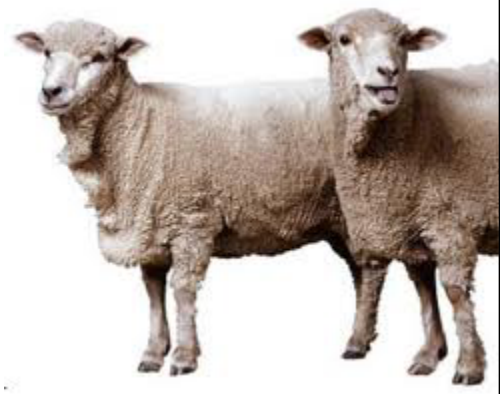


Brucellosis

د. فارس البكري

David Bruce

- British army physician and microbiologist (1855-1931)

Introduction

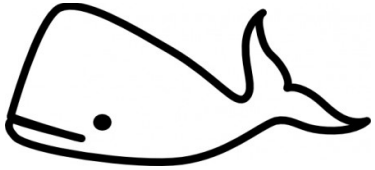
- Bruce first isolated *Brucella melitensis* in 1887
- Gram negative bacilli or coccobacilli
- Intracellular
- 12 species
- Pathogenic species:
  - *B. melitensis*
  - *B. suis*
  - *B. abortus*
  - *B. canis*

