

ANTHRAX

Signs and Symptoms: incubation period is 1-6 days. Fever, malaise, fatigue, cough and mild chest discomfort is followed by severe respiratory distress with dyspnea, diaphoresis, stridor, and cyanosis. Shock and death occurs within 24-36 hours of severe symptoms.

Diagnosis: Physical findings are non-specific. Possible widened mediastinum. Detectable by Gram stain of the blood and by blood culture late in the course of illness.

Treatment: Although usually not effective after symptoms are present, high dose antibiotic treatment with penicillin, ciprofloxacin, or doxycycline should be undertaken. Supportive therapy may be necessary.

Prophylaxis: A licensed vaccine for use in those considered to be at risk of exposure. Vaccine schedule is 0, 2, and 4 weeks for the initial series, followed by boosts at 6, 12, and 18 months and then a yearly booster. Oral ciprofloxacin for known or imminent exposure.

Decontamination: Secretion and lesion precautions should be practiced. After an invasive procedure or autopsy is performed, the instruments and area used should be thoroughly disinfected with a sporicidal agent (iodine or chlorine).

PLAGUE

Signs and Symptoms: Pneumonic plague: incubation period is 2-3 days. High fever, chills, headache, hemoptysis, and toxemia, progressing rapidly to dyspnea, stridor, and cyanosis. Death results from respiratory failure, circulatory collapse, and a bleeding diathesis. Bubonic plague: incubation period is 2 to 10 days. Malaise, high fever, and tender lymph nodes (buboes); may progress spontaneously to the septicemic form, with spread to the ONS, lungs, and elsewhere.

Diagnosis: Clinical diagnosis. A presumptive diagnosis can be made by Gram or Wayson stain of lymph node aspirates, sputum, or CSF. Plague can also be cultured.

Treatment: Early administration of antibiotics is very effective. Supportive therapy for pneumonic and septicemic forms is required.

Prophylaxis: A licensed, killed vaccine is available. Initial dose followed by a second smaller dose 1-3 months later, and a third 3-6 months later. A booster dose is given at 6, 12 and 18 months and then every 1-2 years. This vaccine may not protect against aerosol exposure.

Decontamination and Isolation: Secretion and lesion precautions with bubonic plague. Strict isolation of patients with pneumonic plague. Heat, disinfectants and exposure

CHOLERA

Signs and Symptoms: Incubation period - 1-5 days. Asymptomatic to severe with sudden onset. Vomiting, abdominal distention and pain with little or no fever followed rapidly by diarrhea. Fluid losses may exceed 5 to 10 liters per day. Without treatment, death may result from severe dehydration, hypovolemia and shock.

Diagnosis: Clinical diagnosis. Watery diarrhea and dehydration. Microscopic exam of stool samples reveals few or no red or white cells. Can be identified in stool by darkfield or phase contrast microscopy, and can be grown on a variety of culture media.

Treatment: Fluid and electrolyte replacement. Antibiotics (tetracycline, ampicillin, or trimethoprim-

sulfamethoxazole) will shorten the duration of diarrhea.

Prophylaxis: A licensed, killed vaccine is available but provides only about 50 percent protection that lasts for no more than 6 months. Vaccination schedule is at 0 and 4 weeks, with booster doses every 6 months.

Decontamination: Personal contact rarely causes infection; however, enteric precautions and careful handwashing should be employed. Bacteriocidal solutions (hypochlorite) would provide adequate decontamination.

TULAREMIA

Signs and Symptoms: Ulceroglandular tularemia presents with a local ulcer and regional lymphadenopathy, fever, chills, headache and malaise. Typhoidal or septicemic tularemia presents with fever, headache, malaise, substernal discomfort, prostration, weight loss and a non-productive cough.

Diagnosis: Clinical diagnosis. Physical findings are usually non-specific. Chest x-ray may reveal a pneumonic process, mediastinal lymphadenopathy or pleural effusion. Routine culture is possible but difficult. The diagnosis can be established retrospectively by serology.

Treatment: Administration of antibiotics with early treatment is very effective.

Prophylaxis: A live, attenuated vaccine is available as an investigational new drug. It is administered once by scarification. A two week course of tetracycline is effective as prophylaxis when given after exposure.

