



Microbiology

Slide #: 9- mycobacteria
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Sheet Slide



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**1-Mycobacteria-Chlamydia-
Mycoplasma-Legionella
2- Spirochetes**

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Mycobacteria Group-1

- **Acid-Fast Bacilli**.. Aerobic.. Cell Wall.. Protein-polysaccharides.. High Phospholipids (mycolic acid, waxes).. Necrosis. Resistant to Dryness, low Acidity, Alcohol, detergents.. Susceptible to UV-light, Heat, Common Human, Asymptomatic persons, domestic Animal, Birds, Environment..kill 3-5 Million yearly
- **Human/animals Pathogens**.. Slow growth in vitro culture (2-6 weeks).. Nonpathogenic species.. genital tract, skin (*M. smegmatis*.. rapid growth..3-7 days).
- **Common Pathogens**: Mostly ***M. tuberculosis*** ..Few percentage ***M. bovis*** .. Animals, Dairy products..Intestinal tuberculosis. **Atypical Mycobacteria** .. pigmented and non-pigmented, common in environment..Rarely lung Tuberculosis.

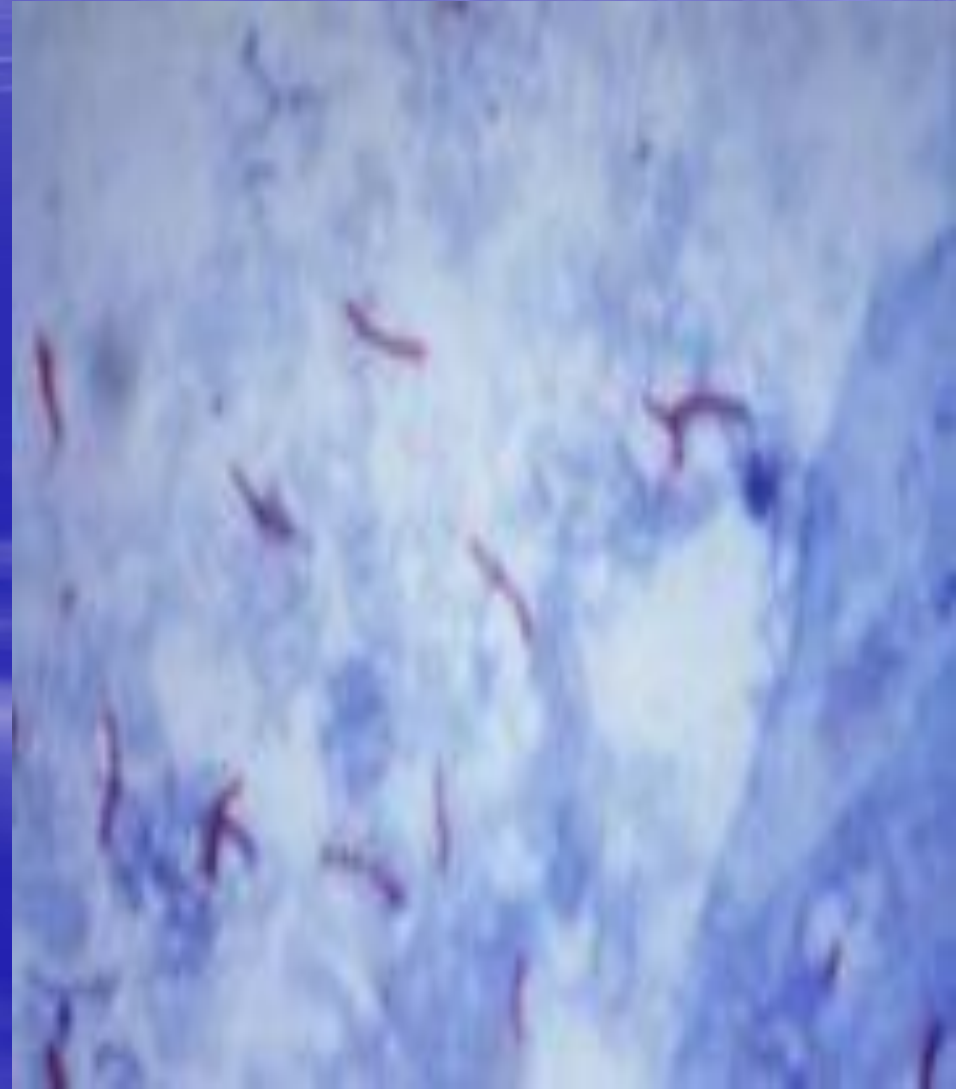
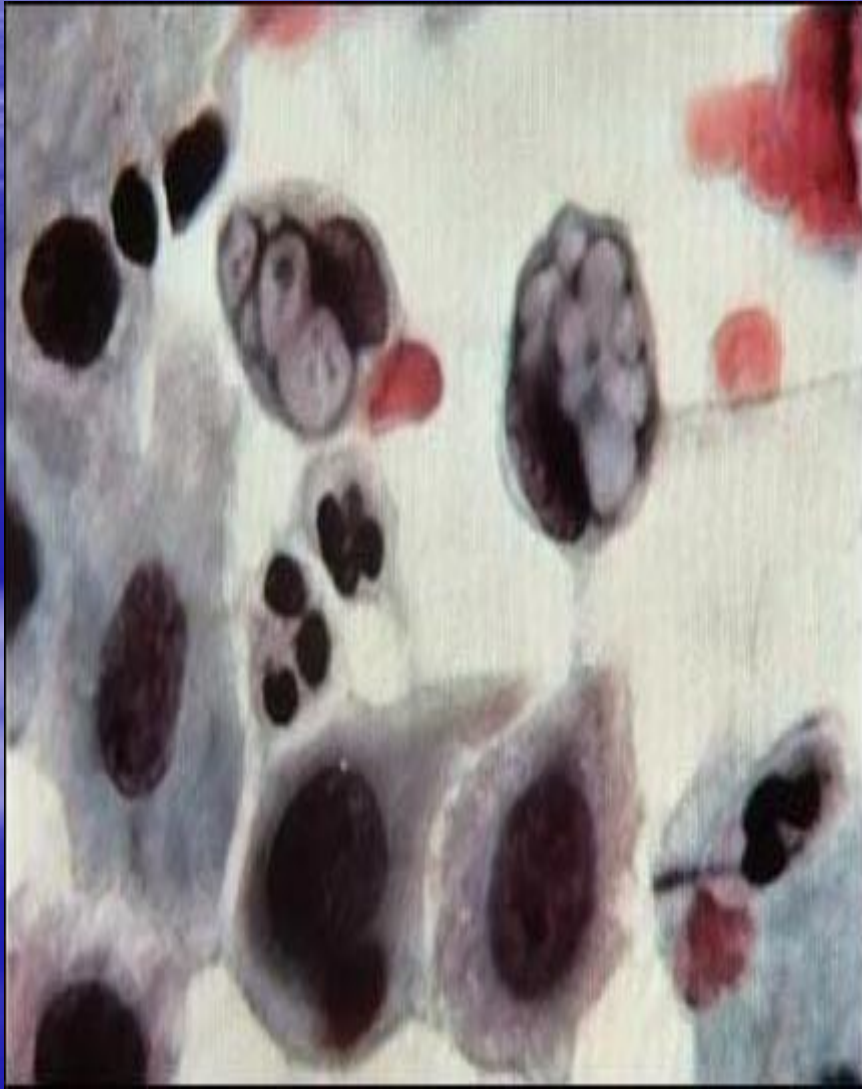
Mycobacteria Group-2

- **Pulmonary Tuberculosis**/ Exudative type: Slow intracellular growth in lung tissue..Incubation time 1-12 months.. droplet infection.. Primarily mild Lung lesion Mostly Children (90%).. Asymptomatic infection, Rarely active lesions..Recovery.. Hypersensitivity Immunity..Positive skin tuberculin test..
- Asymptomatic infection is not necessary result in Disease
- **Active-Productive type**: Adult infection.. Reactivation of old tuberculosis lesions..may present in any Body site.. Intestinal tract, Kidney, bones.. Meningitis common in children.
- **Lung lesion**: Cough, Bloody sputum, night sweats ,weight loss.. Detection X-ray and positive tuberculin test..Larger reaction.
- **Lab Diagnosis**: Direct AFS.. **Ziehl-Neelsen stain**, Culture.. Lowenstein -Jensen Medium, Sputum, urine, Pleural fluid, CSF, Biopsy.
- **Treatment**: Combination of anti-tuberculosis drugs 6-24 months). Prevention.. **BCG vaccine** (Bacilli Calmette-Guerin)..Children.