- *B. neotomae*: desert wood rats
- *B. ovis*: ……. sheap

No human infections

- *B. pinipedialis*:
- *B. ceti*

Marine mammals , sporadic in humans



- *B. microti*: wild life

- *B. inopinata*: one case of breast implant wound

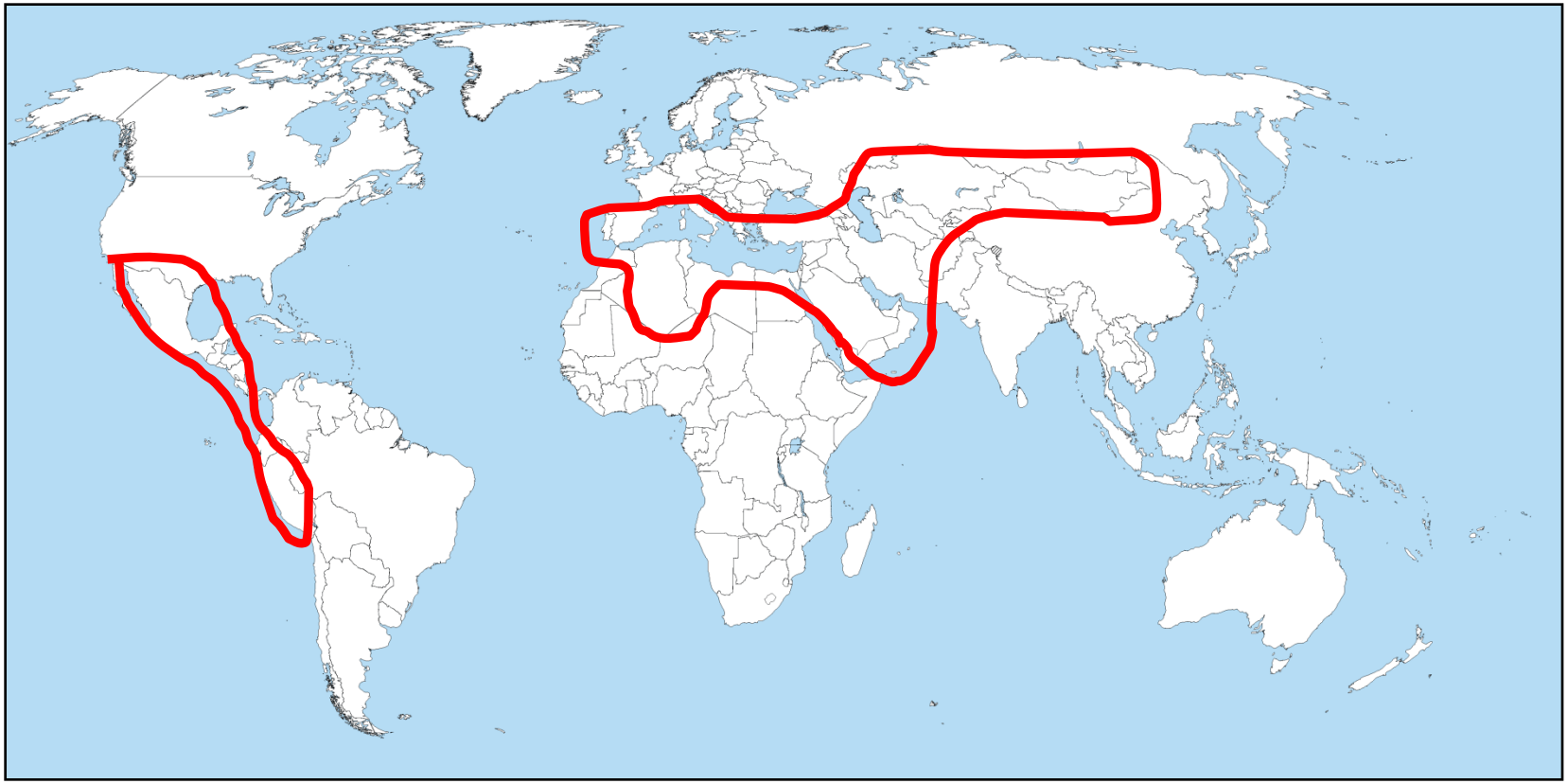
Brucella - Gram stain

cocco bacilli or bacilli

Brucellosis in animals

- Asymptomatic
- Abortions
- Brucella is shed in large numbers in the animal's
  - Urine
  - Milk
  - Placental fluid

Brucella - epidemiology

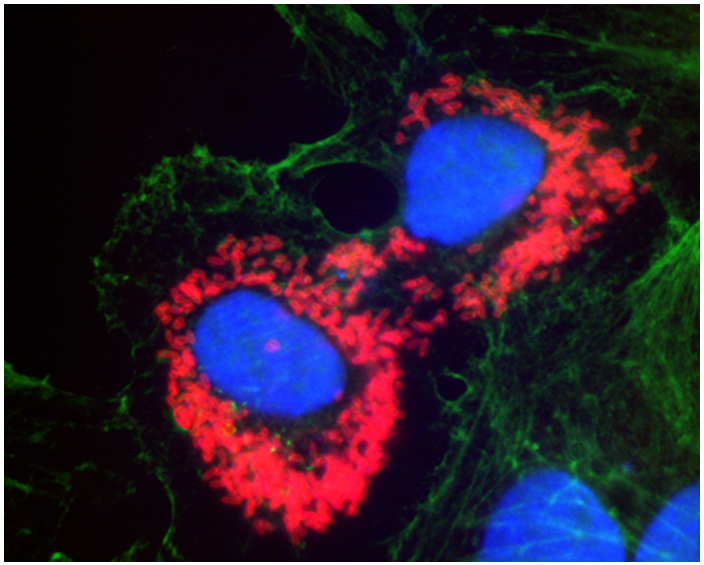


Types

- *B. melitensis*
  - the most virulent and causes the most severe and acute cases
  - the most prevalent worldwide
- *B. suis*
  - A prolonged course of illness, often associated with suppurative destructive lesions
- The type of *Brucella* species involved does not alter treatment.

Pathophysiology

- Only 100 to 1000 organisms are sufficient to cause infection.
- *Brucella* species have a unique ability of invading phagocytic cells