Decontamination: Secretion and lesion precautions should be practiced. Strict isolation of patients is not required. Organisms are relatively easy to render harmless by heat and disinfectants.

SMALLPOX

Signs & Symptoms: Clinical manifestations begin acutely with malaise, fever, rigors, vomiting, headache, and backache. 2-3 days later lesions appear which quickly progress from macules to papules, and eventually to pustular vesicles. They are more abundant on the extremities and face, and develop synchronously.

Diagnosis: Tests of electron and light microscopy are not capable of discriminating variola from vaccinia, monkeypox or cowpox. The new PCR diagnostic techniques may be more accurate in discriminating between variola and other *Orthopoxviruses*.

Treatment: At present there is no effective chemotherapy, and treatment of a clinical case remains supportive.

Prophylaxis: Immediate vaccination or revaccination should be undertaken for all personnel exposed. Vaccinia-immune globulin (VIG) is of value in post-exposure prophylaxis of smallpox when given within the first week following exposure, and with vaccination.

Isolation: Strict quarantine with respiratory isolation for a minimum of 16-17 days following exposure for *all* contacts. Patients should be considered infectious until all scabs separate.

Q FEVER

Signs and Symptoms: Fever, cough, and pleuritic chest pain may occur as early as ten days after exposure. Patients are not generally critically ill, and the illness lasts from 2 days to 2 weeks.

Diagnosis: Q fever is not a clinically distinct illness and may resemble a viral illness or other types of atypical pneumonia. The diagnosis is confirmed serologically.

Treatment: Q fever is generally a self-limited illness even without treatment. Tetracycline or doxycycline are the treatments of choice and are given orally for 5 to 7 days. Q fever endocarditis (rare) is much more difficult to treat.

Prophylaxis: Treatment with tetracycline during the incubation period may delay but not prevent the onset of symptoms. An inactivated whole cell vaccine is effective in eliciting protection against exposure, but severe local reactions to this vaccine may be seen in those who already possess immunity.

Decontamination: Patients who are exposed to Q fever by aerosol do not present a risk for secondary contamination or re-aerosolization of the organism. Decontamination is accomplished with soap and water or by the use of weak (0.5 percent) hypochlorite solutions.

VENEZUELAN EQUINE ENCEPHALITIS

Signs and Symptoms: Sudden onset of illness with generalized malaise, spiking fevers, rigors, severe headache, photophobia, and myalgias. Nausea, vomiting, cough, sore throat, and diarrhea may follow. Full recovery takes 1-2 weeks.

Diagnosis: Clinical diagnosis. Physical findings are usually non-specific. The white blood cell count often shows a striking leukopenia and lymphopenia. Virus isolation may be made from serum, and in some cases throat swab specimens.

Treatment: Supportive only.

Prophylaxis: A live, attenuated vaccine is available as an investigational new drug. A second, formalin-inactivated, killed vaccine is available for boosting antibody titers in those initially receiving the live vaccine.

Decontamination: Blood and body fluid precautions should be practiced. Human cases are infectious for mosquitoes for at least 72 hours. The virus can be destroyed by heat (80 degrees centigrade for 30 minutes) and ordinary disinfectants.

BOTULINUM TOXINS

Signs and Symptoms: Ptosis, generalized weakness, dizziness, dry mouth and throat, blurred vision and diplopia, dysarthria, dysphonia, and dysphagia followed by symmetrical descending flaccid paralysis and development of respiratory failure. Symptoms begin as early as 24-36 hours but may take several days after inhalation of toxin.

Diagnosis: Clinical diagnosis. No routine laboratory findings. Biowarfare attack should be suspected if numerous collocated casualties have progressive descending bulbar, muscular, and respiratory weakness.

Treatment: Intubation and ventilatory assistance for respiratory failure. Tracheostomy may be required. Administration of botulinum antitoxin (IND product) may prevent or decrease progression to respiratory

failure and hasten recovery.

Prophylaxis: Pentavalent toxoid (types A, B, C, D, and E) is available as an ND product for those at high risk of exposure.

Decontamination: Hypochlorite (0.5% for 10-15 minutes) and/or soap and water. Toxin is not dermally active and secondary aerosols are not a hazard from patients.