Chlamydia group

- Chlamydia Cell.. Small Gram-ve wall, few amount of liposaccharides.. obligate intracellular ..Dimorphic growth.. Infectious stage.. **Elementary bodies/ Infectious**.. responsible for attaching to the host mucosa cell and promoting its entry.. Develop **Inclusion bodies/Reticulate bodies** ..replication.
- **Chlamydia trachomatis**: A common cause of STD worldwide.. Nonspecific urethritis.. Prostatitis, Vaginitis.. Cervicitis, infertility
- **Newborns with chlamydial conjunctivitis**: have mild to severe eyes redness, swollen eyelids, discharge from the eyes which can be thin and watery or thick and yellow.. Trachoma .. Blindness if not treated.
- **Chlamydia pneumoniae**.. Attached to Tracheal Epithelial cells acute bronchitis.. Atypical pneumonia.. Mild-severe pulmonary infection..mild-sever cough, Common in children.. All ages
- Diagnosis & treatment : Clinical features & serological test Specific antibodies..developed after infection 4-8 weeks McCoy tissue culture.PCR test.. Antibiotics.. No Vaccine

Chlamydia inclusion bodies/Acid-Fast Mycobacteria



Mycoplasma group

- The smallest Bacteria .. Lack Cell Wall.. Lipid bi-layer Membrane.. Aerobic.. Respiratory/Urinary Mucosa.. Human, Animals, Birds.
- 1-M. pneumoniae: Human pathogens.. Infection Pharyngitis, Bronchitis, Pneumonia.. Dry cough.. Fever, Common old children & Young adults.. Less Elderly... Common infection in Fall-Winter.
- 2-M.hominis/M.genitalium : Part of oral- genital flora cause, cause Nonspecific Urethritis, Vaginitis, Cervicitis.
- Diagnosis & treatment: Sputum, Urine Culture, Cold-Agglutination Test, ELSA Specific antibodies, PCR, Antibiotics.. No Vaccine.