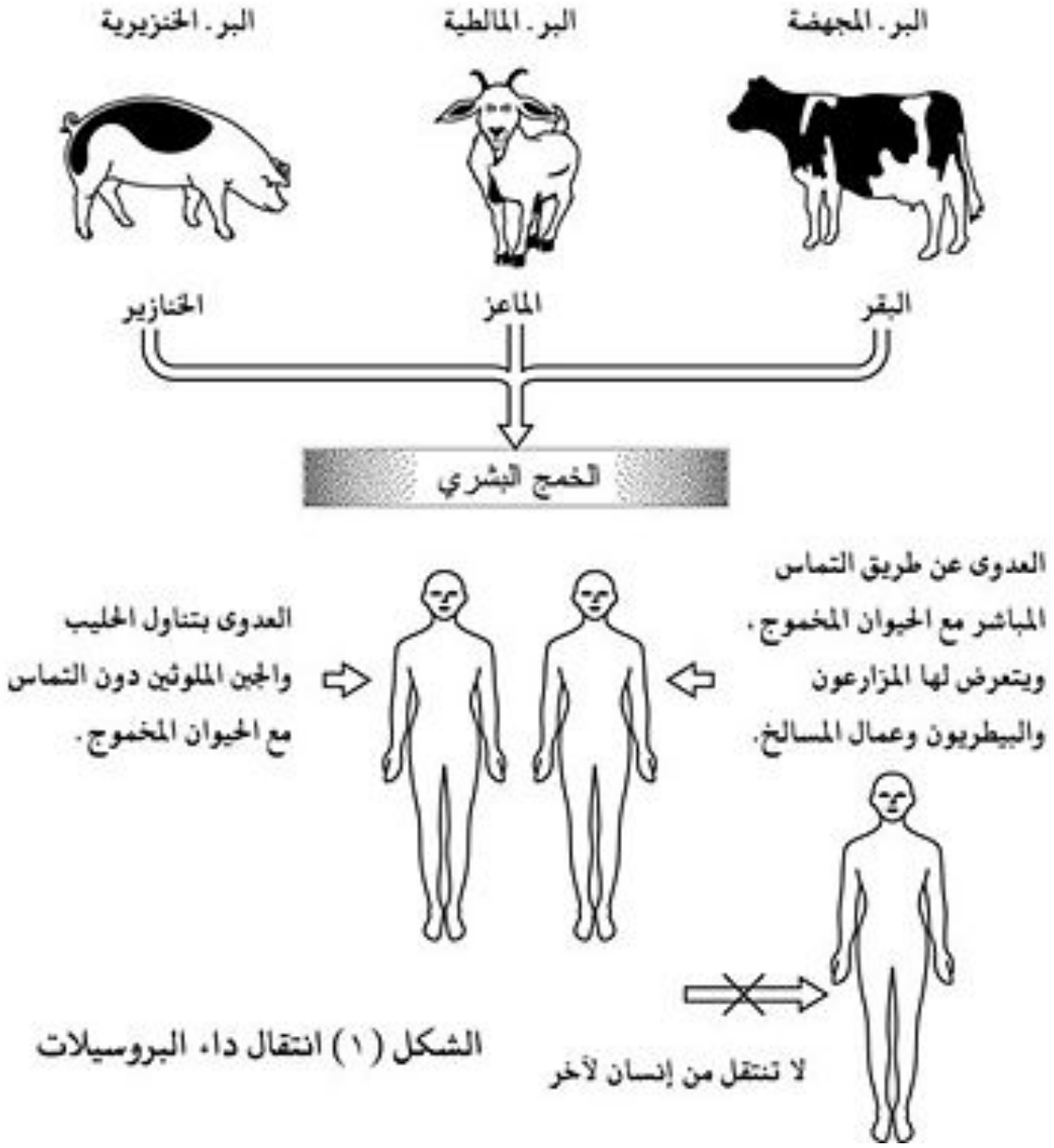
Pathophysiology

- Low mortality rate (<5%)
  - Mostly due to endocarditis, a rare complication
  - However, brucellosis can cause chronic debilitating illness with extensive morbidity
- More common in males
  - ratio of 5:2 in endemic areas

Modes of transmission

- **Ingestion** of unpasteurized dairy products is the main route of *B melitensis* transmission to humans
- Slaughterhouse workers
- Veterinarians are infected by inoculation of animal vaccines against *B abortus* and *B melitensis*
- Laboratory workers (microbiologists) are exposed by processing specimens (aerosols) without special precautions

