

# Sudden Paralysis Is Red Flag for West Nile Virus

BY MICHELE G. SULLIVAN  
Mid-Atlantic Bureau

SAVANNAH, GA. — Any patient who presents with the neurologic symptoms of acute-onset weakness or paralysis during mosquito season should be evaluated for West Nile virus infection, regardless of whether there was a viral prodrome.

Only about 1% of West Nile patients develop symptoms, but about 21% of that group develop a neurologic complication. Recovery is highly variable and almost impossible to predict, two researchers said at the annual meeting of the American Association of Electrodiagnostic Medicine.

An early and virulent season for West Nile virus infection has been predicted for California and the southwestern United States by the Centers for Disease Control and Prevention's division of vector-borne infectious diseases. The culprit: a wetter-than-normal winter.

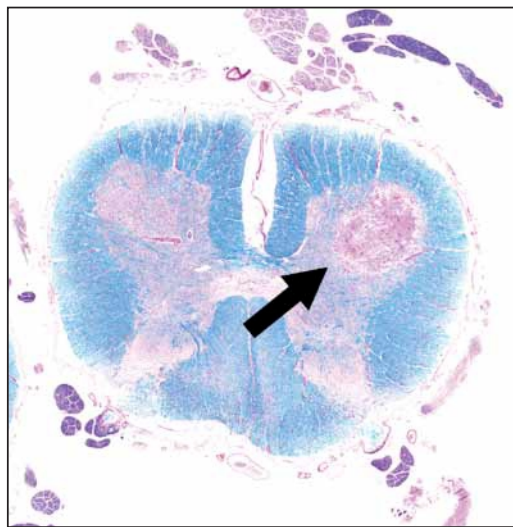
The International Society for Infectious Diseases has predicted a tough year for Oregon in terms of West Nile virus infection. The state saw 88 deaths from West Nile in 2004, according to CDC data. State public health officials are meeting to develop control strategies ([www.promedmail.org/pls/pm/pm?an=20050305.0670](http://www.promedmail.org/pls/pm/pm?an=20050305.0670)).

"These paralytic illnesses are seen a lot in patients who are elderly, immunocompromised, or otherwise sick, but every once in a while you'll see them in a young, healthy patient," said Bjorn Oskarsson, M.D.

"Severity of illness at onset isn't a good predictor of recovery," noted Dr. Oskarsson,

a neurologic fellow at the University of Colorado, Denver.

Weakness or paralysis associated with West Nile infection apparently occurs when the virus destroys motor neurons in the anterior horn of the spinal cord. Magnetic resonance imaging is generally unhelpful in symptomatic infection, but patients with paralytic illness often show abnormal signal intensity in the anterior



Symptoms arise from damage (arrow) to motor neurons in the anterior horn of the spine.

horn, he said in a poster presentation.

Jun Li, M.D., said needle electromyography shows severe denervation in the muscles of weak limbs and their corresponding paraspinal muscles. The findings confirm the localization of the lesion to the anterior horn motor neurons or their ventral nerve roots.

"The cardinal clinical feature of these patients is acute asymmetric flaccid paralysis

that reaches a plateau within hours in most patients," said Dr. Li of the department of neurology at Wayne State University, Detroit. The paralysis is slightly more frequent in the lower extremities than in the upper, and there little or no sensory disturbance.

Many patients report a flu-like illness preceding onset of weakness by days or weeks, but this is not a certainty. Paralysis can occur in previously healthy individuals as well as those who are immunocompromised or those with chronic health problems.

West Nile virus has become endemic in most states, so the presence of IgM antibodies in serum is no longer an acceptable way of confirming the diagnosis, Dr. Li noted. Instead, the antibodies must be detected in cerebrospinal fluid by enzyme-linked immunosorbent assay.

Patients with a paralytic complication may also show increased serum creatine kinase, ranging from several hundred up to 20,000 mg/dL. "This elevated CK may have originated from necrotized muscle fibers," Dr. Li said.

There is no current treatment for the condition, he noted. Intravenous immunoglobulin has been found ineffective.

Both Dr. Li and Dr. Oskarsson presented case studies illustrating the unpredictable nature of this illness.

Dr. Li presented two cases. A previously healthy 36-year-old woman developed a mild flu-like illness followed by low back pain. She then awoke to find her left leg paralyzed. She was unresponsive to a short course of intravenous immunoglobulin.

The second case was a previously healthy 44-year-old man who first noticed a tingling sensation in his back followed by a flu-like illness. Four days later, his legs

suddenly became paralyzed. Ten days later, his right arm was paralyzed and within another 24 hours, the left arm was also paralyzed. He also developed bilateral facial muscle weakness.

