# Listeria Monocytogenes

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# Listeria monocytogenes

# short, motile, non-spore - forming, Grm + rods, β - hemolytic, looks like Group B streptococcus but group B is catalase neg and non-motile.
# found in wild and domestic animals everated into

- # found in wild and domestic animals excreted into soils.
- # healthy human carriers 5-10 %.
- # source of infection is food and animal contact.



# Listeria monocytogenes

### **Listeria Infections**

- Neonatal sepsis or meningitis
- Spontaneous abortion or still birth
- Sepsis or meningitis in immunocompromised patients
- Puerperal sepsis
- Persons at risk: Pregnant, post partum, new born, organ transplants

### WHAT IS LISTERIOSIS?

- *Listeriosis* is a serious infection caused by eating foods contaminated with the bacterium *Listeria Monocytogenes*.
- This disease affects primarily pregnant women, newborn, and adults with weakened immune systems.
- This bacterium is too small to be seen without a microscope.



Listeria monocytogenes is a rod-shaped aerobic and gram positive pathogenic bacterium that invades the cytoplasm of living cells. It develops a distinctive rocket tail structure to help push through the cytoplasm. Eventually, these "rockets" push bacteria into neighboring cells, propagating the infection

# Listeria Pathogenesis

- Ingested raw contaminated food
- Penetrates cell of intestine
- common event
- most have T cells
- Facultative intracellular pathogen
- Immunocompromised host
- Transmitted congenitally



## SYMPTOMS

#### Fever

- Muscle ache
- GI Sx: Nausea, diarrhea
- Pregnant women: mild flu-like Sx, miscarriage, still birth, premature delivery, or infected newborn.
- Lethargy irritability

If infection spreads to the nervous system: headache, stiff neck, confusion, loss of balance, or convulsions.

ListeriacancausePneumonia,Meningitis, andSepsis.

# CONTAMINATION

*Listeria Monocytogenes* is found in soil and water.

Vegetables can become contaminated from the soil or from manure used as fertilizer.

Animals can carry the bacterium without appearing ill and can contaminate foods of animal origin such as meats and dairy products. • The bacterium has been found in uncooked meats and vegetables, soft cheeses and unpasteurized milk or foods.

• If acquired at birth, the incubation period is 7 to 28 days.

• The average incubation period is 31 days; with a range from 11 to 47 days.



# **Food poisoning**

MILK and dairy products. This species grows at refrigerator temp. 5-12° C

Isolated by cold enrichment.



### DIAGNOSIS

- There is no routine screening test for susceptibility.
- If you have Sx of fever, or stiff neck, consult your doctor.
- A blood or spinal fluid test (to cultivate the bacteria) will show if you have *Listeriosis*.
- During pregnancy, a blood test is the most reliable way to find out if your Sx are due to Listeriosis.

# **Test for Listeria in Milk**

Add fluorescent-labelled antibodies specific
for *Listeria monocytogenes* to milk
Pass through a flow cytometer. fluid is passed through a small opening
Listeria detected by a laser beam
NO CULTURE NEEDED!!!

# **Listeriosis Prevention**

Persons at risk

- avoid soft cheeses and unpasteurized milk and processed meat that cannot be cooked.
- thoroughly cook all meats especially hot dogs
  - left over meat should be cooked to steaming.

# TREATMENT

- *Listeriosis* is a serious disease requiring hospitilization.
- A combination of antibiotics is given intravenously through a small straw-like catheter.
  - When infection occurs during pregnancy, antibiotics must be given promptly to the mother to prevent infection of the returnor newborn.
  - Babies with *Listeriosis* receive the same antibiotics as adults.
- The duration of antibiotic treatment is at least 2 weeks.
- Even with prompt treatment, some infections result in death.

### Listeria Monocytogenes

- Gram Positive Bacilli, Facultative intracellular rod, Catalase positive, Beta hemolytic.
- Shows Tumbling motility at 20-25°C but at 37°C its nonmotile.

#### Transmission:

 By ingestion of unpasteurized dairy products, Transplacental transmission from mother to fetus.
 Pathogenesis:

REWIND

• Listeriolysin O is the virulence factor that allows microorganism to escape the phagolytic vacuole inside the host cell.

#### **Culture:**

 Grows on ordinary media, Chocolate agar, PALCAM agar.

#### **Diseases Caused:**

 Granulomatosis infantisepticum, Neonatal Meningitis, Meningitis in immunocompromised, Mild gastroenteritis.

