

## Survivors

### A bolt from beyond can change your life permanently

By Barbara J. Paulsen

"They thought I was dead," says Michael Utley. He was playing golf at a charity tournament on Cape Cod on May 8 two years ago when the skies let loose with thunder and rain. Utley was suddenly on the ground, smoldering. "I was carrying my putter, and the electricity just blew my zipper off, went through my groin, down my legs, and knocked off my shoes," he says. He had to spend 38 days in an intensive care unit at Brigham & Women's Hospital in Boston and two months at HealthSouth Braintree Rehabilitation Center. "I couldn't walk. I couldn't bend my fingers. I couldn't even drink water." The lightning had damaged his brain, much as a stroke would have. He had to learn how to walk again, how to swallow again, how to live again.

I met Utley at the 12th annual Lightning Strike and Electric Shock Survivors International World Conference in Pigeon Forge, Tennessee. Before the accident, he had been a vice president at PaineWebber and a world-class windsurfer. Since the accident, he is on leave from work, walks with a limp, and is frequently in pain. And now he has learned something else: Others here have told him the worst problems may show up three, four, five years down the road.

Unlike Utley, most of the 225 victims attending the conference did not have a catastrophic injury that required months of hospitalization. A number were struck inside their home while on the telephone or in the shower. Many of them never went to the hospital after they were zapped. And yet weeks or months—sometimes years—after a strike, they had begun to notice a cluster of baffling symptoms called post-electrocution syndrome, which includes irregular heartbeat, heightened startle response, sleep disturbances, and panic attacks. Many suffer from memory problems, seizures, and chronic, debilitating pain in their arms and legs, usually from damage to the peripheral nerves.

"People who are struck by lightning often won't have any entry or exit wounds and yet suffer very serious neurological injuries," says Bradley Sewick, a neuropsychologist at Spectrum Rehabilitation Centers in Southfield, Michigan. "And a lot of the symptoms have a delayed onset, which can make it difficult to diagnose." A CT scan, EEG, or EKG performed right after the injury will often be normal. It's only later that a PET scan or results from neuropsychological tests may hint at the full damage.

A handful of neurologists are piecing together an explanation for these lingering problems. The thinking goes like this: Once in the body, electricity follows the path of least resistance, which is the network of nerves, arteries, and veins leading to the heart, the brain, the spinal cord, and the gut. Depending on the severity of the lightning strike, some nerve cells throughout the body may be killed immediately, resulting in acute problems. But the delay of symptoms is thought to be caused by a process called electroporation, in which the electricity causes tiny holes in the membranes of nerve



"I was 48 going on 35," says Michael Utley, a lightning strike survivor and former world-class windsurfer. "Now I'm 50 going on 75. I wake up in the morning and I hurt for two hours." Photograph by Greg Miller

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cells. Like a colander trying to hold water, the cell can't keep nutrients in or wastes out, and it eventually dies. When enough cells are killed off through this slow-motion death-by-drainage, the patient begins to notice the onset of various neurological difficulties.

"I feel cold one minute and am sweating the next," calls out one woman when the audience is asked to name some of their symptoms. Everyone nods. "I have fainting spells," says a burly-looking man. "Me too. I get disoriented and panicky when I'm under the least bit of stress," says a young woman in the back of the room.

Many of the symptoms are thought to result from damage to the autonomic nervous system, which seems to be particularly vulnerable to electroporation. The autonomic nervous system regulates most of the body's involuntary activities, such as heart rate, digestion, sexual arousal, and temperature control through the communication of the sympathetic and parasympathetic nerves. When this smoothly coordinated system stops working correctly, "your blood pressure might drop to nothing and you pass out," says Blair Grubb, a cardiac electrophysiologist at the Medical College of Ohio in Toledo, who has treated about a dozen lightning patients. "Or else your heart rate will go way up and you get stressed, sweaty, light-headed, anxious. Anyone would say you're having a panic attack." As a result, many lightning patients can end up in the psychiatrist's office.

But the cognitive problems can be the most troubling. Tests of electrical injury patients commonly show average or above-average intelligence and verbal ability but very low scores for memory, concentration, and organization. A schoolteacher with an electrical injury says her doctors tell her she is lucky she can dress herself and live a normal life. "They say my IQ for most things is average. But I've never been average in my life," she says. "It's so hard living with a stranger when that stranger is you."

Exactly how much of a recovery patients can expect is unclear. Some improvement often occurs, says Sewick. Patients turn to neural surgery, cognitive rehabilitation, psychotherapy, proper medications— and hope.

Utley, for example, relies on medications to push down the pain long enough to continue his rehabilitation. And he just keeps checking items off his list of things he needs to relearn. He has played golf again. Last summer, he put training wheels on his bicycle and learned to ride again with his 3-year-old daughter, Sonia.

One day toward the end of summer, his wife, Tamara, watched from the window as he took her bicycle— the one without training wheels— on his first spin down the hill toward the ocean. "I cried like a mother cries when I saw that. You should have seen the look on his face," she says. "He was just like a kid. It was such a look of total excitement— and sheer terror."

*Some details in this article have been changed to protect the patient's privacy.*