



BOTULISM

Overview

Botulism is a disease caused by extremely potent toxins produced by the bacterium *Clostridium botulinum*. Person to person transmission of botulism does not occur. The sporulated form of the bacterium is commonly found in soils, sediments and marine waters. There are seven recognized types of botulism. Four of these (types A, B, E and rarely F) cause human botulism. Types C, D and E cause illness in mammals, birds and fish. Healthy adults can consume spores in small amounts with no ill effects. The spores are heat-resistant. Under anaerobic conditions, botulinum spores can germinate, and the bacterium can reproduce and produce toxin. Ingestion of the toxin formed during the growth of the bacteria that can be present in improperly prepared food is dangerous.

Symptoms

The symptoms are not caused by the organism itself, but by the toxin that the bacterium releases. The toxin ingested by individuals produces the symptoms of disease, usually within 12 to 36 hours (within a range of four hours to eight days) after exposure. Incidence of botulism is low, but the mortality rate is high if treatment is not immediate and proper.

The characteristic early symptoms and signs are marked fatigue, weakness, and vertigo, usually followed by blurred vision, dry mouth, and difficulty in swallowing and speaking. Vomiting, diarrhoea, constipation and abdominal swelling may occur. The disease can progress to weakness in the neck and arms, after which the respiratory muscles and muscles of the lower body are affected. The paralysis may make breathing difficult. There is no fever and no loss of consciousness. Similar symptoms usually appear in individuals who shared the same food. Most cases recover, but the recovery period can take weeks or even months. The disease can be fatal in 5-10% of cases.

Different types of intoxication from the botulinum toxin have been recognized:

Exposure to Pre-formed Toxin

- Foodborne botulism occurs when the spores of the organism *Clostridium botulinum* germinate inside foodstuff and produce the bacterium that generates the toxin. *Clostridium botulinum* is an „anaerobic bacterium“, which means it can only grow in the absence of oxygen. Therefore, botulism tends to occur when the spores are in an airtight environment (tins or jars), particularly in inadequately processed home-preserved foods,

including those which have been preserved in oil. Occasionally, commercially-prepared foods are involved.

The Botulinum toxin has been found in a variety of foods, including low-acid vegetables, such as green beans, spinach, mushrooms, and beets; fish, including tuna, smoked and salted fish; and meat products, such as ham, chicken, sausage, and luncheon. The toxin is destroyed by normal cooking processes (heating at 80° C for ten minutes or boiling for a few minutes), and is not formed in acidic foods (pH less than 4.6).

- Inhalation botulism following inhalation of the toxin (in an aerosol) has occurred in laboratory workers. In these cases, neurological symptoms may be the same as in foodborne botulism, but will develop faster.
- Waterborne botulism can also result from the ingestion of the pre-formed toxin. Since water treatment processes inactivate the toxin, normally only contamination post-treatment will pose a risk to humans.
- In addition, adverse effects of the pure toxin have been reported as a result of its medical use in patients being treated for specific muscular disorders and in cosmetic surgery.

Intestinal colonisation

- Infant botulism is extremely rare. It occurs when infants ingest spores, which germinate to produce bacteria that reproduce in the gut and release the toxin. In most adults and children older than about six months, this would not happen because the natural defences that develop over time prevent the germination and growth of *Clostridium botulinum*. Clinical symptoms in infants include constipation, loss of appetite, weakness, an altered cry, and a striking loss of head control. Infant botulism has been associated with honey contaminated with botulism spores. Mothers are warned not to feed raw honey to their infants, as it can contain botulinum spores.
- Botulism of undetermined origin usually involves adult cases where no food or wound source can be identified. It has been suggested that these cases are comparable to infant botulism and may occur when the normal gut flora have been altered as a result of surgical procedures or antibiotic therapy.

In vivo

- Wound botulism occurs when the spores get into an open wound and are able to reproduce in an anaerobic environment. The symptoms pro-

duced are similar to the foodborne form, but may take up to two weeks to appear.

Prevention

Prevention of botulism is based on good food preparation (particularly preservation) practices and hygiene. If exposure to the toxin via an aerosol is suspected, in order to prevent additional exposure to the patient and health care providers, the clothing of the patient must be removed and stored in plastic bags until it can be washed with soap and water. The patient must shower thoroughly.

