

## Brain scan key for closed-head injury

But DTI can't show causation, win case on its own, attorneys say

By Brian Frasier  
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A scan that's gaining traction in mainstream medicine for assessing brain injuries is becoming more prevalent in [traumatic-brain-injury cases](#).

The scan, known as diffusion tensor imaging (DTI), is an important tool that plaintiffs' lawyers can use to prove otherwise invisible injuries, said Michigan Auto Law attorney Steven M. Gursten.

The Farmington Hills-based attorney said DTI alone isn't enough to win a case. He said it works better as a "tiebreaker" to be used to corroborate the other evidence.

"You can never just point to an image and say, 'There, that's my case,'" he said. "But what you can do a good job of is matching up the objective testing like the DTI, with the neuropsychological findings.

"Let's say the neuropsych findings show frontal lobe and temporal lobe damage. If the DTI shows defects or abnormalities in the same areas, then it's consistent with what the treaters are finding and with what the laywitness, the doctors and the plaintiff are saying is wrong with him. It all becomes consistent and reinforces one another."

But Mount Clemens-based Martin, Bacon & Martin PC attorney Victor Van Camp said defendants have ways to challenge DTI scans.

"Usually in these cases, symptomology of a mild traumatic brain injury, years after the fact that they claim are lingering, are hard to prove," he said. "I think this method is the newest and latest way that plaintiffs and their experts are going to try to prove an otherwise unproveable fact."

Van Camp said the technology of DTI scans is still too relatively new to be considered absolutely reliable in court.

"I think it's incumbent on defendants and their counsel to look at the way in which these tests are performed whether they are reliable, whether they've properly been subject to peer review, and whether they show causation back to the alleged incident," he added.

### **Proffering evidence**

DTI is a form of magnetic resonance imaging that measures the way water moves in three directions through the brain's white matter, said Dr. Ay-Ming Wang, head of neuroradiology at William Beaumont Hospital in Royal Oak.

"I think closed-head injuries sometimes are very difficult to evaluate," he said. "Other kinds of studies, [like] perfusion studies, can see any increase in blood supply to the injured brain, but it can't show the connection between the neurons. This is much better to show the connection of the neurons."

DTI displays fiber connections between neurons in color-mapped three-dimensional images. For a patient with brain trauma, tumors or infections, the imaging will display changes and deficits in water movement in three different directions.

This will show injuries that aren't detectable through standard MRI scans, Wang said.

DTI can be used along with another similar type of diffusion imaging, diffusion weighted imaging (DWI). DWI measures movement of water in all directions, and is often used to detect strokes.

Wang said use of both scans is recommended, because DTI can be used to show the presence and location of brain trauma, as early as two hours after the injury occurs, and DWI can be used to show an older injury. A DTI scan cannot show when an injury happened.

The use of DTI scans have become more mainstream in recent years. The NFL has reportedly been using DTI to determine the extent of players' concussions. The Department of Defense has also been using it to assess head injuries suffered by veterans returning from Iraq and Afghanistan.

Gursten said he was one of the first attorneys to use DTI scans as evidence for a 2004 U.S. District Court trial in *Lloyd v. First Choice Trucking* (see "Low-impact car crash results in \$2.5M verdict," Feb. 23, 2004). In that case, the plaintiff suffered a brain injury in a case in which Gursten said there was no physical damage to his car, a case that normally would have resulted in a defense verdict.

Gursten introduced a DTI scan as evidence that his client had suffered a brain injury, and the defense didn't produce any evidence to counter the scan.

"I'll never forget what the jury told me and the defense attorney after the verdict," he said. "The defense attorney had spent a good portion of the trial railing against the brain imaging. They said, 'You should have done your own brain imaging then to prove it wasn't there.' We had proven our burden. We had proffered evidence proving the brain injury."

### **'Spotlight theory'**

Van Camp said DTI evidence has one major flaw that defendants can attack: it can't answer the question of causation.

"In my opinion, the way these tests have been used in cases of mild closed head injury or mild traumatic brain injury, the testing itself isn't done until years after the event — usually and quite often after litigation has been filed," he said. "Perhaps the strongest challenge to this type of evidence is whether testing done years after the fact reliably shows causation."

Defendants should understand that several factors can contribute to brain changes over time, Van Camp said.

“We all know there’s a lot of different reasons why any normal person’s brain matter, as that person ages, may be subject to deterioration and or damage,” he said. “When these tests are performed years after an event that may show some degree of white matter in the brain, the real key is that there may be damage here, but was it caused by an auto accident that occurred three, four, five or six years earlier.”

Despite his success using DTI scans, Gursten suggests that a plaintiffs’ attorney use them unless their case absolutely depends on the head injury evidence. In fact, he recalls two recent cases in which he specifically chose not to go that route.

“It’s spotlight theory,” he said. “Juries focus where you put the spotlight. In both of those cases, I didn’t think it was going to help me because the neuropsych testing in both cases showed mild deficits. It wasn’t a huge part of my case, as opposed to other parts of my case, which included chronic pain or fatigue.

“You need to look at your case and decide whether it’s going to help you move the ball or not.”

And if the rest of the proofs aren’t there, DTI isn’t going to “move the ball” very far, he said.

“What I try and tell lawyers when I lecture on this is don’t think this is going to be the panacea, that all you need is DTI and you’re going to win that case,” Gursten said.

He added that traumatic-brain-injury cases, “like all trials, boil down to the credibility and likeability of the plaintiff. So if you have evidence that strongly suggests malingering, or shows that you have a very weak case, don’t expect DTI to help you.

“But if you have a good case, it’s an extremely important part of proving that case and get past the way defense lawyers attack TBI cases in the courtroom.”

*If you would like to comment on this story, please contact Brian Frasier at (248) 865-3113 or [brian.frasier@mi.lawyersweekly.com](mailto:brian.frasier@mi.lawyersweekly.com).*