LearnInfection
a learning platform for infection trainees

Severn Deanery **Bug of the Week**
8th July 2019

Listeria monocytogenes

Background:
- Genus of gram-positive bacteria with 20 species
- *L. monocytogenes* most associated with infections in humans
- Named in honour of Joseph Lister in late 1920s, initially categorised with Corynebacteria before being established as separate genus.

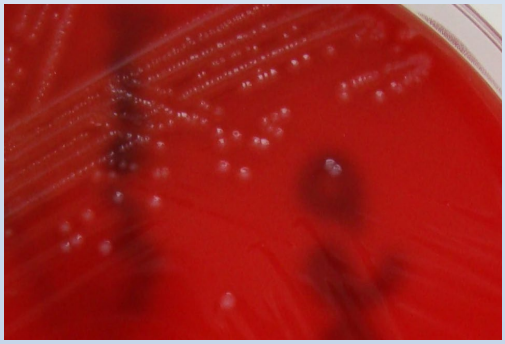

Image from Flickr: "Listeria monocytogenes - Colombia horse blood agar" by Nathan Reading. Taken 21.10.2011 (CC BY-NC-ND 2.0)
Note small zones of β hemolysis

Microbiology and identification
- Facultatively anaerobic, nonsporulating, catalase positive, oxidase negative, gram-positive rod with rounded ends.
- Variable morphology and can be mistaken for strep (chain forming) or corynebacterium
- Grows readily on blood agar with haemolysis
- Motile due to flagella which are lost at body temperature, best observed at 25°c
- Tumbling motility: https://youtu.be/fjD_ruKmSfA
- Aesculin hydrolysis
- CAMP test. The CAMP factor acts synergistically with the beta lysin produced by *Staphylococcus aureus* to produce a zone of enhanced lysis of erythrocytes
- Selective agar "oxford formulation"

Sources:
PHE SMI ID3: identification of Listeria species
https://www.cdc.gov/listeria/technical.html

Transmission and Epidemiology
- Naturally inhabits water and soil, as well as mammalian faecal flora
- Asymptomatic carriage in human stool (5%)
- Able to grow at refrigerator temperatures and recovery common (15-70%) from multiple raw/refrigerated food stuffs
- Ingestion therefore probably "exceedingly common"
- Some cases can occur through contact with birthing sheep
- RFs for disease: >60y, immunocompromise, pregnancy, neonate, alcohol dependency, substance use.

Clinical manifestations
- Infection in pregnancy due to dampening of cell-mediated immunity in final trimester, bacteraemia (CNS involvement uncommon) 22% neonatal death rate
- Neonatal infection, early- and late- onset pattern, similar to GBS
- Bacteraemia without focus – usually immunocompromised
- CNS infection – meningitis, encephalitis, abscess
- Febrile gastroenteritis

Antimicrobial therapy and resistance
- Penicillin susceptible but intracellular pathogen therefore high dose required to achieve intracellular levels (eg. Amox 2g q4°)
- Co-trimoxazole suitable alternative
- Vanc/Rif/Cipro/Doxy theoretical efficacy but insufficient data. Cephalosporins inactive.

Bacteraemia alone 2 weeks
CSF involvement 3 weeks
Cerebral abscess / rhomboencephalitis 6 weeks.