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Cooling seen aiding player's recovery Doctor: Action may have helped avert paralysis

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Doctors initially said that Buffalo Bills tight end Kevin Everett had little chance of walking again after his devastating spinal cord injury in last Sunday's football game against the Denver Broncos. But just two days later, Everett was moving his arms and legs in what one doctor involved in his care called "a minor miracle."

Everett's ongoing recovery may stem in part from an experimental cooling technique performed moments after the accident, researchers say. Team doctor Andrew Cappuccino decided to inject an ice-cold saline solution into Everett's veins as he was being rushed to the hospital in hopes of preventing the death of nerve cells that follows a severe spinal injury.

"I was trying to pull out all the stops to help this young man," Cappuccino said Wednesday at a news conference.

He had heard of the therapy, called moderate hypothermia, at a conference attended by doctors from the Miami Project to Cure Paralysis who have been experimenting with it for more than a decade.

Modeled on the way animals' body temperatures drop during hibernation, the therapy lowers body temperature below the norm of 98.6 degrees. The cooler temperature slows the body's metabolism and fights the inflammation and release of toxic chemicals that occur when the spinal cord is damaged.

"We have shown that modest cooling - 2 to 3 degrees Celsius - is protective and improves outcome," said Dr. W. Dalton Dietrich, a neurosurgeon in the Miami Project. The group has been consulting on Everett's care since Dietrich saw initial accounts of his injury on television.

No human trials have proven the benefits of hypothermia for the approximately 11,000 people who injure their spinal cords each year. But Dietrich said his colleagues at the Miami Project have performed the technique on many patients and hope to publish studies soon on its effectiveness.

Everett severely dislocated the upper vertebrae in his neck attempting a tackle during the second half of Sunday's game. The injury put pressure on his spinal cord and initially left him unable to move his limbs.

Neurologists said that while the effects of such injuries can be difficult to predict, patients who receive quick treatment are more likely to avoid paralysis.

In addition to the cooling, doctors at Buffalo's Millard Fillmore Gates Circle Hospital performed a four-hour surgery to relieve spinal pressure and injected Everett with large doses of steroids to reduce swelling.

By Wednesday, Everett's doctors said he was wiggling his toes, bending his knee, and flexing his bicep, though he still couldn't move his hands.

The Bills said Everett's condition remained unchanged yesterday when he received a visit from NFL Commissioner Roger Goodell. While at least one doctor involved with Everett's case has said the hypothermia helped to heal him, other spinal cord specialists said his progress is not so simple to explain.

"It's nice to give credit to the cooling, but some people have an injury that's just not that bad," said Dr. Christopher Shields, chairman of neurosurgery at the University of Louisville.

Induced hypothermia has been around since the 1950s, but its use increased in 2003 when the American Heart Association recommended it to combat brain damage in heart attack patients. Dr. Arthur Day, chief of neurosurgery at Brigham and Women's Hospital, said surgeons at his hospital cool patients' spinal cords during abdominal aortic surgery to protect them from damage.

"In the old days we used to pack a person literally with ice," Day said. "In the frozen north, people could fall into a hole and survive without breathing for an extended period of time, be woken up and heated up, and didn't have damage to the brain. The reason was thought to be that the intense cold protected the needs of the metabolic tissue."

Today, physicians are more likely to use a blanket or suit to cool the entire body, or place a tube filled with chilly liquid near the area of the injury.

In Everett's case, Cappuccino administered the cold saline directly into his veins in the minutes after the accident, lowering his temperature. As Everett's temperature began to rise following surgery Monday, doctors cooled him again, this time using a tube that circulated a solution inside his body without mixing with his blood.

To be useful, induced hypothermia must be performed quickly, ideally within two to three hours after the injury. which is a major reason why the practice is not more widespread, experts said.

In a situation like Everett's where the neck bones are broken or misaligned, doctors are usually more focused on realigning the neck and removing pressure from the spinal cord, Day said.

Lowering body temperature too far can weaken muscles and cause an irregular heartbeat, and even mild hypothermia can reduce resistance to infection. Doctors also must be careful not to rewarm a patient too quickly, since that can make the brain swell.

Dietrich said doctors at the Miami Project are also working to change guidelines for treating stroke and brain damage to include hypothermia, he said.