Blood test might help spot, monitor concussions

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Study found levels of a protein linked with brain damage spiked right after injury, dropped with recovery.

(HealthDay)—When someone suffers a concussion, it can be hard to tell how serious it is and how long recovery will take, but a new blood test might help answer those questions.

Swedish researchers report they have found a way to test blood for a protein called total tau (T-tau), which is released when the brain is injured. The amount of T-tau is apparently key to diagnosing a concussion and predicting when players can get back into the game.

"We have a biomarker [indicator] that is elevated in the blood of players with a concussion," said lead researcher Dr. Pashtun Shahim, from the department of neurochemistry at Sahlgrenska University Hospital in Molndal. "The level of T-tau within the first hour after concussion correlates with the number of days you have symptoms. We can use this

biomarker to both diagnose concussion and to monitor the course of concussion until the patient is free of symptoms."

Shahim added that by watching the level of T-tau drop over time, it is possible to predict when symptoms such as dizziness, nausea, trouble concentrating, memory problems and headaches will disappear.

This initial trial involved only 28 hockey players, so the findings need to be reproduced in larger trials, the researchers pointed out, and Shahim suspects it will be a couple of years before this test would find its way into clinical practice.

The report was published online March 13 in the journal *JAMA Neurology*.

Dr. Robert Glatter, director of sports medicine and traumatic brain injury in the department of emergency medicine at Lenox Hill Hospital in New York City, said the finding is important.

"Identifying a reliable marker that correlates with the severity of brain injury, as well as the recovery, can help track progress and improvements after a concussion, and this can provide an objective measure for safe return to play," Glatter said.

"This is a very promising study that opens the door to looking at biomarkers that can help us to provide better care to athletes with concussions," he added.

For the study, Shahim's team looked for concussion in 288 players in the Swedish Hockey League. From September 2012 through January 2013, they identified 35 players with concussions, 28 of whom were included in the study.

These players had repeated blood tests hours and days after their injury, and after they returned to play.

The researchers found that players who suffered a concussion had higher blood levels of T-tau compared with levels measured before the hockey season began.

The highest levels of T-tau were seen in the first hour after a concussion and these levels declined over the next 12 hours, yet they were still elevated six days later.

Levels of T-tau were also associated with the number of days it took for concussion symptoms to clear and for players to return safely to competition, the researchers noted.

"This kind of test is really necessary," said Dr. Robert Duarte, a neurologist at North Shore-LIJ Cushing Neuroscience Institute in Manhasset, N.Y.

The only treatment for concussion is rest, and knowing how long a patient has to wait before getting back to normal activity is a challenge, he explained.

"This test could be useful on a daily basis, helping patients get back to school, work and play," Duarte said.

Concussion, also called mild traumatic brain injury, is a growing problem among athletes at all levels—professional, college, high school and even middle school.

Mild concussions generally don't cause loss of consciousness, but they can result in dizziness, nausea, trouble concentrating, memory problems and headaches. Severe concussions can cause temporary loss of

consciousness.

Most symptoms go away in days or weeks after the injury, but some patients can suffer symptoms for more than a year after injury.

More information: Visit the U.S. National Library of Medicine for more on concussions.

Abstract
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