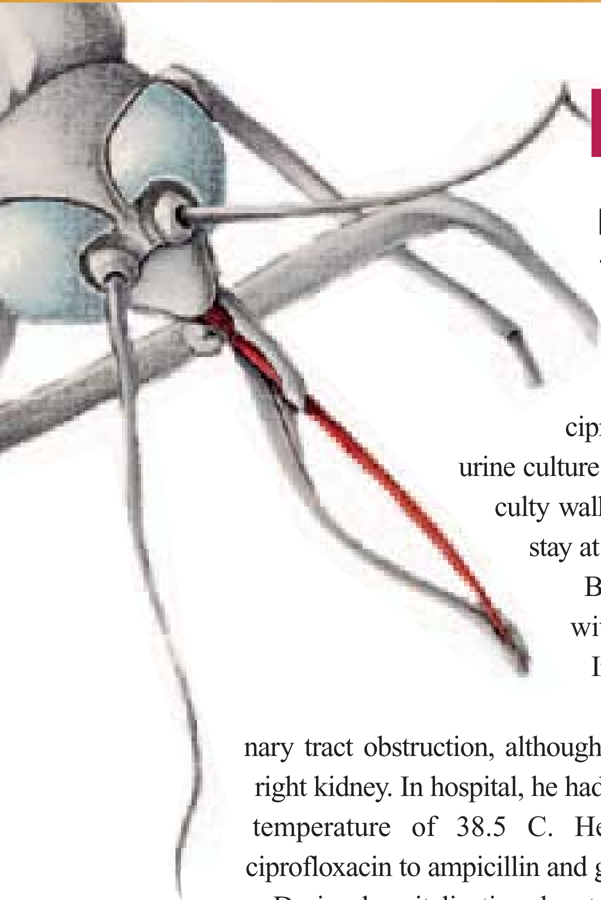
Mosquitoes on the Attack?

By Irving Salit, MD, FRCPC



In early September, while in central Ontario, Peter, 61, noted fever, urinary frequency, dysuria, abdominal pain, back pain, and achiness in his legs. He was started on ciprofloxacin and phenazopyridine, but he did not improve. His urine culture was negative. He felt he had some leg weakness and had difficulty walking. Peter's travel history included a trip to Italy in July and a stay at a cottage around Georgian Bay, Ontario in August.

Because of the fever and back pain, he was admitted to hospital with a diagnosis of possible pyelonephritis or prostatitis. Investigations in hospital did not reveal any urinary tract obstruction, although there was a cyst in his right kidney. In hospital, he had chills and rigors, with a temperature of 38.5 C. He was switched from ciprofloxacin to ampicillin and gentamicin.

During hospitalization, he started to develop a slight left-sided tremor. Magnetic resonance imaging did not reveal any new lesions to account for the tremor. He was previously noted to have an acoustic neuroma which was unchanged. Results of the physical and laboratory examinations are shown in Table 1.

When seen in a followup one month after the onset of his original symptoms, he still had a tremor and difficulty with fine motor skills. The tremor interfered with his ability to write and he found it most noticeable when had to sign his name; his signature was no longer recognizable as being his own. An additional test was done which revealed the cause of his problem.

What's your diagnosis?

See page 40 for the answer

Table 1
Examination and laboratory test results

Physical examination

- No definite flank tenderness
- Tremor of the left hand
- Mild confusion
- Neurologic exam: Otherwise normal

Lab tests

- Hemoglobin: 135 g/L
- White blood cells: 11.2
- Creatinine: Normal
- Transaminases: Normal
- Albumin: Normal
- Urinalysis/Urine culture: Negative

Dr. Salit is an associate professor, University of Toronto, and a staff member, division of infectious diseases, University Health Network, Toronto General Hospital, Toronto, Ontario.

Answer: West Nile virus

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Our mailing address:
955 boul. St-Jean,
Suite 306
Pointe Claire, Quebec
H9R 5K3

Our fax number:
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This patient's predominant symptoms included an initial febrile illness followed by a tremor. There was some unsteadiness of gait and subtle confusion.

Because of the large number of cases of West Nile virus infection occurring in Ontario, the patient's blood was sent for arbovirus serology. Antibody titres to both St. Louis encephalitis and West Nile virus were 1:≥ 640 at one month and four months after the onset of his illness. Cross-reactions can occur among arboviruses, such as St. Louis encephalitis, Dengue fever, West Nile virus, Powassan encephalitis, Yellow fever, and Japanese encephalitis, but West Nile was geographically most likely.

More on West Nile virus

In 2002, there was a 65-fold increase in the number of West Nile virus cases in the U.S. Similarly, during 2002, West Nile virus activity was detected in birds and mosquitoes in many areas of southern Ontario. During August and September 2002, there were many patients admitted to hospital with neurologic disorders which

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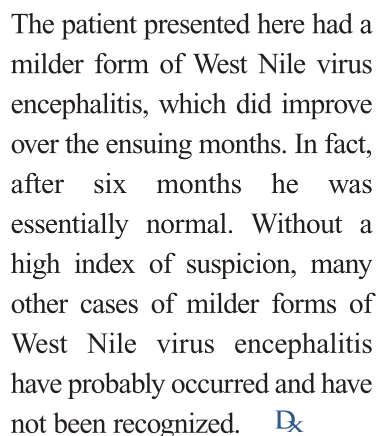
turned out to be West Nile encephalitis. Patients admitted to hospital with West Nile virus had the most severe forms of the disease. The main symptoms of those hospitalized for West Nile virus and the prevalence of those symptoms are listed in Table 2.

The neurologic dysfunction with West Nile virus usually starts several days after the onset of systemic symptoms, such as fevers and myalgias. Most patients with severe West Nile virus neurologic disease are over age 50 and about half have significant underlying disease. The mortality rate is almost 20% and survivors very frequently have chronic and persistent neurologic deficits.

What happened to Peter?



The patient presented here had a milder form of West Nile virus encephalitis, which did improve over the ensuing months. In fact, after six months he was essentially normal. Without a high index of suspicion, many other cases of milder forms of West Nile virus encephalitis have probably occurred and have not been recognized. Dx

Table 2

Neurologic manifestations of West Nile and their prevalence

Symptom	Prevalence
• Decreased level of consciousness	75%
• Neuromuscular weakness	40%
• Dysphagia	34%
• Ataxia	30%
• Dysarthria	17%
• Vertigo	14%
• Intention tremor	13%

Some of the most severe neuromuscular manifestations include coma and flaccid quadriparesis.