Florida Poison Information Center/Jacksonville
At Shands Jacksonville
University of Florida Health Science Center
1-800-222-1222

Botulism

Causative Agent

Botulism is caused by neurotoxins produced by the spore-forming anaerobic gram-positive bacillus, *Clostridium botulinum.* There are eight known strains of botulism toxin designated "A" through "G". Botulism neurotoxins A, B and E are the most common. In the United States, type A is more commonly found west of the Mississippi whereas type B is more common east of the Mississippi. Type E is most commonly found in seafood.

Mortality rates for botulism treated early with anti-toxin (<24 hours), late with anti-toxin (>24 hours), and no treatment have been reported as 10%, 15%, and 46%, respectively. Botulism can be used as a warfare agent via inhalation or by contamination of food. The presentation would be similar to that of foodborne botulism.

Mechanism of Action

Botulism toxin binds irreversibly to presynaptic neuromuscular junction terminals blocking the release of the neurotransmitter acetylcholine.

Clinical Presentation

Foodborne Botulism- Botulism in adults usually results from ingestion of pre-formed botulism toxin with onset usually occurring 18-36 hours after exposure. Initial symptoms are usually gastrointestinal in nature. Neurologic symptoms commonly predominate—the earliest findings are typically dry mouth, blurry vision and diplopia. Later findings may include dysphonia, dysarthria, dysphagia and peripheral muscle weakness. A symmetric descending muscle paralysis is characteristic of botulism.

Wound Botulism- Clostridium botulinum can flourish in badly crushed and denervated tissue as might occur in trauma. Symptoms reminiscent of adult botulism, typically excluding the gastrointestinal symptoms, can develop within 4-18 days of the incident.

Diagnosis

Botulism is largely diagnosed based on history and physical as there is no definitive test available that can be performed in a timely manner. Useful tests that may help rule out other diseases that could mimic botulism include CAT scan of the head and lumbar puncture.

Botulism toxin can be assayed in any bodily fluid specimen; however, most hospitals do not have this capability. State health departments or the CDC can perform this test.

Medical Management

Decontamination: soap and water or 0.5% hypochlorite solution can be used to decontaminate surfaces. Secondary aerosols from affected patients pose no risk of botulism transmission.

In cases of severe botulism, supportive care including intubation and ventilatory support in case of respiratory depression are the mainstay of treatment.

Trivalent anti-toxins (A, B and E) are available from the CDC for botulism poisoning. Anti-toxin will neutralize any toxins not yet bound to the nerve endings. Use of anti-toxin is indicated if botulism is suspected regardless of the time course, however early administration will be much more efficacious

Bibliography

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4. Clinical Recognition and Management of Patients Exposed to Biological Warfare Agents. Franz, D.R. et al.. JAMA 1997; 278: 407-408.

Call the Florida Poison Information/Network for information and/or to report exposures.

1-800-222-1222
Florida Poison Information Center Network
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