

Bulletin No. 19
December 03, 2001
Illnesses at an Anchorage Middle School

Since September, three students from the same Anchorage middle school have experienced serious illnesses. The Section of Epidemiology, in collaboration with the Municipality of Anchorage Department of Health and Human Services and the Anchorage School District, began an investigation of the first case on September 10, the second case on September 13, and the third case on November 26.

Patient 1

This patient was a previously healthy 13-year-old male who presented to the emergency department (ED) on September 10 with a history of an abrupt onset of nausea, vomiting, fever, and a purpuric rash on his hands and torso. The patient was immediately diagnosed as having a meningococcal infection and begun on antibiotic treatment. The patient's condition rapidly deteriorated, with the development of renal failure, hepatic failure, and severe mental status depression. The patient subsequently recovered. While conclusive laboratory evidence was not found, based on the patient's clinical presentation, there is a high degree of certainty that this patient had a bacterial infection caused by *Neisseria meningitidis*.

Patient 2

This patient was a previously healthy 13-year-old male who presented to his primary care provider on September 7 with a three-day history of sore throat, lethargy, and nausea. He was initially diagnosed with tonsillitis and treated with an antibiotic. On September 9 the patient returned because of dizziness and continued sore throat. He was found to have tonsillitis, cervical node enlargement, a positive monospot test, a normal chest x-ray, and a normal CT scan. The patient was diagnosed as having acute mononucleosis, an illness caused by Epstein-Barr virus (EBV). During the next few days, he became progressively weaker, developed an unremitting headache, dizziness, and blurred vision. On September 12 he was taken to the ED and was subsequently admitted to the pediatric intensive care unit with the diagnosis of EBV encephalitis. The next morning he developed seizures and was intubated. His condition gradually worsened, and he died on September 16. An autopsy provided evidence consistent with, but not diagnostic of viral encephalitis. Pathologic specimens were sent to the Mayo Clinic where they are now undergoing further analysis in an attempt to confirm the diagnosis.

Patient 3

This patient was a previously healthy 14-year-old female who presented to the ED on November 22 with a 24-hour history of headache, diarrhea, nausea, vomiting, fever, a fine rash on her abdomen and legs, and mental status changes. The patient's sister was ill with diarrhea, nausea, and vomiting on November 16 and the patient's parents were both ill with diarrhea, nausea, and vomiting on November 17. The patient was admitted to the hospital with the diagnosis of viral encephalitis, most likely caused by an enterovirus. Specific tests for EBV were negative. Additional laboratory tests are pending.

Discussion

Based on the current evidence, the three students had three clinically distinct and unrelated illnesses. Patient 1 was diagnosed with presumed meningococcal septicemia, caused by a blood infection with the bacteria, *Neisseria meningitidis*. Patient 2 was diagnosed with acute mononucleosis caused by EBV and developed encephalitis, a rare, but known, severe complication of the disease. Patient 3 had a gastrointestinal illness and subsequently was diagnosed with suspected viral encephalitis. Based on the clinical course of illness for patients 2 and 3, it appears highly likely that two different viruses were involved--Epstein Barr virus in patient 2 and an enterovirus in patient 3. Laboratory tests are pending that may identify the specific viruses responsible for these two children's illnesses.

Hundreds of viruses are known to cause acute infection and injury to the central or peripheral nervous system. Many of the signs and symptoms of these diseases are determined by whether the infection is limited primarily to the tissue that covers the brain and spinal cord (meningitis) or extends to involve the nerve cells of the brain (encephalitis). The same organisms responsible for causing viral meningitis are also responsible for encephalitis, although their relative frequencies differ.

Viruses known to commonly cause meningitis and/or encephalitis include enteroviruses, arboviruses, herpes simplex, mumps, measles, Epstein-Barr, cytomegalovirus, HIV, and influenza A and B. In the U.S., there are approximately 20,000 reported cases of encephalitis each year.

Ongoing viral surveillance by the Alaska State Virology Lab, the Section of Epidemiology, and local health care providers has identified the presence of adenovirus, enteroviruses, and influenza A circulating in Anchorage and elsewhere in Alaska. Because these viruses are present in the community, it is possible that additional persons with illness may be identified. However, there is no medical or epidemiological indication that persons affiliated with the middle school are at any greater risk of viral infection or of severe complication from a viral infection than other persons.

Recommendations

1. At the present time, local and state public health authorities do not recommend any treatment, restriction of activities, or other precautions for any persons at the school or elsewhere.
2. All health care providers in Anchorage should immediately report any patient who presents with signs and symptoms compatible with meningitis or encephalitis to the Section of Epidemiology (907-269-8000 or 800-478-0084 after hours).
3. Nasopharyngeal and rectal swabs, and CSF samples should be obtained and sent the Alaska State Virology Lab in Fairbanks for evaluation. Submit swabs in viral transport media. Section of Epidemiology staff can expedite specimens to the lab.