

RESEARCHERS DISCOVER METHOD TO OBJECTIVELY IDENTIFY PTSD

By measuring magnetic fields in the brain, researchers have identified potential biomarkers of those exhibiting Post Traumatic Stress Disorder

(Jan. 20, 2010) Researchers at the Minneapolis VA Medical Center and the University of Minnesota have identified a potential biological marker in the brains of those exhibiting post-traumatic stress disorder (PTSD).

A group of 74 United States veterans were involved in the study, which for the first time objectively diagnoses PTSD using magnetoencephalography (MEG), a non-invasive measurement of magnetic fields in the brain. It's something conventional brain scans such as an X-ray, CT, or MRI have failed to do.

With more than 90 percent accuracy, researchers were able to differentiate PTSD patients from healthy control subjects (250 people with clean mental health) using the MEG. All behavior and cognition in the brain involves networks of nerves continuously interacting – these interactions occur on a millisecond by millisecond basis. The MEG has 248 sensors that record the interactions in the brain on a millisecond by millisecond basis, much faster than current methods of evaluation such as the functional magnetic resonance imaging (fMRI), which takes seconds to record.

The measurements recorded by the MEG represent the workings of tens of thousands of brain cells. This recording method allowed researchers to locate unique biomarkers in the brains of patients exhibiting PTSD.

The findings are published January 20 in the *Journal of Neural Engineering* and led by **Apostolos Georgopoulos**, M.D., Ph.D., and Brian Engdahl., Ph.D. – both members of the Brain Sciences Center at the Minneapolis VA Medical Center and the University of Minnesota.

“These findings document robust differences in brain function between the PTSD and control groups that can be used for differential diagnosis and which possess the potential for assessing and monitoring disease progression and effects of therapy,” Georgopoulos said.

The ability to objectively diagnose PTSD is the first step towards helping those afflicted with this severe anxiety disorder. PTSD often stems from war, but also can be a result of exposure to any psychologically traumatic event. The disorder can manifest itself in flashbacks, recurring nightmares, anger, or hypervigilance.

Besides diagnosing those with PTSD, the researchers also are able to judge the severity of how much they are suffering, which means the MEG may be able to be used to gauge the how badly patients are impacted by other brain disorders.

It is likely that the study will be replicated and administered to a larger group to assure the accuracy of its results.

This work, specifically on detecting post-traumatic stress disorder, follows success in detecting other brain diseases, such as Alzheimer's and multiple sclerosis, using MEG, as [reported in September 2007](#).

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