

PROPHYLKTICS OF BOTULISM DISEASE

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Abstract: *Botulism is one of the most serious food poisoning diseases. This disease occurs when food contaminated with botulism bacilli is eaten and is caused by damage to the central nervous system. Botulism bacilli are widespread in nature, found in soil, water, animal, and fish guts and are stored in the shell for years. It multiplies in oxygen-free and comfortable conditions, and produces poison that is dangerous for humans.*

Key words: *botulism, neurotoxin, quarantine, antitoxin.*

The main causes of botulism: the disease occurs when a person eats canned goods (vegetables, fruits, mushrooms, meat, fish), smoked chicken meat, sausages prepared without following the rules of heat treatment at home. Hygienic during the canning process and as a result of non-compliance with technical rules, the microbe develops rapidly in a closed environment in a can. As a result of the accumulation of gas in spoiled canned goods, the lid rises.[1]

Effects of botulism toxin: botulinum neurotoxin is one of the most powerful and deadly substances. As little as 1 nanogram/kg can be fatal to humans, and scientists estimate that about 1 gram of botulinum toxin can kill 1 million people. Because small amounts of the toxin can kill people, it can be used as a weapon for bioterrorism. All forms of botulism can be fatal and are considered an emergency. The toxin is quickly absorbed by the digestive system, so many people get poisoned even after eating small amounts of contaminated food. [2] The neurotoxin actually paralyzes the nerves so the muscles cannot contract. The neurotoxin enters the nerve cells and prevents the release of acetylcholine, so the nerve cannot control the muscles. If the nerve fibers cannot regenerate a new axon that can withstand the neurotoxin, the neuromuscular paralysis is permanent. Therefore, it takes a long time to get rid of botulism, and the neurotoxin is effective for a relatively long time when it is used for cosmetic and therapeutic purposes.

The following symptoms are observed in a sick person: a person has a headache, nausea, vomiting, dry mouth, dark vision, double vision, dilated pupils, speech is disturbed (aphasia), breathing becomes difficult, swallowing becomes difficult, heart seems to stop.

Course of the disease: the disease begins 12-24 hours after eating contaminated food, or 1-5 days. The poison (toxin) is quickly absorbed in the intestine, passes into the blood and spreads throughout the body, damaging the nervous system and muscles.

Methods for diagnosing botulism: If botulism is diagnosed early, it can be treated by neutralizing the neurotoxins of food and wound botulism with antitoxins. Trivalent antitoxin (effective against three neurotoxins: A, B and E) is distributed to quarantine stations. Antitoxin prevents illness and deterioration, but recovery takes several weeks. Another heptavalent antitoxin (effective against seven neurotoxins: A, B, C, D, E, F, and G) is available for military use. Doctors can remove any contaminated food from the intestines, induce vomiting, and use enemas. Wounds usually require surgery to remove the toxin-producing bacteria. Good hospital-based therapy (intravenous fluids and respiratory support) is the cornerstone of all botulism therapy. [3] Enemas can be used to remove toxins that have not been fully digested; but magnesium salts, citrate, and sulfate are not used, as they may increase the potency of the toxin. Antibiotics (high-dose, intravenous penicillin or other antibiotics) are not used in foodborne botulism; only in wound botulism, surgical treatment may be required. Consultation with an infectious disease specialist will contribute to successful treatment.[4]

Treatments for botulism: If botulism is diagnosed early, food and wound botulism can be treated by neutralizing the neurotoxins with antitoxins. Trivalent antitoxin (effective against three neurotoxins: A, B and E) is distributed to quarantine stations. Antitoxin prevents illness and deterioration, but recovery takes several weeks. Another heptavalent antitoxin (effective against seven neurotoxins: A, B, C, D, E, F, and G) is available for military use. Doctors can remove any contaminated food from the intestines, induce vomiting, and use enemas. Wounds usually require surgery to remove the toxin-producing bacteria. Well-maintained therapy in the hospital (intravenous fluids and respiratory support) is the basis of all botulism therapy. Enemas may be used to remove undigested toxins; but magnesium salts, citrate, and sulfate are not used, as they may increase the potency of the toxin. Antibiotics (high-dose, intravenous penicillin or other antibiotics) are not used in foodborne botulism; only in wound botulism, surgical treatment may be required. Consultation with an infectious disease specialist will contribute to successful treatment.[5]

Measures to prevent the disease: in the process of canning at home, everyone should follow the rules of sanitation and hygiene, pay attention to the quality of canning products (vegetables, mushrooms, and greens). Fruits and vegetables can be contaminated with soil. It is necessary to wash them thoroughly in running water, then in boiled water and boil the products under high temperature for no less than 20 minutes. Do not forget to add acetic acid to non-sour products (cucumbers, green peas) when making preserves. The most important thing is not to prepare canned food at home. If there are canned products, they should be stored in a dark and cool place. In addition, in markets and crowded places, illegally sold smoked meat and fish, which are prepared at home by citizens, and whose quality is not guaranteed, as well as canned vegetables and fruits do not buy their products.[6]

- It is not recommended to store mushrooms, meat, fish, greens at home;

- Only fresh fruits and vegetables should be used for canning, it is not possible to store old, damaged fruits;
- Vegetables and fruits should be thoroughly washed; if their surface is soiled, use a brush when washing;
- Strictly follow the rules of sterilization of jars, lids and the regime of heat treatment of products at home;
- Keep home cans at low temperatures, do not forget to refuse and destroy bombed (swollen) cans;
- It is forbidden to buy home-made mushroom preserves or vegetables in jars with rolled-up lids in the markets (by hand).
- Since children are especially sensitive to botulinum toxin, they should not be given home-canned foods without prior heat treatment.

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