

Listeriosis

- Organism:** *Listeria monocytogenes*, Gram-positive rod shaped bacterium.
- Incubation period:** Variable. 3-70 days, estimated 3 week median.
- Infectious period:** Infected individuals can shed bacteria in stool for several months. Mothers of infected infants can shed from vaginal secretions and urine for 7-10 days after delivery.
- Transmission route:** Foodborne (raw/contaminated milk, soft cheeses, vegetables, lunch meats, pate). Direct contact thru papular lesions on hands and arms. Neonatal mother to child in utero or during birth. Rarely fomites: neonatal unit equipment.
- Treatment:** Penicillin or ampicillin alone or together with aminoglycosides. For penicillin allergic patients, trimethoprim-sulfamethoxazole or erythromycin. Some tetracycline resistance noted. Treat newborns prophylactically if Gram-positive rods found in meconium.
Do not use cephalosporins, even 3rd generation.
Enteric precautions for cases.

Information Needed for the Investigation

Verify the Diagnosis

- Isolation of organism from CSF, blood, amniotic fluid, placenta, meconium, lochia, gastric washings, other sites.
- Gram stain of meconium showing short Gram-positive rods (Note: If Gram-positive rods found in meconium, treat infant prophylactically, see below).
- Foodborne: Test food for organism.
- Serological tests, fluorescent antibody, and PCR testing are unreliable.

Determine Extent of Illness

- Is this sporadic case or possible foodborne outbreak?
- Obtain linelist of other ill persons and begin outbreak investigation.

Evaluate Public Health Impact

- Severe disease may occur in pregnant women, newborns, immunocompromised, persons with AIDS, elderly, alcoholic, diabetic, cirrhotic adults.
- Foodborne outbreaks or sporadic cases may lead to food tracebacks. DEC and USDA/FSIS may become involved.

Laboratory Specimens

- CSF, blood, other perinatal fluids as listed above into selective enrichment medium for culture. (Culture will most likely be done by hospital, ASPHL cannot culture).
- Grain stain of fluids listed above (by hospital also).

- Food (at least 8 ounce specimen) if suspected foodborne outbreak to DEC along with Food Sample Collection Report. May want to test food from sporadic cases (determine in conjunction with DEC). USDA may be involved.
- Usefulness of other laboratory methods such as fluorescent antibody testing or PCR to diagnose invasive listeriosis has not been established (per CDC).
- All isolates should be sent to Alaska State Public Health Laboratory (ASPHL).
- ASPHL can culture and confirm *Listeria monocytogenes* and will do PFGE analysis on all isolates.

Contact and Control Measures

- No routine contact prophylaxis recommended.
- May treat newborns prophylactically if Gram-positive rods found in meconium.
- During foodborne outbreak, we may recommend treatment for Epi-linked, clinical cases (see Treatment above).
- Work with DEC for food testing, embargo, and possible traceback.

Hospital Considerations

- Standard Precautions.
- Person-to-person transmission is rare; cross-transmission in neonatal settings has been reported. (Early onset disease is most likely acquired in utero, late-onset can be a result of acquisition during delivery or environmental source.)

Reporting Requirements

- FTR for foodborne outbreaks.
- Case form for sporadic cases.
- AK Stars case form for all cases.

References

- Control of Communicable Diseases Manual (18th Edition, 2004)
- Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. Available at <http://www.cdc.gov/hicpac/pdf/isolation/isolation2007.pdf>

Listeriosis (*Listeria monocytogenes*)

1999 Case Definition

Clinical description

In adults, invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or bacteremia; infection during pregnancy may result in fetal loss through miscarriage or stillbirth, or neonatal meningitis or bacteremia. Other manifestations can also be observed.

Laboratory criteria for diagnosis

- A. Isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid)
- B. In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue

Case classification

Confirmed: A clinically compatible case that is laboratory-confirmed

Comment:

The usefulness of other laboratory methods such as fluorescent antibody testing or polymerase chain reaction to diagnose invasive listeriosis has not been established.



Listeriosis Fact Sheet

What is listeriosis?

Listeriosis is a bacterial infection caused by *Listeria monocytogenes*. While many bacteria generally infect specific locations within the human body, *Listeria* may infect many different sites, such as the brain or spinal cord membranes or the bloodstream.

Who gets listeriosis?

Anyone can get the disease, but those at highest risk for serious illness are newborns, the elderly, people with weakened immune systems, and pregnant women. Healthy adults and children occasionally get infected with *Listeria*, but they rarely become seriously ill.

When do *Listeria* infections occur?

Infections occur throughout the year. Although most cases occur sporadically, food-borne outbreaks do occur.

How is listeriosis spread?

Listeria bacteria are widely distributed in nature and can be found in water and soil. Infected animals may also serve as sources. Unlike other organisms, *Listeria* can be spread by several different methods. Ingestion (food-borne transmission) of the organism such as, by drinking unpasteurized milk or contaminated vegetables, is often a source of cases. In newborn infections, the organism may be transmitted from mother to fetus in utero or directly to the fetus at the time of birth. Direct contact with the organism can cause lesions on the skin.

What are the symptoms of listeriosis?

Because listeriosis can affect many different parts of the body, the symptoms vary. For meningoenephalitis, the onset can be sudden with fever, intense headache, nausea, vomiting and signs of meningeal irritation. In other body locations, various types of lesions at the site of infection are the primary symptom. In most cases, *Listeria* infection causes fever and influenza-like symptoms resembling many other illnesses.

How soon after exposure do symptoms appear?

Listeriosis has an extremely variable incubation period. It can range from 3 to 70 days, but symptoms usually appear within a month.

How is this disease diagnosed?

Specific laboratory tests are the only way to identify this disease. Since many cases may be mild, the disease may be more common than is realized.

Are there any unusual features of this disease?

Listeria infections are a significant risk for pregnant women, who may not experience obvious symptoms. Infection of the fetus can occur before delivery and can cause abortion as early as the second month of pregnancy, but more often in the fifth and six months. An infection later in pregnancy may cause exposure during birth, sometimes resulting in infection of the newborn which may be fatal.

Does past infection with *Listeria* make a person immune?

Past infection does not appear to produce immunity.

What is the treatment for *Listeria* infection?

Several antibiotics are effective against this organism. Ampicillin, either alone or in combination with other antibiotics, is frequently used.

What can be done to prevent the spread of this disease?

Since the organism is widespread in nature, basic sanitary measures such as using only pasteurized dairy products, eating cooked meats and washing hands thoroughly before preparing foods offer the best protection.

In addition, the following recommendations are for persons at high risk, such as pregnant women and persons with weakened immune systems:

- Do not eat hot dogs, luncheon meats, or deli meats, unless they are reheated until steaming hot.
- Avoid getting fluid from hot dog packages on other foods, utensils, and food preparation surfaces, and wash hands after handling hot dogs, luncheon meats, and deli meats.
- Do not eat soft cheeses such as feta, Brie, and Camembert, blue-veined cheeses, or Mexican-style cheeses such as queso blanco, queso fresco, and Panela, unless they have labels that clearly state they are made from pasteurized milk.
- Do not eat refrigerated pâtés or meat spreads. Canned or shelf-stable pâtés and meat spreads may be eaten.
- Do not eat refrigerated smoked seafood, unless it is contained in a cooked dish, such as a casserole. Refrigerated smoked seafood, such as salmon, trout, whitefish, cod, tuna or mackerel, is most often labeled as "nova-style," "lox," "kippered," "smoked," or "jerky." The fish is found in the refrigerator section or sold at deli counters of grocery stores and delicatessens. Canned or shelf-stable smoked seafood may be eaten.