State of Alaska Epidemiology Bulletin

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Bulletin No. 22 November 26, 2014

Two Cases of Tetanus — Alaska, 2012 and 2014

Introduction

Tetanus is an acute, potentially fatal disease characterized by generalized rigidity and convulsive spasms of skeletal muscles. Tetanus is caused by the spore-forming bacterium *Clostridium tetani*, the spores of which are found in soil and animal feces and enter the body through breaks in the skin—usually cuts or puncture wounds caused by contact with contaminated objects. *C. tetani* produces a potent toxin which causes painful and often violent muscular contractions, initially involving the jaw (lockjaw), and later becoming generalized.[1,2] Tetanus does not spread from person to person.

In the United States, the reported mortality from tetanus has declined at a constant rate since the early 1900s. In 2009, a total of 19 cases of tetanus, including two deaths, were reported to the national tetanus surveillance system.[1]

There are four tetanus toxoid-containing vaccines. The Advisory Committee on Immunization Practices (ACIP) recommends primary tetanus vaccination with 5 doses of DTaP for all infants and children <7 years old at 2, 4, 6, 12–15 months, and 4–6 years. Routine tetanus booster vaccination, starting at age 11 years, is recommended for adolescents and adults every 10 years. A single dose of Tdap is recommended, followed by Td boosters every 10 years. Tetanus toxoid and tetanus immunoglobulin (TIG) are critical components of wound management for preventing tetanus (Table).[1,2]

There is no laboratory test for tetanus; the diagnosis is entirely clinical. Tetanus is defined in the absence of a more likely diagnosis of an acute illness with muscle spasms or hypertonia and tetanus diagnosis by a health care provider, or death with tetanus listed as the cause of death or significant contributor.

Case Reports

Patient A

In August 2014, a 77-year-old non-English speaking male living in Southeast Alaska presented to a primary care provider with hand angioedema and presumed cellulitis without an obvious wound. The patient had a history of type II diabetes and only documentation in 2007 of a single tetanus vaccination. He was treated with Augmentin. The swelling slowly resolved; however, 10 days after the initial visit, Patient A presented to the Bartlett Regional Hospital Emergency Department with weakness. He was hospitalized the next day with difficulty walking, possible altered mental status, fever, sore throat, and altered speech. While hospitalized, the patient subsequently developed dysphagia, rigidity, grimacing, clenched hands, and tremors. He was clinically diagnosed with tetanus 5 days after admission once alternative diagnoses (e.g., metabolic imbalance, subdural hematoma, and stroke) were ruled out. He received Td vaccine and TIG, slowly recovered with supportive care, and was discharged 3 weeks after admission.

Patient B

In April 2012, a 60-year-old male presented to an Anchorage hospital Emergency Department with lower extremity severe muscles spasm, fever and chills approximately 1 week after stepping on a rusty nail; his last tetanus vaccination was estimated to be in the 1980s. Patient B was given TIG and experienced marked improvement of symptoms after 24 hours, with complete resolution of symptoms at discharge 48 hours after admission. He declined Tdap vaccine offered by the public health nurse.

Discussion

These case reports demonstrate the risk of tetanus among persons who are not up-to-date with vaccinations. Limited studies suggest that clinicians may not always assess wound patients for tetanus vaccination status and miss an opportunity for tetanus prevention.[3] Similarly, some patients, like Patient B, may not seek medical attention at the initial time of a wound, thereby also missing a prevention opportunity.

Tetanus diagnosis is based entirely upon clinical findings; therefore, clinicians need to keep tetanus in their differential diagnosis in persons presenting with acute onset of muscle spasm. Nearly all cases of tetanus occur in people who have never received a tetanus vaccine or adults who are not current with their tetanus booster.[2] However, overt wounds are not always reported prior to symptom onset.[2] Patient A had uncharacteristic features, i.e., no wound, a single Td in 2007, and long period of progression to symptoms; however, tetanus diagnosis was made after excluding alternate diagnoses.

Recommendations

1. Health care providers should promptly notify SOE of any suspected cases of tetanus by calling 907-269-8000 during work hours, or 800-478-0084 after hours.
2. Health care providers should administer prophylaxis according to published algorithms.[1,4]
3. Children should be immunized against tetanus with a 5-dose series of tetanus-containing vaccine (or a 4-dose series if the 4th dose is given at age ≥4 years) in accordance with the ACIP-recommended childhood vaccine schedule available at: http://www.epi.alaska.gov/id/iz/schedule/birth18.htm
4. The ACIP recommends that adolescents/adults have a tetanus-containing vaccine at least every 10 years. Adults with an unknown or incomplete history of a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series including a Tdap dose. The routine adult immunization schedule is available at: http://www.epi.alaska.gov/id/iz/schedule/adult.htm

References

1. CDC. Vaccine Preventable Disease Surveillance Manual, 5th edition, 2011. Chapter 16: Tetanus. Available at: http://www.cdc.gov/vaccines/pubs/surv-manual/chpt16-tetanus.html
2. CDC. Epidemiology and Prevention of Vaccine Preventable Diseases, 12th edition, 2012. Available at: http://www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html
3. Yoon Y et al. Clinician awareness of tetanus-diphtheria vaccination in trauma patients: a questionnaire study. *Scand J Trauma Resusc Emerg Med* 2012;20:35.
4. Minnesota Department of Health. Summary Guide to Tetanus Prophylaxis in Routine Wound Management. Available at: http://www.health.state.mn.us/divs/idepc/diseases/tetanus/hcp/tetwdmgmtc.pdf

Table. Guide to Tetanus Prophylaxis in Routine Wound Management[1]

History of Tetanus Toxoid (doses)	Clean Minor Wounds (vaccine)	Clean Minor Wounds (TIG)	All Other Wounds (vaccine)	All Other Wounds (TIG)
Less than 3 or unknown	DTaP, Tdap or Td*	No	DTaP, Tdap or Td*	Yes
3 or more doses	No†	No	No±	No

**Preferred formulation will depend on patient's age: DTaP for 0-7 years old, Td for 7-9 years old, and Tdap for >10 years old.*
†Yes, if 10 years or longer since last dose. *±Yes, if 5 years or longer since last dose.*

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