

The background of the slide features a microscopic image of Rickettsia bacteria. The bacteria are small, rod-shaped organisms with a distinct internal structure, including a central body and a flagellum. They are arranged in a descending staircase pattern from the top-left towards the bottom-right. The image is overlaid on a light blue gradient background with a darker blue horizontal band at the top and bottom.

Rickettsia

Rickettsia

Small, intracellular parasites, transmitted to humans by arthropods (both vector and reservoir).

Clinical manifestation: fever, rashes, and vasculitis.

They are grouped on the basis of clinical features, epidemiologic aspects, immunologic characteristics.

Properties of Rickettsiae

1. pleomorphic. intracellular parasites-----
yolk sacs of embryonated egg, cell culture.
2. both RNA and DNA
3. cell wall is similar to the cell wall of gram-negative bacteria (peptidoglycan-containing muramic acid and diaminopimelic acid).

4. Rickettsial growth is enhanced in the presence of sulfonamides.

R. growth require NAD (coenzyme I)

PABA in body is binded to NAD



complex

(inhibition R. growth)

PABA (structure analogues of sulfonamide), bind to NAD. so PABA loss inhibition R.growth.

5. antigen

Agglutination of proteus vulgaris (Weil-Felix Reaction):
Because rickettsial strains possess cell wall antigen that are similar to polysaccharide O antigens of the proteus strains.

Give presumptive diagnosis of rickettsial disease.

S + OX19 → agg titer > 1:160

Pathogenicity

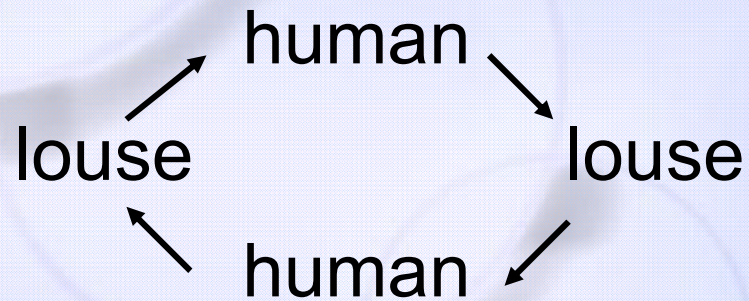
A. pathogenic substances: endotoxin, phospholipase

B. R→host→multiply in endothelial cells of small blood vessel→cell become swollen and necrotic, thrombosis of the vessel→cell rupture and necrosis→vascular lesions in skin→ vasculitis (brain, heart etc).

Clinical findings

1. Epidemic typhus

It is caused by *R. prowazekii*



Brill's disease:

Brill's disease is a recrudescence of an old typhus infection. Human are the reservoir of the *R .prowazekii* of epidemic typhus.

How do you confirm that Brill's disease is recurrence infection of *R . prowazekii*.

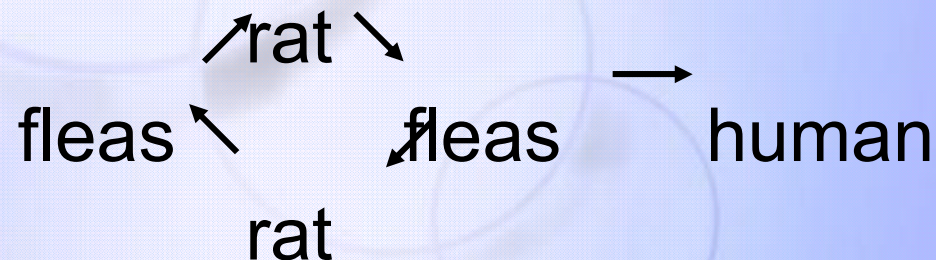
- (1) Isolates *R . prowazekii* from the case
- (2) Serologic characteristic: Antibodies arise earlier and are IgG rather than IgM.
- (3) Weil-Felix reaction is usually negative.

2. endemic typhus

It is caused by *R. typhi*

Rat fleas carry the rickettsiae from Rat to rat and sometime from rat to human.

Rat fleas can serve as vectors and vectors.





Quality Assurance of Tests for
Sexually Transmitted Infections

In North America

The most commonly submitted sample is urine from women with acute or recurrent urinary tract infection.

The most common cause of urinary tract infections in women is recent sexual activity.

Tests for sexually transmitted infections are the second most commonly submitted samples sent to medical laboratories.

Sexual activity directly accounts for 60-70 percent of microbiology laboratory activity.

In North America

- Sexually transmitted infections cycle with a periodicity of 10-20 years.
 - Peaks in 1920s, 1940s, 1960s, 1980s
 - Progressive decreasing detection and reporting rates throughout 1990s
- Rate of sexually transmitted infections lower now compared to the last 20 years.
- Diagnostic assays for sexually transmitted infections continuously improves.

North America experience does not necessarily reflect world-wide experience

Why STI Diagnosis is Important

- STIs rapidly spread throughout communities.
- STIs can be associated with acute illness.
- STIs can be associated with chronic illness.
- STIs can be associated with remote illness.
- Ulcerative STI associated transmission of other illnesses, especially HIV.
 - Syphilis
 - Chancroid
 - LGV

Sexually Transmitted Infections

- **Bacterial**
 - Neisseria gonorrhoeae
 - Chlamydia trachomatis
 - Treponema pallidum
 - Haemophilus ducreyi (chancroid)
 - Lymphogranuloma
 - Mycoplasma
- **Viruses**
 - Herpes simplex II
 - Hepatitis B
 - Hepatitis C
 - HIV
 - Papillomavirus
- **Yeasts and fungi**
 - Candida albicans
 - Candida glabrata
 - Candida tropicalis
- **Parasites**
 - Trichomonas vaginalis
 - Entamoeba histolytica

Sexually Transmitted Infections

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Treponema pallidum*

F.H.C.-Hepatitis

Acute
tenosynovitis

Sepsis

Urethritis

Neonatal
Conjunctivitis

P.I.D.

Gonorrhoea

Urethral
Strictures

Chronic
Arthritis

Infertility

Hepatitis

Acute Arthritis

Urethritis

Neonatal
Conjunctivitis

P.I.D.

*Chlamydia
trachomatis*

Infertility

Chronic
Arthritis

Test Procedures Requiring EQA

(Those with Readily Available EQA Programs)

- *Neisseria gonorrhoeae*
 - Gram stain
 - Culture
 - PCR
- *Chlamydia trachomatis*
 - DFA
 - EIA
 - PCR
 - Culture
- *Treponema pallidum*
 - Serological tests for Syphilis
 - VDRL, RPR, FTA-abs, MHA-tp