Listeriosis
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Listeriosis

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After ingestion, the bacillus enters the body through the gastrointestinal tract and disseminates hematogenously. In pregnant women, it can cross the placenta and infect the neonate. Macrophages and other cells endocytose the bacteria, which subsequently multiply and spread directly to other macrophages. The host immune system’s response is T-cell-mediated. Symptoms manifest an average of 3 weeks after infection.

Pregnant women, neonates, the elderly, and immunocompromised individuals have the highest risk of invasive listeriosis because of relative T-cell deficiencies. Patients who have cancer or diabetes mellitus, have received organ transplants, are receiving long-term steroids, and have other immunosuppressive conditions are at increased risk of infection. Pregnant women are 20 times more likely than the average population to acquire the disease; patients infected with human immunodeficiency virus are 300 times more likely.

Most cases of listeriosis are sporadic, but outbreaks can occur. In the United States, approximately 2,500 cases and 500 deaths are reported each year. Serotypes 1/2a, 1/2b, and 4b most commonly cause disease. Although Listeria infection typically is invasive, several outbreaks have been marked by gastroenteritis alone. The overall incidence rate is likely to be underestimated because noninvasive infections may escape detection.

Most maternal infections occur during the third trimester of pregnancy, when T-cell immunity is most impaired. Infected women typically develop nonspecific flulike symptoms but may remain asymptomatic. The nonspecificity of the symptoms makes recognition of maternal listeriosis difficult, leading to delays in the identification of infection in the neonate. Neonatal disease manifests either as early-onset or late-onset listeriosis.

Early-onset listeriosis is due to in utero transmission and frequently leads to prenatal death or preterm delivery. Neonatal sepsis usually develops 1 to 2 days after delivery. Severe disease can result in widespread granulomas, termed granulomatosis infantiseptica. Up to one third of affected neonates who have early-onset disease die despite adequate antimicrobial therapy.

Neonatal late-onset disease is associated with a better prognosis. This infection is more likely to present as meningitis, and infants up to 30 days of age are at the greatest risk. Mothers typically are asymptomatic. Transmission is believed to occur across the placenta, from exposure in the birth canal, or after delivery.

Sepsis and meningoencephalitis are the most common clinical manifestations of listeriosis outside of the neonatal age group. Invasive disease leads to death in up to 30% of patients, and up to 33% of those who survive meningocelphalitis suffer long-term neurologic sequelae. A subset of patients who have central nervous system involvement develops rhombencephalitis, characterized by brainstem involvement. Rarely, endocarditis, cutaneous involvement, or localized infection occurs.

Listeriosis is diagnosed by a positive culture from a normally sterile site. Intravenous ampicillin or amoxicillin is the mainstay of treatment, although high drug concentrations are required for bactericidal effects. Gentamicin works synergistically and should be
added to the treatment, except in preg-
nant women because of possible tera-
togenic affects. Almost no resistance 
has developed to this treatment. In-
fected neonates are treated with a 
minimum course of 14 days of ampicil-
lin and gentamicin. Cephalosporins are 
not effective against *Listeria*. Ampicillin 
should be used empirically for infants 
younger than 1 month of age or in 
infants up to 3 months of age who 
show evidence of meningitis, severe 
ilness, or pylonephritis (to provide 
coverage for *Enterococcus*). Ampicillin 
also should be considered in older pa-
tients who have meningitis and under-
lying risk factors. Trimethoprim-
sulfamethoxazole can be used to treat 
patients who are allergic to aminopeni-
cillins, and prophylactic therapy for 
*Pneumocystis carinii* pneumonia may 
prevent listeriosis in immunocompro-
mised patients. Although exposure to 
*Listeria* cannot be avoided completely, 
proper food preparation and storage 
can decrease the risk. Pregnant women 
and immunocompromised patients 
should be advised to avoid unpasteur-
ized soft cheeses, deli meats, hot dogs 
that are not heated adequately, refrig-
erated pates, and smoked seafood be-
cause they can harbor high levels of 
contamination.

**Comment:** Although the overall in-
cidence of listeriosis has decreased by 
40% in the United States over the past 
decade, some studies have suggested 
that the perinatal rates have remained 
static. Aggressive public health inter-
ventions, including control measures by 
the food industry, the United States 
Department of Health and Human Ser-
vices, and the United States Depart-
ment of Agriculture, have been instru-
mental in leading to the overall 
decrease. Identified cases need to be 
reported to the health department so 
that public health agencies can inves-
tigate outbreaks quickly, identify con-
taminated food, and remove it from 
public consumption. Although such 
public health measures remain essen-
tial, anticipatory guidance to pregnant 
women regarding appropriate food 
avoidance remains important to de-
crease perinatal rates.

Janet R. Serwint, MD 
Consulting Editor

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