A blood test that can diagnose PTSD may be on the horizon

By Sally Robertson, BSc

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Doctors may soon be able to diagnose post-traumatic stress disorder (PTSD) using a simple blood test, after scientists identified genetic changes in soldiers who experienced trauma after serving time in Afghanistan.

Currently, the condition is only diagnosed based on the symptoms that sufferers self-report, which many people are reluctant to do.

PTSD can be caused by exposure to traumatic, frightening events such as natural disaster or combat. It leads to recurrent nightmares, depression, flashbacks, hyper-alertness and insomnia. The condition affects about one in every three individuals who experience trauma, but it is unclear why some people develop it and others do not.
Over the last few years, researchers have been trying to find out whether changes in gene expression may be associated with this difference in tendency to develop PTSD.

For the current study, Laurence de Nijs (University of Maastricht, the Netherlands) and colleagues analysed genetic changes in relation to PTSD symptoms among 1,000 Dutch soldiers who were deployed to a combat zone in Afghanistan. Blood samples were collected six months before deployment and six months afterwards, at which point most soldiers had experienced trauma, with some displaying symptoms of PTSD.

The team selected 24 individuals from the initial group and divided them into three subgroups. Eight had suffered trauma and developed PTSD, eight had experienced trauma, but not developed the condition and eight people who had not been exposed to trauma served as a control group.

When the team performed genetic sequencing of the soldiers’ blood samples, they found that small molecules called microRNAs (mRNAs) were present at different levels among those with PTSD compared with trauma-exposed and control individuals without PTSD.

“We identified over 900 different types of these small molecules. 40 of them were regulated differently in people who developed PTSD, whereas there were differences in 27 of the miRNAs in trauma-exposed individuals who did not develop PTSD”

Laurence de Nijs, University of Maastricht, the Netherlands.

Unlike DNA, which codes for the proteins and peptides needed for bodily functions, mRNAs do not code for these, but they do regulate gene expression and how active genes are.

Differences in levels of mRNAs have been associated with some diseases including certain types of cancer and kidney disease. Now, the findings from this pilot study suggest that mRNAs could serve as biomarkers to flag up people who are at a high risk of developing PTSD.

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However, several steps need to be performed before such results can really have an impact on the larger field and in clinical practice. In addition to working towards biomarkers, the results may also provide novel information about the biological mechanisms underlying the development of PTSD.”

Laurence de Nijs, University of Maastricht, the Netherlands.

The results of the study were presented at the annual meeting of the European College of Neuropharmacology in Paris.

Sources: