

## Brains of vets with PTSD can change as they age

Victoria Colliver, Chronicle Staff Writer

Wednesday, June 22, 2011



Combat veterans with post-traumatic stress disorder are more likely to have dementia, cardiac problems and structural changes in the brain as they get older than veterans without PTSD, according to new research.

The findings, which for the most part resulted from research at the San Francisco Veterans Affairs Medical Center, raise concerns about the overall health of aging veterans, but hold promise for the potential of helping to treat these diseases.

"Our concern is that veterans who honorably serve our country ... are at greater risk of developing Alzheimer's disease and over the next 10 to 20 years we will see a lot of Alzheimer's in the veteran population," said Dr. Michael Weiner, director of the Center for Imaging of Neurodegenerative Diseases at the Veterans Affairs Medical Center.

The impact of combat on the brain as it ages will be at the center of the fourth annual "Brain at War" conference Thursday at the Marines' Memorial Club in San Francisco.

Much of the research to be presented during the daylong conference was conducted at the city's Veterans Affairs hospital and funded through San Francisco's Northern California Institute for Research and Education, the largest VA research institute in the country and the nation's leading neuroscience research institute.

### Effects of ptsd

Of the 2 million Americans who have served in the current wars in Iraq and Afghanistan, at least 400,000, or as much as 20 percent, have developed or are at risk of developing PTSD, a psychological condition caused by exposure to severe trauma.

Some 23 million veterans, like many people, will later face more common illnesses, such as cancer, heart disease and Alzheimer's, as a function of aging. But a growing body of work shows these diseases may be exacerbated by traumatic stress, the researchers found.

For example, veterans with PTSD are two to three times more likely to develop heart disease than those who do not have the disorder.

"These are young men and women, most of whom do not yet have heart disease," said Dr. Beth Cohen, a staff physician at the hospital, in a statement about her research. "If we can learn why they are at greater risk now, we can find ways to help avoid heart disease later in life."

Unlike heart disease, no effective ways to prevent or treat Alzheimer's disease yet exist, but researchers are studying soldiers' brains to learn more about how combat-related stress affects the brain's biology and increases the chance of developing Alzheimer's.

They have found that a section of the hippocampus - the part of the brain that is devoted to short-term memory and learning new things - is significantly smaller in veterans with PTSD. Researchers are trying to determine if this smaller section can grow over time with therapy and treatment for stress.

"It's possible new stem cells, new brain cells are made, or it's possible the existing neurons or cells get plumper or have more synapses and connection," said Weiner, also professor of medicine, radiology, psychiatry and neurology at UCSF. "Nobody knows. Our ability to probe the brain and understand these mechanisms is really limited."

### A veteran's story

Weiner and his colleagues at the VA hope their research will help veterans like 37-year-old Ben Sykes, who enlisted in the Marine Corps after Sept. 11, 2001, and was among the first troops to move into Baghdad and then into Saddam Hussein's primary palace in Tikrit in 2003.

When Sykes returned to civilian life and his previous career as an interaction Web designer, he found himself trying to re-create the intensity of combat through drinking and extreme sports.

"I have read the greatest pharmacy on the planet is your hypothalamus," said Sykes, referring to the part of the brain responsible for certain metabolic processes and secretion of some hormones. "It changes your body's chemistry. I was hooked and was just looking for the next rush."

Sykes did not recognize his classic symptoms of PTSD until his family pushed him to get help. Now, after years of therapy and treatment at the VA, Sykes believes he has few lingering effects other than an occasional feeling of impending panic that comes when he smells burning odors or realizes he's seated with his back to a door.

Still, he is grateful for how far he's come and appreciates the continued work of the VA in researching the long-term health effects of PTSD on veterans.

"Humans are amazing in the sense they adapt to anything," he said.

### The brain at war

The fourth annual "Brain at War" conference, to be held Thursday, will look at research that suggests post-traumatic stress disorder, or PTSD, has potentially long-term ill effects on the brain and body. Here are some of the findings by researchers at the San Francisco Veterans Affairs Medical Center:

**PTSD and heart disease:** Veterans of the current wars in Iraq and Afghanistan who have been diagnosed with PTSD and other mental health issues have two to three times the rate of heart disease risk factors compared with veterans without those diagnoses.

**PTSD and the hippocampus:** Research using magnetic resonance imaging, or MRI, at the VA hospital have shown the hippocampus, the part of the brain that stores memory, is significantly smaller in the brains of veterans with PTSD.

**PTSD and dementia:** Older veterans with PTSD are almost twice as likely as veterans without such trauma to develop dementia.

Source: Northern California Institute for Research and Education-Veterans Health Research Institute

E-mail Victoria Colliver at [vcolliver@schronicle.com](mailto:vcolliver@schronicle.com).

<http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2011/06/22/MNQ91K0MQ9.DTL>

This article appeared on page **A - 1** of the San Francisco Chronicle