Food and water samples associated with suspect cases must be obtained immediately, stored in proper sealed, and sent to reference laboratories in order to prevent further cases.

Treatment

Antitoxin administration is indicated as soon as possible after clinical diagnosis has been made. Health authorities usually control antitoxin supplies. Severe botulism cases require supportive treatment, especially mechanical ventilation,

which may be required for weeks or months. Antibiotics are not required (except in the case of wound botulism). There is a vaccine against botulism, but it is used very rarely as its effectiveness is not fully evaluated and it has side effects.

Botox injections

The bacterium *Clostridium botulinum* is the same bacteria that is used in Botox injections. However, what is used in Botox treatments is the purified and diluted A neurotoxin. The neurotoxin is commercially available for clinical and cosmetic use. Treatment is administered in the medical setting, tailored according to the needs of the patient and is usually well tolerated. Occasionally there may be some side effects.

For further information, journalists can contact the Communications Office of the Director-General's Office, WHO, Geneva. Telephone (+41 22) 791 2222; Fax (+41 22) 791 4858; Email: inf@who.int All WHO Press Releases, Fact Sheets and Features as well as other information on this subject can be obtained on Internet on the WHO home page <http://www.who.int/> ■

Asthmatherapie bei Kindern

Wann ist Cromoglicinsäure angezeigt ?

Bochum, DGP-Kongress - Allen Unkenrufen

zum Trotz: Ganz verbannen sollte man Dinatriumcromoglicinsäure (DNCG)
beim kindlichen Asthma nicht

„Es gibt keine ausreichende Evidenz , dass DNCG günstige Effekte in der Erhaltungstherapie bei Kindern mit Asthma bronchiale hat“, lautet das Fazit einer vor zwei Jahren publizierten Metaanalyse, für die 28 prospektive randomisierte Studien mit Kindern und Jugendlichen herangezogen wurde. Daher sei es nicht mehr gerechtfertigt, inhalatives DNCG zur Erstlinienbehandlung beim kindlichen Asthma zu empfehlen.

Allerdings: Auch mehrere Studien mit Kindern bis zu vier Jahren haben zu dem Ergebnis beigetragen. „Das sind aber vor allem Kinder mit Infektasthma ,bei dem Cromoglicinsäure vermutlich weniger wirksam ist als beim allergischen Asthma“, erläuterte Privatdozent Dr. Joachim Kühn von der Universitäts-Kinderklinik Freiburg auf dem Kongress der Deutschen Gesellschaft für Pneumologie (DGP). Auch gab es zum Zeitpunkt der Studien noch keine geeigneten Inhalatoren.

Neuere klinische Studien belegen für DNCG signifikante Verbesserungen im Symptomen-Score im Vergleich zu Placebo sowie eine etwa 30%ige Reduktion des Betasympathomimetika-Bedarfs. Hospitalisierungen verhinderte DNCG in ähnlichem Maße wie inhalative Kortikosteroide. Relativ wenig

Daten gibt es zum Nutzen der Langzeittherapie mit DNCG. Von 175 Kindern, die über durchschnittlich acht Jahre beobachtet wurden, benötigte aber die Hälfte der DNCG-Patienten keine weitere Medikation oder nur einen Reliever, das entsprach dem Ergebnis unter inhalativen Steroiden.

Die Autoren verweisen darauf , dass inhalative Kortikosteroide bei schwerem Asthma wirksamer sind. Bei leichtem bis mittelschwerem Asthma gewährleisten nichtsteroidale antiinflammatorische Medikamente aber eine höhere Sicherheit bei vergleichbarer Wirksamkeit . Fixe Kombinationen von DNCG mit Betasympathomimetika verbessern zudem die Patienten-Compliance und Sicherheit bei der Anwendung.

„Meines Erachtens ist es deshalb überzogen , die Cromone ganz aus den Empfehlungen herauszunehmen, da wir Alternativen zu Steroiden brauchen“, resümierte Dr. Kühn.

Allergospasmin: Fixe Kombination von DNCG + Reproterol (Betasympathomimetikum) - Eine gute und sichere Therapie bei Anstrengungs- u. allergischem Asthma im Kindes- und Jugendalter .