VIRAL HEMORRHAGIC FEVERS

Signs and Symptoms: VHF are febrile illnesses which can be complicated by easy bleeding, petechiae, hypotension and even shock, flushing of the face and chest, and edema. Constitutional symptoms such as malaise, myalgias, headache, vomiting, and diarrhea may occur in any of the hemorrhagic fevers.

Diagnosis: Definitive diagnosis rests on specific virologic techniques. Significant numbers of military personnel with a hemorrhagic fever syndrome should suggest the diagnosis of a viral hemorrhagic fever.

Treatment: Intensive supportive care may be required. Antiviral therapy with ribavirin may be useful in several of these infections. Convalescent plasma may be effective in Argentine hemorrhagic fever.

Prophylaxis: The only licensed VHF vaccine is yellow fever vaccine. Prophylactic ribavirin may be effective for Lassa fever, Rift Valley fever, CCHF, and possibly HFRS.

Decontamination and Isolation: Decontamination with hypochlorite or phenolic disinfectants. Isolation measures and barrier nursing procedures are indicated.

STAPHYLOCOCCAL ENTEROTOXIN B

Signs and Symptoms: From 3-12 hours after aerosol exposure, sudden onset of fever, chills, headache, myalgia, and nonproductive cough. Some patients may develop shortness of breath and retrosternal chest pain. Fever may last 2 to 5 days, and cough may persist for up to 4 weeks. Patients may also present with nausea, vomiting, and diarrhea if they swallow toxin. Higher exposure levels can lead to septic shock and death.

Diagnosis: Diagnosis is clinical. Patients present with a febrile respiratory syndrome without CXR abnormalities. Large numbers of soldiers presenting with typical symptoms and signs of SEB pulmonary exposure would suggest an intentional attack with this toxin.

Treatment: Treatment is limited to supportive care. Artificial ventilation might be needed for very severe cases, and attention to fluid management is important.

Prophylaxis: Use of protective mask. There is currently no human vaccine available to prevent SEB intoxication.

Decontamination: Hypochlorite (0.5% for 10-15 minutes) and/or soap and water. Destroy any food that may have been contaminated.

TRICHOHECENE MYCOTOXINS (T2)

Signs and symptoms: Exposure causes skin pain, pruritus, redness, vesicles, necrosis and sloughing of epidermis. Effects on the airway include nose and throat pain, nasal discharge, itching and sneezing, cough, dyspnea, wheezing, chest pain and hemoptysis. Toxin also produces effects after ingestion or eye contact. Severe poisoning results in prostration, weakness, ataxia, collapse, shock, and death.

Diagnosis: Should be suspected if an aerosol attack occurs in the form of “yellow rain” with droplets of yellow fluid contaminating clothes and the environment. Confirmation requires testing of blood, tissue and environmental samples.

Treatment: There is no specific antidote. Superactive charcoal should be given orally if swallowed.

Prophylaxis: The only defense is to wear a protective mask and clothing during an attack. No specific immunotherapy or chemotherapy is available for use in the field.

Decontamination: The outer uniform should be removed and exposed skin should be decontaminated with soap and water. Eye exposure should be treated with copious saline irrigation. Once decontamination is complete, isolation is not required.

RICIN

Signs and Symptoms: Weakness, fever, cough, and hypothermia about 36 hours after aerosol exposure, followed in the next 12 hrs by hypotension and cardiovascular collapse.

Diagnosis: Signs and symptoms noted above in large numbers of geographically clustered patients could suggest an exposure to aerosolized ricin. The rapid time course to severe symptoms and death would be unusual for infectious agents. Laboratory findings are nonspecific except for specific serum ELISA. Acute and convalescent sera should be collected.

Treatment: Management is supportive. There is currently no available antitoxin. Gastric decontamination measures should be employed if the toxin is ingested.

Prophylaxis: There is currently no vaccine or prophylactic antitoxin available for human use. Use of the protective mask is currently the best protection against inhalation if an attack is considered likely.

Decontamination: Weak hypochlorite solutions and/or soap and water can decontaminate skin surfaces. Ricin is not volatile, so secondary aerosols are generally not a danger to health care providers.