

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

Anthrax

Mechanism of Action

It is a naturally occurring disease of plant eating animals such as swine, goats, sheep and cattle. It is caused by the bacterium, *Bacillus anthracis*.

Properties

Anthrax is a highly lethal agent. It is estimated that there are 100 million lethal doses per gram of spores. Anthrax spores can remain viable for decades in soil and animal products. It is a stable substance, easy to produce in large quantities and difficult to detect. Aerosol or munitions for warfare purposes can be used to distribute anthrax.

Symptoms - humans are infected by one of 3 ways

Cutaneous anthrax- most common form. Occurs through breaks in the skin, typically as a result of contact with an infected animal. It presents with itching (first 2-3 hours) at the site followed by formation of a necrotic ulcer (36 hours). This may progress to systemic infection. The lesion discharge is potentially infectious. Five to twenty percent of untreated cutaneous anthrax may be fatal.

Inhalational anthrax- results in pulmonary infection and occurs from breathing in spores. Initial symptoms are non-specific with malaise, myalgias, a dry hacking cough and low grade fevers. There may be improvement after 2-4 days, but this is followed by sudden worsening symptoms with respiratory distress, cyanosis, hemoptysis, shock and death within 24 hours. Most cases are fatal despite treatment.

Intestinal anthrax- is caused by eating the meat of an infected animal. This route has very low potential for use as a biologic warfare agent. Presentation includes abdominal distress, rapidly developing ascites, diarrhea, fever, and signs of sepsis.

Medical Management

Decontamination- Human to human transmission has not been known to occur with inhalational or intestinal modes, but has rarely occurred with the cutaneous form. However, clothes should be bagged until incinerated or autoclaved. The skin should be washed with soap and water. Appropriate protective garments (gloves, gowns) should be used when in contact with infective material. Patients should be isolated with drainage/secretion precautions until antibiotics are completed and lesions have healed. Surgical tampering of the lesions of the skin should be avoided. All patients with suspected anthrax should be admitted to an intensive care unit.

Antibiotics-

For anthrax inhalational infection Treat for 60 days	Adults	Ciprofloxacin IV or Doxycycline IV, If PCN sensitive strain Pen G 4 IV
	Children	Ciprofloxacin IV If PCN sensitive strain Age < 12: penicillin G IV Age ≥12: penicillin G IV Doxycycline
For anthrax cutaneous infection Treat for 14 days	Adults	Ciprofloxacin 500mg PO Q 12 hours Doxycycline 100mg PO Q 12 hours If PCN sensitive strain Amoxicillin 500mg PO TID
	Children > 9 yo	Amoxicillin Ciprofloxacin Doxycycline
	Children < 9 yo	Amoxicillin
For post exposure prophylaxis Treat for 60 days	Adults	Ciprofloxacin Doxycycline
	Children	Ciprofloxacin If PCN sensitive strain Amoxicillin Doxycycline

Bibliography

1. Franz DR, Jahrling PB, Friedlander AM. Clinical Recognition and Management of Patients Exposed to Biological Warfare Agents. JAMA 1997;278:399-411.
2. Ibrahim KH, Wright DH, Rotschafer JC. Bacillus anthracis: Medical Issues of Biologic Warfare. Pharmacotherapy 1999;19:690-701.
3. Inglesby TV, et al. Anthrax as a Biological Weapon. JAMA 1999;281:1735-45.



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