence that one of his worst seizures came on the day last year that his best friend was deployed with the Second Battalion, Eighth Marines, as part of President Obama's surge into Afghanistan.

David Brown's symptoms have placed him at the vanguard of military medicine, where doctors, officials, and politicians are puzzling out the connection between head injuries and PTSD, and the role each plays in both physical and psychological post-combat illness.

Invisible Wounds

The military reports that 144,453 service members have suffered battlefield concussions in the last decade; a study out of Fort Carson argues that that number misses at least 40 percent of cases. By definition, a concussion is a shaking of the brain that results from a blow to the head. Typical symptoms include headache, memory loss, and general confusion. For decades, head injuries were a challenge mainly for civilian doctors, who studied the results of auto accidents and football injuries. The best treatment, it was generally thought, was rest and time. And in the great majority of these civilian cases, the brain heals by itself in as little as a week.

Concussions sustained on the battlefield are another matter, and a vexing one. According to the Department of Veterans Affairs, symptoms such as vision, memory, and speech problems, dizziness, depression, and anxiety last far longer in men and women returning from combat. Why? Doctors suspect that the high-stress combat environment stifles the kind of recovery that would normally occur. More often than not, those unlucky enough to suffer a concussion in Afghanistan, or especially in Iraq, do so in stifling heat, "which can make the effects of a concussion worse," says David Hovda, director of the UCLA Brain Injury Research Center. Then there's the question of reinjury before full recovery. If an injured fighter reports symptoms that match the concussion watch list, he or she is pulled from action for 24 hours. (There's currently no test for a concussion besides self-diagnosis, though the military is actively pursuing biomarker tests that could be done on site.) But in a macho military culture, admitting unseen symptoms that can take you out of the action doesn't happen as often as it should. "If you ain't bleeding, you ain't hurt," says Brooke of the military culture around head injuries.

More from: FIGHTING FOR THEMSELVES

- PHOTOS: Lessons in Hope From Wounded Warriors

- VIDEO: What Do Combat Nightmares Look Like?
- PHOTOS: America's Wars on NEWSWEEK's Covers
- The Complicated History of Veterans Day
- VIDEO: Last Letters Home From Fallen Soldiers

Blood or not, evidence is mounting that battlefield concussions from these two long-running wars could result in decades of serious and expensive health-care issues for a significant number of veterans. After all, TBI is a relatively new problem of modern warfare. Thanks to technological advances, warriors are surviving what once would have been fatal blasts--but the long-term consequences of the impact are still unknown. Two years ago, the RAND Corporation published a comprehensive study, "The Invisible Wounds of War," which highlighted brain injuries as a massive, and little-understood, mental-health issue for returning combat veterans. This summer the nonprofit journalism site ProPublica chronicled challenges in diagnosis of head trauma and breakdowns in care within the military medical system. Around the same time, the Senate Armed Services Committee called the brass from each of the military branches and the Department of Veterans Affairs to testify on the topic, and at the hearing senators expressed concern that head trauma may be a factor in service-member suicide.

The military's concerns have arisen during something of a boom in concussion research in civilian institutions, and new research in sustained head trauma in athletes shows that repeated concussions can lead to a condition called chronic traumatic encephalopathy. This disorder, which can present 10 to 15 years after the initial trauma, is linked to depression and suicidal thoughts, as well as Parkinson's, dementia, and even a devastating neurological condition resembling Lou Gehrig's disease. Another study found that those who abused drugs and alcohol after a TBI had drastically increased rates of suicide attempts.

Suicide is a serious threat to the military: an August 2010 report by the Department of Defense showed that the military suicide rate comes to one death every 36 hours. In the past, suicide has been associated with PTSD—an issue armed forces across the world have been struggling with for years. "Nostalgia" afflicted Napoleon's troops fighting his endless campaigns far from home. "Traumatic neurosis" and "shell shock" overcame British troops in the trenches of World War I. Col. John Bradley, head of psychiatry at Walter Reed Army Medical Center, describes today's PTSD as the inability to dial back on the instincts necessary for survival in combat even long after one is out of danger. "If you go back to your family and you still feel like you're in mortal danger, that creates a problem," says Bradley. A common estimate inside the military is that 20 percent of veterans in combat experience symptoms of posttraumatic stress. Some 2.1 million service members have been deployed to Iraq and Afghanistan—implying more than 400,000 potential cases.

Connecting the Dots

But in Iraq and Afghanistan, the symptoms of PTSD are often complicated by TBI—a condition seen as a consequence of the fact that, thanks to better battlefield technology and medical care, more soldiers are surviving blasts that proved deadly in previous wars. Figuring out what's caused by PTSD and what's the result of a head injury isn't easy, especially since the symptoms of TBI overlap with those of PTSD. "You may have been injured, may have lost a buddy during an attack," says Bradley. "Traumatic brain injury has both a physical and psychological component, and so does PTSD." After a concussion, one is almost certain to have headaches, but headaches are also common among people with a mental-health disorder. Concussions cause trouble sleeping—and so can PTSD. Difficulty

concentrating is common to both. "It's very difficult to determine if it's a psychological problem or the results of an organic brain injury," says Terry Schell, a behavioral scientist at RAND.