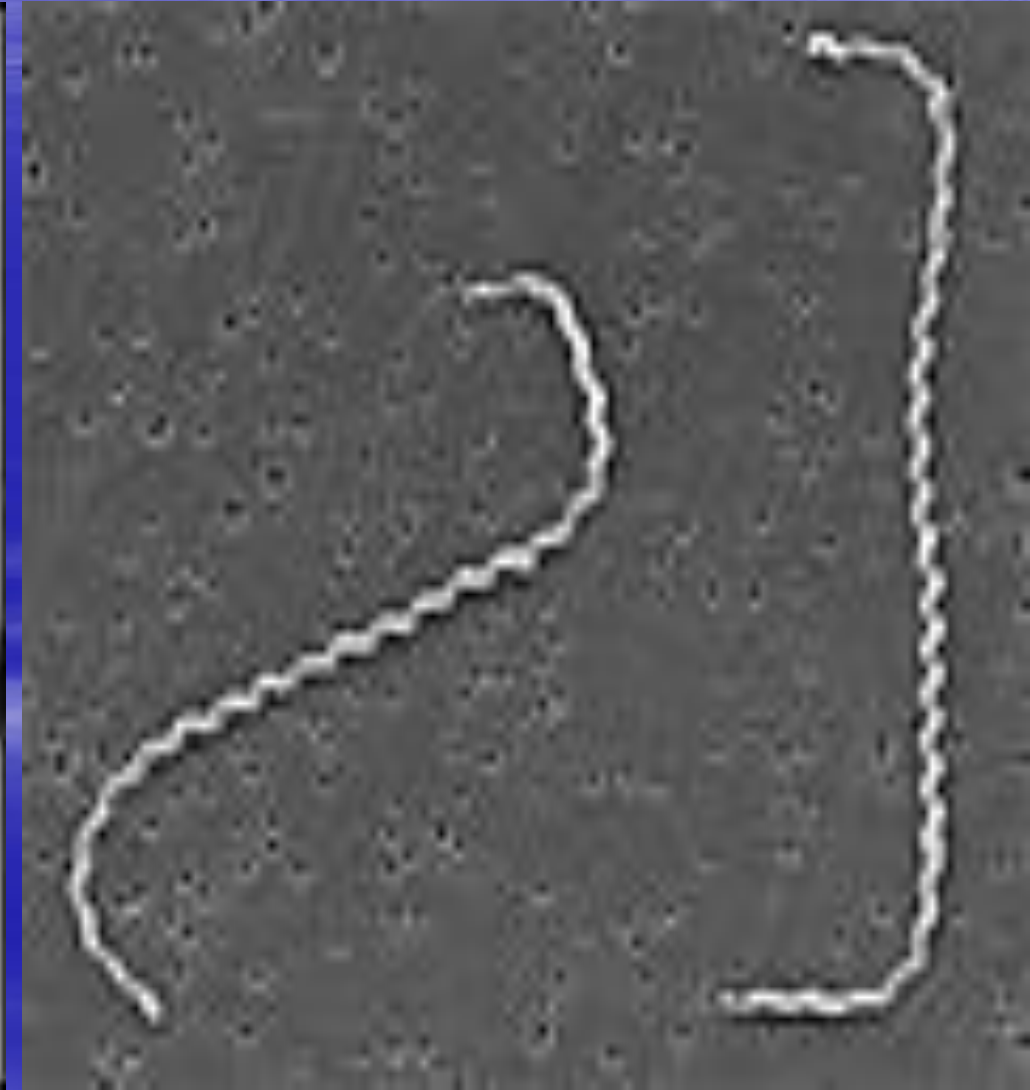
Legionella pneumophila

- **Legionnaires' disease** -1976 USA Thin G-ve Coccobacilli-Filaments.. Facultative Anaerobes.. Survive 0-80 C.. Cold/Hot Water.. Air Condition, Wet Soil, Droplet infection ..Aerosols, Fine sprays , Respiratory Mucosa Lung.. **Intracellular.. Monocyte-Macrophage..** Extracellular growth,Not contagious disease.
- **Clinical Features:** High Fever, dry Cough, vomiting, and stomach discomfort, Diarrhea. Other common symptoms include headaches, muscle aches, chest pain, and shortness of breath, Pneumonia, Renal Failure, Death.. **Old/ Immunodeficient / heavy Smoking Persons.**
- **Diagnosis & treatment:** Special Culture Media, Blood-sputum culture, Detection Specific antibodies, PCR, Antibiotics.. No Vaccine.

Spirochetes Group-1

- Gram-ve.. Spiral forms.. Long.. which have long helically coiled cells (5-20um).. Common Human, Animals, Arthropodes.. Nonpathogenic /Pathogenic.
- **1- Treponema species**: Nonpathogenic.. Oral cavity.
- **2-Treponema pallidum**: Syphilis.. Venereal Disease.. Sexual Contact.. entering the host via breaches in squamous or columnar epithelium.
- It gains access to host's blood and lymph systems through tissue and mucus membranes. **Incub. 2-week-Few Months**: Acute-Chronic Infection.. Mucosa/Skin Lesions-**Chancre** on Genitalia, Anal area/Mouth.. Systemic Disease.. Affect Any Body Organ.. Meningitis, Hepatitis, Nephritis, Granulomatous lesions. **Congenital Syphilis**.. Pregnancy, affects fetus

Legionella- Spirochete Cells



Spirochetes Group-2

- **Diagnosis:** Direct Dark-field Microscopy.. Serological Test.. VDRL, Fluorescent Trep. Antibody-Test (FTA).. No Culture.. Antibiotics
- **Borrelia Burgdorferi:** Lyme Disease.. Common USA, Biting Insects (Ticks).. Wild Animals, Rodents, Birds ..Incub. Few Weeks- Months..**Single/Multiple Skin Erythematic Lesions.. Systemic Disease.. Arthritis, CNS.. Cardiac Abnormalities.**
- 4- **Borrelia species:** Worldwide.. Epidemic/Endemic **Relapsing Fever..** Biting Insects (Human Lice/ Animal Ticks).. Septicemia.. Low-High Fever, Chills, Severe Headache, Common Relapses.
- **5-Liptospiral diseases:** Zoonosis, mild-severe fatal systemic .. **Weils's disease** ..high Fever, Jaundice, vasculitis , Bleeding.
- **Diagnosis:** Serological Tests, Special fluid culture methods

Lyme Disease/ Tick Erythematous lesions

