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Botulism

WHAT IS BOTULISM?

Botulism is a food poisoning caused by a toxin produced by the bacteria, *Clostridium botulinum*. *C. botulinum* and its spores are everywhere. It is prevalent in soil and water worldwide. The bacteria and spores themselves are harmless; however, when they grow, they create a highly toxic poison that can lead to extreme illness and even death. The spores must have an oxygen-depleted, low-acid environment in which to grow, and prefer temperatures between 40 °F and 120 °F.

This organism can easily grow in improperly stored home-cooked or commercial foods, as well as in canned foods that have not been prepared with proper canning procedures. During the canning process, oxygen is removed from the container and if the proper temperatures to destroy the spores are not reached, the spores now have the proper environment to grow into vegetative cells and eventually produce the deadly toxin.

WHO GETS BOTULISM?

Foodborne botulism is due to ingestion of a toxin formed in food. One of the most common culprits in foodborne botulism is home canned foods, especially low-acid foods such as asparagus, corn, green beans, lima beans, mushrooms, peppers, sauces, soups, meats, fish and poultry. More than 90 percent of foodborne botulism outbreaks between 1976 and 1985 were due to home-processed foods.

Commercial foods have also been involved in botulism outbreaks. Some outbreaks have been attributed to improperly handled food, such as potato salad, served in restaurants. But many commercial food outbreaks are due to consumer mishandling, such as disregarding labels that indicate the food should be refrigerated. Some food companies acidify their products or lower their moisture content as an extra precautionary measure in case the refrigeration warning is not heeded. Consumers can best protect themselves by reading the labels and following the storage instructions and by discarding rusty, swollen or otherwise damaged cans.

Infant botulism is serious, but rare, and not usually fatal. From 1976 through the end of 1993, 1,206 infant botulism cases were confirmed in the United States. About 75 to 100 cases are reported annually, about half of them in California. All infant cases involve babies less than 1 year old. The disease is most common in the second month of life and has been associated with the ingestion of contaminated honey.

HOW IS BOTULISM SPREAD?

Person to person spread does not occur. A person must ingest food that is contaminated with the toxin. A person can kill the botulism toxin if the affected food items are properly cooked or reheated. Infant botulism differs from foodborne botulism in that the toxin itself is not ingested. Instead, *C. botulinum* spores swallowed by the infant germinate and produce the toxin in the favorable environment.

WHAT ARE THE SYMPTOMS OF BOTULISM?

Foodborne botulism produces symptoms that affect the nervous system (the toxin bonds to nerve endings). The symptoms of foodborne botulism include blurred or double vision, general weakness, poor reflexes, difficulty swallowing and may result in death. Unfortunately, this is a commonly misdiagnosed illness. It is mistaken for stroke, intoxication, Guillain-Barre syndrome and other less serious illnesses.

The first sign that an infant has botulism is usually constipation, although this isn't always apparent to parents. Often the baby isn't brought to a doctor until parents notice other symptoms, such as lethargy and poor feeding as the paralysis begins to affect the baby's gag reflex and swallowing ability. Loss of head control is striking, and the baby will develop a wail or altered cry.

HOW SOON DO SYMPTOMS APPEAR?

Symptoms usually develop within a day of eating the food, but can take up to 10 days to manifest.

WHAT IS THE TREATMENT FOR BOTULISM?

Hospital care is necessary. An antitoxin (made from horse serum) will prevent any further bonding of the toxin to the nerve endings. However, side affects from this serum can include anaphylaxis, a life-threatening reaction, so it cannot always be used, and it is never given to infants. Recovery is slow and occurs only when the affected individual grows new nerve endings. Until that time, the patient is maintained so that they do not suffer from respiratory paralysis. The infant botulism fatality rate is less then 2 percent and recovery is usually complete. Often, however, infants have to spend weeks or months on a ventilator.

WHAT HAPPENS IF BOTULISM IS NOT TREATED?

Untreated botulism may result in death.

HOW CAN BOTULISM BE PREVENTED?

Although less than 5 percent of infant botulism patients contract the disease from honey, health officials and pediatricians agree honey should not be fed to infants under one year of age. Honey is perfectly safe for older children and adults.

All canned and preserved foods should be properly processed and prepared. Bulging containers should not be opened and foods with off-odors should not be eaten or even tasted. Commercial cans with bulging lids should be returned, unopened, to the vendor.

If you home-can products, make sure you use proper equipment, proper containers to can in, and up-to-date procedures. Before eating, bring home canned low-acid foods to a hard rolling boil for 10 to 20 minutes, stirring several times. This will destroy any toxin present. For more specific information on safe canning procedures, request HGIC 3040, *Canning Foods at Home.*

PREVENTION ALERT

- Discard all raw or canned food that shows any sign of being spoiled.
- Discard all bulging or swollen cans of food and food from glass jars with bulging lids.
- Do not taste food from swollen containers or food that is foamy or has a bad odor.
- Can low-acid foods in a pressure canner (to reach temperatures above boiling) and for the recommended time for the size of can or jar you are using.
- Do not can low-acid foods in the oven, in a water-bath, open kettle or vegetable cooker.
- Before eating home-canned low-acid foods, heat to a rolling boil, then cover and boil corn, spinach and meats for 20 minutes and all other home-canned low-acid food for 10 minutes before tasting.
- When in doubt, throw it out.

Sources:

1. Santa Barbara County Environmental Health Services *Botulism* [WWW document]. URL **http://www.co.santa-barbara.ca.us/hcs/p/ehs/botulism.htm**

2. U.S.F.D.A. *Botulinum Toxin: A Poison That Can Heal* [WWW document]. URL **http://www.fda.gov/fdac/features/ 095_bot.html**

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