

BW Agents: Plague

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Plague

- *Yersinia pestis*
 - Rod-shaped, non-motile, non-sporulating, gram-negative bacterium
- Zoonotic disease of rodents
- Organism remains viable in all kinds of extreme conditions (except light)

BW History

- Easily deliverable as aerosol
- Long history of use in warfare
- First weaponized by Japan in 1930s
 - Originally released infected fleas
 - Developed aerosol form

BW Significance

- Easy to cultivate (can be recovered from bedding, grain stores, and flea feces)
- Highly resistant to:
 - Low heat, cold, water
 - Killed by high heat, light, disinfectants
- Highly contagious via inhalation

Human Disease

- Bubonic
- Pneumonic
- Primary septicemic

Bubonic plague

- “Buboes” – swollen lymph nodes
- Mostly inguinal nodes (legs are most commonly “flea-bitten”)
- 80% blood culture (+); CFR = 50% untreated

Primary septicemic plague

- Bubonic plague without adenopathy
- Blood culture (+)
- CFR = 50% untreated

Pneumonic plague

- Likely form of BW attack
- Infection secondary to inhalation or spread to lungs from septicemia
- CFR = 100% untreated

Pneumonic plague

- Incubation period = 2-3 days
- Acute, fulminant onset of high fever, malaise, headache, myalgia, & hemoptysis
- CXR = patchy bronchopneumonia

Pneumonic plague

- Rapid progression to dyspnea, stridor, & cyanosis
- Death occurs within 2-10 days of onset due to respiratory failure, circulatory collapse and bleeding diathesis

Bubonic plague

- Incubation 2-10 days
- Onset similar to pneumonic form
- Hepatosplenomegaly usually present
- 25% will have skin lesions/rash (black eschars at point of inoculation)

Lab diagnosis

- Elevated WBC with 80% PMNs and bands
- Increased FSPs and other indicators of DIC
- Elevated LFTs
- Gram stain of blood or lymph node aspirate

Medical Management

- Universal precautions for at least 48 hrs following initial antibiotic therapy
 - Pneumonic form fatal if not treated within 24 hrs of onset of symptoms
- Streptomycin 15 mg/kg IV bid f10d
 - Can also use gent or doxy (maybe Cipro)
- Drain buboes

Prophylaxis

- Vaccine: killed whole cell
 - 0, 1, 6 months plus 3 six-month boosters
- **INEFFECTIVE VS. PNEUMONIC FORM**
- Prophylactic therapy for likely exposures
 - Doxy 100mg po bid f7d post-exposure
 - May also use Cipro 400mg po bid f7d p-e

Plague

- Bronchopneumonia-like symptoms
- Hemoptysis
- Doxy 100mg po bid f7d post-exposure OR
- Cipro 400mg po bid f7d post-exposure