Maya Alleruzzo / AP for Newsweek.com

PHOTOS: Four wounded warriors share their tales of dedication and anguish, valor and intense personal victory

The Road Home

Scientists are just starting to understand if and how the two are connected. It's been shown in animal models that a head trauma can make one more susceptible to PTSD. "Minor traumatic brain injury does not necessarily cause PTSD, but it puts the brain in a biochemical and metabolic state that enhances the chances of acquiring posttraumatic stress disorder," says UCLA's Hovda, who is part of a civilian task force of doctors and scientists commissioned by the military to assess how PTSD and TBI affect troops. They'll meet in December to discuss whether troops suffering from both should receive special medical treatment. Hovda also played a key role in the development of the National Intrepid Center of Excellence, a military medical facility in Bethesda, Md., devoted to the care of returning vets who suffer from PTSD and/or head trauma. "When they get to Bethesda, or get home, a lot of times individuals will be suffering from symptoms related to these multiple concussions," he says. "They don't understand that it's related to a brain injury, and they become very depressed and confused."

Murray Stein, a neurologist at the University of California, San Diego, is leading a consortium of doctors and specialists through several clinical trials investigating the long-term effects of concussions mixed with high-stress situations. Stein suspects there's more to the long-term effects of battlefield brain injuries than we now understand. "Right now it's extremely controversial," he says. "It's simply too simplistic to suggest [TBI] and emotional symptoms can't be linked."

There's not a lot research as of yet. Early on in the Iraq War, Col. Charles Hoge, then the director of mental-health research at Walter Reed Army Medical Center, surveyed some 2,700 soldiers about battlefield concussions and PTSD, as well as the extent of their injuries and the state of their current mental and physical health (relying on self-reported measures like days of work missed). In 2008, The New England Journal of Medicine published Hoge's findings: battlefield concussions existed, perhaps in significant numbers, but "cognitive problems, rage, sleep disturbance, fatigue, headaches, and other symptoms" that had become commonplace among service members back home resulted almost entirely from PTSD. Hoge argued that attributing postcombat symptoms to the effect of concussions,

which "usually resolve rapidly," could lead to a large number of military personnel receiving treatment for the wrong problem—treatment that could actually make things worse for the patient and put undue strain on the health-care system.

In an interview with NEWSWEEK, Hoge agreed that there was a connection between the two conditions. "PTSD and battlefield concussions are interrelated, and they have to be treated as such," he said. But he's also standing by his findings that one should not be confused for the other. In his new book, Once a Warrior, Always a Warrior, published earlier this year as a mental-health handbook for veterans and their families, Hoge reiterates that "concussions/TBIs have also become entangled and confused with PTSD." Battlefield concussions, he writes, are best diagnosed at the time of injury, and the more time that elapses, the more difficult it becomes to link symptoms to the incident.

That much is true: with shoddy records of brain injuries from the early parts of the wars in Iraq and Afghanistan, many veterans who could be afflicted by the long-term effects of battlefield concussions will have little—if any—documentation to rely on in their claims for disability benefits. And as evidenced by Lance Cpl. David Brown, in some cases those men and women could require a significant amount of ongoing care.

More from: FIGHTING FOR THEMSELVES

- PHOTOS: Lessons in Hope From Wounded Warriors
- VIDEO: What Do Combat Nightmares Look Like?
- PHOTOS: America's Wars on NEWSWEEK's Covers
- The Complicated History of Veterans Day
- VIDEO: Last Letters Home From Fallen Soldiers

The Path Ahead

There's another, unsettling reality, of course: that PTSD and TBI are far from the only culprits for Brown's mystery symptoms. "Headaches are almost useless as a diagnostic," says Barry Willer, professor of psychology at the University of Buffalo and an expert on concussions. He notes that headaches present for a large number of illnesses. And depression, anxiety, and trouble sleeping? Those are often the result of living with an unexplainable illness. In reality, the troops are coming home with myriad medical issues, some new, like TBI; some, like PTSD, as old as war itself; and some a hybrid of the two. The question is whether we have the tools and treatments to figure out which is which.

Brown finally found some respite thanks to Tim Maxwell, a fellow Marine, who was pierced in the skull with shrapnel in Iraq and later lost his leg to mortar fire. Maxwell has established a quiet network of wounded warriors and maintains a Web site on the topic, SemperMax. Earlier this year, he got wind of Brown's struggle and helped get him back into the Marines and into the TBI ward at the National Naval Medical Center in Bethesda. Today, Brown's back at Camp Lejeune, readmitted to the Marines and working to get medically retired. "I spend most of my time over at the wounded-warrior tent doing rehab," he says. He's taking Topamax, a drug usually prescribed to epileptics to stave off seizures, and it seems to be effective, despite the side effects. "He's lost his speech for 30 minutes a couple of times," Brooke says, but he hasn't had any more grand mal seizures. His wife is fighting for him at

every turn. "I'm going to stand by my man," she said in August, and then stiffened her spine. "He stood for me over in Iraq. The least I can do is stand by him now."