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Outbreak of Adenovirus 14 Respiratory Illness — Prince of Wales Island, 2008

Introduction

In September 2008, a physician on Prince of Wales Island (PWI) notified the Section of Epidemiology (SOE) of an unusual number of pneumonia cases among otherwise healthy adults. In collaboration with the U.S. Centers for Disease Control and Prevention (CDC), we began an investigation.

Methods

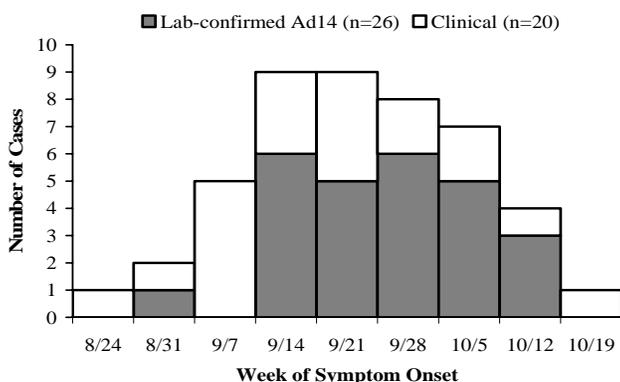
Epidemiologists first arrived at PWI on October 1 to identify cases, determine the cause of the outbreak, and prevent further disease transmission. A case was defined as an acute respiratory illness in a resident of PWI who presented to one of the two medical clinics on the island between August 25 and October 25, 2008. Medical records from the clinics and hospital records were reviewed to ascertain demographic characteristics of ill persons, symptom information, past medical history, and clinical outcomes. Serum and naso/oropharyngeal swabs were obtained and submitted to the Alaska State Virology Laboratory (ASVL) and CDC in Atlanta for identification by viral culture and neutralization.

Results

Forty-six patients met the case definition (Figure). Patients ranged in age from 2–95 years (median: 47 years), 70% were male, and 59% had at least one of the following comorbid conditions: chronic obstructive pulmonary disease (COPD), congestive heart disease, asthma, cancer, cardiac disease, or renal disease. Patients' symptoms included fever (74%), cough (100%), productive cough (70%), shortness of breath or wheezing (87%), sore throat (52%), and nasal congestion (54%). Thirty-nine percent of patients had fever $\geq 38^{\circ}\text{C}$, 22% had tachypnea, and 41% had an O_2 saturation $< 95\%$. Thirty-nine (85%) patients had a chest radiograph (CXR); of those, 30 (77%) were abnormal (most often described as a patchy or interstitial infiltrate). Eleven patients were hospitalized. One patient with underlying COPD refused hospitalization and died within 13 days of symptom onset. Most patients (91%) received antibiotics; none received antiviral therapy.

Clinical specimens were obtained from 39 (85%) patients; of these, 26 (67%) tested positive for adenovirus 14 (Ad14). No other pathogens were identified.

Figure. Adenovirus 14 Outbreak — Prince of Wales Island, 2008 (N=46)



(Contributed by Tracie Gardner, PhD and Joe McLaughlin, MD, MPH, Alaska Section of Epidemiology.)

Retrospective Cohort Study

Methods

Using medical records data, we evaluated risk factors for hospitalization among a cohort of persons identified during the outbreak investigation who had radiologically confirmed or clinical diagnosis of an acute lower respiratory tract infection or laboratory confirmation of Ad14 infection.

Results

Risk factors for hospitalization included age ≥ 65 years (relative risk [RR]=5.0, 95% confidence interval [CI]=1.7–14), tachypnea (RR=4.1, CI=1.4–11), and underlying COPD (RR=3.4, CI=2.7–9.1).

Discussion

This report documents the first recognized community outbreak of adenovirus 14 in Alaska. Several risk factors for hospitalization were identified, which were consistent with risk factors identified in previous adenovirus 14 outbreak investigations in the United States.²

Adenovirus 14 is a rarely reported but emerging adenovirus serotype that has been associated with severe and sometimes fatal respiratory illness in persons of all ages.^{1,2} Control of adenovirus outbreaks can be difficult because these viruses can be shed in both respiratory secretions and feces and can persist for weeks on environmental surfaces.

Since this outbreak, ASVL has detected Ad14 in several specimens collected from patients in other communities in Southeast and Southcentral Alaska, with the most recent case report coming from Juneau in December.

Recommendations

1. Health care providers should consider Ad14 in their differential diagnosis for patients with severe community-acquired pneumonia and obtain serum and naso/oropharyngeal swab specimens for laboratory confirmation.
2. Hospitalized patients with suspected or confirmed adenovirus pneumonia should be placed on contact and droplet precautions.³
3. To prevent the spread of adenoviruses, health care providers should remind patients of basic respiratory hygiene practices: cover mouth and nose when sneezing or coughing; wash hands frequently; and avoid touching their eyes, nose and mouth.
4. Report suspected outbreaks to the Section of Epidemiology by calling (907) 269-8000 during business hours or (800) 478-0084 after hours.

References

1. Adenovirus 14 Fact Sheet. CDC. Available at: <http://www.cdc.gov/ncidod/dvrd/revb/respiratory/ead-ad14-factsht.htm>
2. Acute Respiratory Disease Associated with Adenovirus Serotype 14 - Four States, 2006-2007. MMWR 56(45):1181–1184. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5645a1.htm>
3. Guidelines for Preventing Health-Care-Associated Pneumonia, 2003. MMWR 53(RR03):1-36. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm>