COACTION PUBLISHING

Ten years after Amerithrax: have improvements to our bioterrorism and influenza surveillance networks enhanced our preparedness?

Alan Siniscalchi*

State of Connecticut, Department of Public Health, Hartford, CT, USA

Objective

The 2001 U.S. anthrax mailings, which followed a week after the tragic events of September 11, highlighted the nation's vulnerability to bioterrorist attacks. This event, known by its FBI code name 'Amerithrax', resulted in 22 known infections and 5 deaths in various east coast locations, including Connecticut (1). These cases enforced the need for an effective, federal, state and locally integrated biosurveillance system network that can provide early warnings to reduce casualties, as called for in U.S. Homeland Security Presidential Directive (HSPD)-21 and emphasized in recent CDC reports (2). This presentation reviews several post-2001 anthrax cases and the roles played by various biosurveillance systems in their identification. Recommendations for the use of modeling and the development of regional and national coordinated surveillance systems are also discussed.

Introduction

The use of syndromic surveillance systems by state and local health departments for the detection of bioterrorist events and emerging infections has greatly increased since 2001. While these systems have proven useful for tracking influenza and identifying large outbreaks, the value of these systems in the early detection of bioterrorism events has been under constant evaluation (3, 4).

Methods

Several U.S. anthrax infections have been identified since the 2001 Amerithrax attacks. These cases were investigated by a number of local, state and federal agencies, and most were subsequently associated with exposure to imported animal hides contaminated with anthrax spores of natural origin (5–7). Each incident presented a unique diagnostic challenge since all three forms of the disease (inhalation, cutaneous and gastrointestinal) were identified. All of the cases were reviewed to determine which laboratory and surveillance systems were used to first identify possible cases and the number of days required to confirm the diagnosis of anthrax. The role of syndromic surveillance and other advanced surveillance systems in identifying these cases and searching for additional cases was evaluated. Efforts to coordinate surveillance and communication efforts among the various jurisdictions involved in the investigation of these cases were also noted.

Results

A review of these post-Amerithrax incidents revealed that all the cases were identified by astute clinicians using improved laboratory techniques. The time required to suspect and confirm the diagnosis of anthrax decreased with each subsequent incident, with increased awareness of animal sources of anthrax combined with improved compliance with laboratory reporting protocols. While syndromic surveillance systems did not identify the initial patients, these systems were used to search for additional cases. These efforts were enhanced when they were well coordinated among all jurisdictions.

Conclusions

The single local sources of exposure in most of these cases limited the value of these incidents to test the ability of syndromic surveillance systems to detect potential bioterrorist attacks. However, each incident provided valuable experience in the use of advanced laboratory and syndromic surveillance systems in the identification of anthrax cases. Although 10 years of surveillance system development has enhanced our nation's preparedness, use of outbreak modeling exercises in conjunction with regional and national multijurisdictional public health working groups, such as the Distribute Community of Practice, can further test and develop our ability to respond to bioterrorist attacks and emerging disease.

Keywords

Anthrax; syndromic surveillance systems; disease detection; modeling

References

1. CDC. Update: investigation of bioterrorism-related anthrax—Connecticut, 2001. MMWR Morb Mortal Wkly Rep. 2001;50:1077–9.
2. CDC. Improving the nation's ability to detect and respond to 21st century urgent health threats: second report of the National Biosurveillance Advisory Subcommittee. April 2011.
3. Buehler JW, Berkelman RL, Hartley DM, Peters CJ. Syndromic surveillance and bioterrorism-related epidemics. Emerg Infect Dis. 2003;9:1197–204.
4. Nordin JD, Goodman MJ, Kulldorff M, Ritzwoller DP, Abrams AM, Kleinman K, et al. Simulated anthrax attacks and syndromic surveillance. Emerg Infect Dis. 2005;11:1394–8.
5. CDC. Inhalation anthrax associated with dried animal hides—Pennsylvania and New York City, April 2006. MMWR Morb Mortal Wkly Rep. 2006;55:280–2.
6. CDC. Cutaneous anthrax associated with drum making using goat hides from West Africa—Connecticut, 2007. MMWR Morb Mortal Wkly Rep. 2008;57:628–31.
7. CDC. Gastrointestinal anthrax after an animal-hide drumming event—New Hampshire and Massachusetts, 2009. MMWR Morb Mortal Wkly Rep. 2010;59:872–7.

***Alan Siniscalchi**
E-mail: alan.siniscalchi@ct.gov

Citation: Emerging Health Threats Journal 2011, **4**: 11026 - DOI: 10.3402/ehtj.v4i0.11026