



Injury Briefing

A review of the latest studies from Dr. Michael D. Berry.

Breakthrough Discovery for Brain Disease Research on CTE

Scientists have discovered a holy grail in brain-injury research: the ability to diagnose the degenerative brain disease chronic traumatic encephalopathy (CTE) in living patients.

Until recently, CTE could only be diagnosed through autopsy. But scientists from UCLA say they've developed a new technique in brain imaging that allows them to detect the build up of protein tau in the brain, a key indicator of CTE.

CTE can develop in the brains of athletes, military personnel, or anyone exposed to repeated blows to the head. Recent autopsies revealed that 34 former NFL players had the disease, and several former NHL players have also been diagnosed with CTE.

In January, the family of former NFL linebacker Junior Seau filed a lawsuit against the league, claiming he developed the disease as a result of the multiple concussions he obtained during his career. Seau showed signs of the disease while he was living, like mood changes, irritability, memory problems, and cognitive deficits, but the former limitations of CTE diagnosis meant Seau committed suicide without ever knowing whether he had the disease.

Now, doctors could one day diagnose CTE in athletes like Seau and help them take steps to slow the progression of the disease.

The study included six former NFL players aged 45 and older who had a history of concussions and were experiencing problems with cognition and mood changes.

Researchers injected the athletes with a new dye containing a radioisotope called FDDNP which clings to deposits of tau "tangles" and amyloid beta "plaques" in the brain. The dye shows up on PET scan images, acting as a visual marker of the build up of plaque and tau tangles in the brain.

When compared to healthy men without a history of concussions, the NFL players had higher levels of FDDNP, particularly in parts of the brain responsible for learning, emotions, behavior, and memory. Their FDDNP levels were similar to patterns of tau deposits found in the brains of people with CTE.

This is the first and only imaging technique that can measure tau proteins in living subjects, the researchers pointed out. Although larger follow-up studies are needed to confirm the results, the findings represent a major step forward for brain-injury treatment.

Small G, et al. PET scanning of brain tau in retired national football league players: preliminary findings. American Journal of Geriatric Psychiatry 2013;21: 138-144.

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Obese Drivers More Likely to Die in Car Crashes

Who is most likely to die in a severe car crash? A new study from the State University of New York shows that moderate to morbidly obese drivers have the highest mortality rate.

Researchers analyzed data from over 150,000 fatal auto accidents to determine which BMI levels put drivers most at risk. The table below summarizes their findings, listed from highest mortality rate to lowest.

Risk	Category	Definition
Highest	Morbidly obese	BMI greater than 40
	Moderately obese	BMI of 35 to less than 40kg/m ²
Lowest	Underweight	Less than 18.5 kg/m ²
	Normal weight	BMI of 18.5 to less than 25 kg/m ²
	Slightly obese	BMI of 30 to less than 35kg/m ²
	Overweight	BMI of 25 to less than 30 kg/m ²

Interestingly, underweight drivers were also at a greater risk of death than drivers with normal weight. People considered slightly obese and overweight were the least likely to die in collisions.

Researchers believe that one contributing factor in the mortality of severely obese people is their closeness to the steering wheel. The authors of the study suggest that obese drivers move their seats back and increase the space between the driver's seat and the steering wheel. Unfortunately, some smaller car models do not allow enough leeway for proper seat positioning for obese drivers.

Additionally, the findings may be linked to other health complications of obese people. For instance, obese people have a greater risk of diabetes and cardiac disease, conditions which can make death more likely in a trauma.

The authors of the study suggest that people who are obese discuss safety measures and preventive health strategies with their health-care providers.

Jehle D, et al. Influence of obesity on mortality of drivers in severe motor vehicle crashes. American Journal of Emergency Medicine 2010; 30(1):191-195.