These two patients illustrate the unpredictable outcomes of this illness, Dr. Li noted. The man had more systemic symptoms and severe four-limb paralysis. His condition appeared much worse than that of the woman. Yet his strength recovered completely, while the woman's leg paralysis improved only minimally after 20 months.

Dr. Oskarsson presented five cases; three involved immunocompromise.

One patient died. She was a 46-year-old woman with a history of bone marrow transplant for large cell lymphoma. She presented with generalized weakness after a flu-like illness. She rapidly became comatose. Her brain MRI showed severe panencephalitic changes with multifocal necrosis in the cerebral deep gray nuclei, brainstem, and spinal cord.

The other patients survived, but only one regained baseline strength: a 48-year-old woman with a prior kidney transplant. A month after developing gastroenteritis she became confused and developed proximal bilateral arm weakness.

The other three patients survived but with neurologic deficits: a previously healthy 54-year-old woman who developed paraplegia after a flu-like illness; a previously healthy 32-year-old woman who developed left arm, face, and leg weakness after 3 days of severe headache and truncal rash; and a 50-year-old man with a liver transplant who developed rapidly progressive quadriplegia after severe abdominal pain and encephalopathy. ■

## Unusual Remedies May Help In Fight Against Mosquitoes

BY NORRA MACREADY  
Los Angeles Bureau

NEWPORT BEACH, CALIF. — The hands-down winner in the mosquito wars is DEET, but there are other ways of fighting off mosquitoes, according to two presentations at the annual meeting of the Pacific Dermatologic Association.

One approach is simply to avoid the things that attract the insects, said Tissa Hata, M.D., of the University of California, San Diego. At close range, mosquitoes rely heavily on olfactory cues and are drawn to floral fragrances in soaps, perfumes, and hair products. Dark clothing acts as a long-range attractant, and mosquitoes can detect carbon dioxide from breath and skin from a distance of 36 m. The combination of carbon dioxide and lactic acid is also a heady mix—if you're a mosquito.

The answer is to wear light-colored clothing, avoid fragrances, and "don't give off a lot of hot air," she said.

A product containing 2% soybean oil did well in a comparison of mosquito repellents. Although a product with the highest concentration of DEET (N, N-diethyl-

3-methylbenzamide) provided 301 minutes of protection, one with soybean oil warded off the bugs for 94 minutes. The oil can irritate children's eyes, so parents should not put it on their children's hands, Dr. Hata said. None of the other non-DEET products fared well in the comparison (N. Engl. J. Med. 2002; 347:13-18).

According to anecdotal reports, rubbing fabric softener sheets on the skin is effective, said Allan L. Kayne, M.D., a dermatologist with Berlex Pharmaceuticals in Montville, N.J. But he recommended that they not be used on infants or children.

He listed several other approaches anecdotally reported to be effective:

- ▶ Vick's VapoRub.
- ▶ A lotion that contains ethyl butylacetylaminopropionate (Skin-So-Soft Bug Guard made by Avon).
- ▶ Pure vanilla extract (not vanilla flavoring), mixed with equal parts water.
- ▶ Daily supplements of 100 mg thiamine.
- ▶ Cinnamon oil.

Other recommendations include avoiding bananas, which are thought to attract the insects, and planting marigolds, which contain pyrethrums that repel insects. ■

### DATA WATCH

#### Buzz Off: Protection Times of Insect Repellents

Product	Active Ingredient, Concentration	Mean Time of Complete Protection (min)
OFF! Deep Woods	DEET, 23.8%	301.5
Sawyer Controlled Release	DEET, 20%	234.4
OFF! Skintastic	DEET, 6.65%	112.4
Bite Blocker for Kids	Soybean oil, 2%	94.6
OFF! Skintastic for Kids	DEET, 4.75%	88.4
Skin-So-Soft Bug Guard Plus	IR3535, 7.5%	22.9
Natrapel	Citronella, 10%	19.7
Herbal Armor	Citronella, 12%	18.9
	Peppermint oil, 2.5%	
	Cedar oil, 2%	
	Lemongrass oil, 1%	
	Geranium oil, 0.05%	
Green Ban for People	Citronella, 10%	14.0
	Peppermint oil, 2%	
Buzz Away	Citronella, 5%	13.5
Skin-So-Soft Bug Guard	Citronella, 0.1%	10.3
Skin-So-Soft Bath Oil	Uncertain	9.6
Skin-So-Soft Moisturizing Suncare	Citronella, 0.05%	2.8
Gone Original Wristband	DEET, 9.5%	0.3
Repello Wristband	DEET, 9.5%	0.2
Gone Plus Repelling Wristband	Citronella, 25%	0.2

Note: Based on a survey of 15 people who tested these products in January 2001. Source: N. Engl. J. Med. 2002;347:13-8