MedicalXpress

Women's brains may have tougher time recovering from concussion

April 28 2015, by Randy Dotinga, Healthday Reporter

MRI study suggests working memory doesn't bounce back quickly as it does in men.

(HealthDay)—New research from Taiwan uncovers more evidence that women may have a tougher time recovering their memory after concussions.

Scientists don't know why the brains of women seem to respond to these brain injuries differently from those of men. But experts think it might have something to do with differences in male and female brains, or the way in which men and women are injured when their heads hit something.

Whatever the case, "you cannot treat women like you treat men," said neuropsychologist Dave Ellemberg, an associate professor who studies brain injuries at the University of Montreal. "But in the field of the management of brain injuries, everyone is managed the same. The data

mainly comes from men, and the management programs are all based on evidence that comes from them."

At issue are concussions, also known as mild traumatic brain injuries. According to the Brain Injury Association of America, "mild" refers to the initial blunt trauma itself, not its consequences, which can be severe.

Concussions have gotten tremendous attention in recent years in the world of sports, and some research has shown that female athletes suffer concussions at a higher rate than male athletes playing similar sports, the researchers noted.

The new study, which was led by Dr. Chi-Jen Chen and conducted by scientists at Taipei Medical University Shuang-Ho Hospital in New Taipei City, involved using functional magnetic resonance imaging (fMRI) scans to study the brains of 30 men and 30 women.

Half of each group had suffered mild traumatic brain injuries from playing sports, car crashes, falls or assault. Their brains were scanned a month after their injuries and again after another six weeks had passed. The other halves of both groups had not suffered brain injuries.

While other studies have found differences in how the brains of males and females react to brain injuries, the new research is unique because it used brain scans, said Ellemberg, who was not involved with the study.

In the first round of scans, the Taiwanese researchers found that the sections of the brain devoted to "working memory" were more active in brain-injured men and less active in brain-injured women, compared to their uninjured peers.

"Working memory is short-term memory," explained Steven Broglio, a brain researcher and director of the NeuroSport Research Laboratory at

the University of Michigan in Ann Arbor. "For example, remembering the price of something when you take it off the shelf and to the register at a store."

The working memory in the brain-injured men, at least when viewed via brain scans, seemed to have bounced back to normal when they returned six weeks after their first scan. But the brains of the injured women were still affected.

"We know women have higher brain injury rates and longer recoveries, but we aren't entirely sure why," said Broglio, who was not involved with the study. One theory is that women have weaker muscles in the neck that are a factor in how head injuries affect them. Another theory suggests that women are more likely to report brain injuries and to tell doctors about ongoing symptoms, he said.

The study likely won't affect treatment of concussions, said Broglio. It's still crucial to treat injuries based on individual symptoms, he said, and there's inconclusive research about the value of using brain scans as a tool for concussion patients.

Ellemberg said the research suggests that females take longer to recover from concussions. Physical and mental rest are more important for them, he said, and they must be careful about taking enough time away from athletics and mentally taxing activities like schoolwork.

"If they don't," he said, "it might prolong their recovery."

What about the long term, over months or years? "Studies suggest that the brain pretty much recovers after one injury," Ellemberg said. "But if you don't get the proper management, it could lead to long-term consequences."

The study appears online April 28 issue in the journal *Radiology*.

More information: Visit the U.S. Centers for Disease Control and Prevention for more on brain injuries.