

Botulism

What is botulism?

Botulism is a rare but serious disease that affects the nervous system and can cause paralysis. It is caused by a toxin that is produced by a group of bacteria called *Clostridium botulinum*. Botulinum toxins are among the most potent toxins found in nature; tiny quantities can cause illness. The *C. botulinum* bacterium is found in the soil, and sometimes in water, and can form spores that can survive in the environment for a long time.

There are many forms of botulism. All forms can be fatal and are considered medical emergencies. The three main forms of botulism are as follows:

- Foodborne botulism is caused by eating foods that contain the botulinum toxin. It is considered a public health emergency, as action can be taken to prevent others from eating a contaminated food.
- Wound botulism is caused by toxin produced from a wound infected with *Clostridium botulinum*.
- Infant botulism is caused by consuming the spores of the botulinum bacteria, which then grow in the intestines and release toxin.

Two other forms of botulism also have occurred. Adult intestinal botulism is very rare and occurs among adults by the same route as infant botulism. Iatrogenic botulism can occur as a complication from injecting botulinum toxin for medical purposes, and is also very rare.

Who gets botulism?

Anyone can get botulism. About 145 cases are reported in the U.S. each year, with 15% being the foodborne form, 65% being infant botulism, and 20% wound botulism. Infant botulism occurs in babies less than 12 months old and has been associated with honey, a natural product that can contain *C. botulinum* spores. Infants less than 3 months old are more susceptible than those 3-12 months old. Injection drug users are at increased risk for wound botulism.

How is botulism spread?

Botulism does not spread from a person to another person. A person can get foodborne botulism from eating food that contains the toxin produced by *C. botulinum* if the food is not heated well enough. Foodborne botulism is most frequently associated with improperly processed or home-canned foods. Infants get botulism by swallowing something that contains *C. botulinum* spores; then the spores germinate and produce toxin in the gastrointestinal tract. Wound botulism occurs when *C. botulinum* spores germinate within wounds.

Botulism

May 2013 – page 2

What are the symptoms of botulism?

The classic symptoms of botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Muscle paralysis may start with the face and progress down the body to the trunk, arms, and legs. Infants with botulism appear very tired, feed poorly, are constipated, and have a weak cry and poor muscle tone. These are all symptoms of the muscle paralysis caused by the bacterial toxin. If untreated, these symptoms may progress to cause paralysis of the muscles used for breathing.

How soon after exposure do symptoms appear?

Symptoms of foodborne botulism usually appear 18 to 36 hours after eating the food that contains the toxin, but they can occur as early as 6 hours or as late as 10 days after exposure. The time from exposure to symptom onset for wound and infant botulism is difficult to estimate because the time of exposure is often unknown.

How is botulism diagnosed?

Doctors might suspect botulism based on the nature of the illness, especially if paralysis is seen to move down the body; however, other diagnoses can also cause the same illness. Therefore, special tests have to be conducted to rule out other diagnoses. The state public health laboratory can confirm botulism.

What is the treatment for botulism?

Botulism can be treated with an antitoxin, which blocks the action of toxin circulating in the blood. If given before paralysis is complete, antitoxin can prevent worsening and shorten recovery time, but it will not reverse paralysis that has already occurred. Wound botulism usually needs to be treated by surgically removing the source of the toxin-producing bacteria and then putting the patient on antibiotics. The respiratory failure and paralysis that occur with severe botulism may require a patient to be on a breathing machine (ventilator) for weeks or months and also require intensive medical and nursing care. Good supportive care in a hospital is the mainstay of therapy for all forms of botulism.

How can botulism be prevented?

Foodborne botulism is usually associated with improperly processed home-canned foods. Persons who do home canning should follow strict hygienic procedures to reduce contamination of foods and carefully follow instructions on safe home canning. This includes the use of pressure canners/cookers as recommended through county extension services or from the US Department of Agriculture. Because the botulinum toxin is destroyed by high temperatures, persons who eat home-canned foods should consider boiling the food for 10 minutes before eating it to ensure safety. Bulging containers of commercially canned food should not be opened and goods with off-odors should not be eaten. Most infant botulism cases cannot be prevented because the bacteria that causes this disease is in soil and dust and can be found inside homes on floors, carpet, and countertops even after cleaning. Honey should not be fed to infants less than one year of age because it can contain the bacteria that cause infant botulism. Honey is safe for persons one year of age and older. Wound botulism can be prevented by promptly seeking medical care for infected wounds and by not using injectable street drugs.

Botulism

May 2013 – page 2

Could botulism toxin be used for bioterrorism?

Yes. Botulinum toxin is one of the agents that could be used for bioterrorism because it is easy to obtain, transport, and misuse. Many people could get sick and need medical care for a long time. Botulinum toxin could be released into the air, where it could be breathed in by people in the area of the release. The form of botulism that would result is called inhalational botulism. Symptoms of inhalational botulism appear from 12 to 80 hours after exposure.

How can I get more information about botulism?

- 1) If you have concerns about botulism, contact your healthcare provider.
- 2) Call your local health department. A directory of local health departments is located at <http://www.vdh.virginia.gov/LHD/index.htm>.
- 3) Visit the Centers for Disease Control and Prevention website at <http://www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/>.