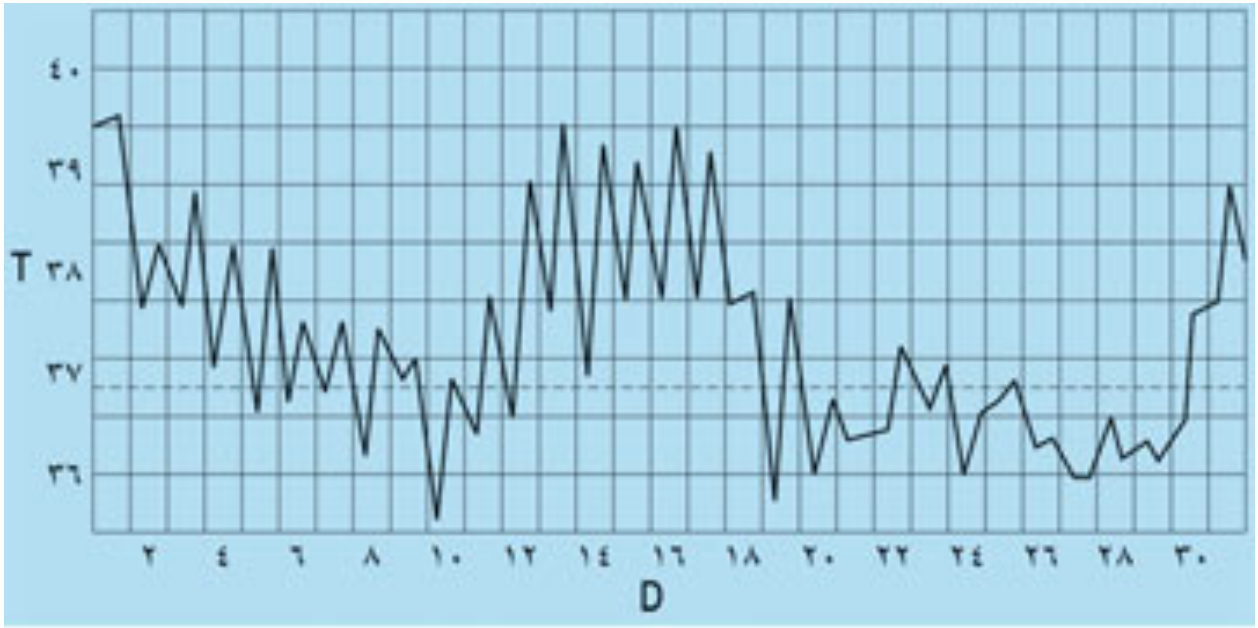
- Macrophages then transport Brucella to the
  - lymph nodes
  - Spleen
  - Liver
  - bone marrow
  - mammary glands
  - sex organs



الشكل (١) انتقال داء البروسيلات

Signs and symptoms

- Fever is the most common symptom and sign
  - 80-100% of cases
- Fever can be associated with a relative bradycardia
- Anorexia, asthenia, fatigue, weakness, and malaise and are very common (>90% of cases)
- abdominal pain, constipation, diarrhea, and vomiting
- Cough and SOB
  - Dry cough
  - 20% of cases
  - these symptoms are rarely associated with active pulmonary involvement



الشكل (٢) مخطط الحرارة في داء البروسيلات، يبدي حمى «متموجة» نمطية، وهي مترددة ومتغيرة في شكلها

Presentation

- **Subclinical brucellosis**:
  - asymptomatic, and the diagnosis is incidental after serologic screening of persons at high risk of exposure
  - Culture is usually unrevealing
- **Acute or subacute brucellosis:**
  - mild and self-limited (eg, *B abortus*)
  - fulminant with severe complications (eg, *B melitensis*)
  - symptoms can develop at 2-12 months prior to diagnosis

Presentation

- **Chronic brucellosis:**
  - The diagnosis is typically made after symptoms have persisted for 1 year or more
  - Low-grade fevers and neuropsychiatric symptoms predominate
  - Results of serologic studies and cultures are often negative; without confirmatory evidence, many authorities doubt the existence of chronic disease
  - Many patients have persistent disease caused by inadequate initial therapy, and underlying localized disease may be present

Presentation

- **Localized complications**
  - In acute disease
  - In chronic untreated infection
  - Sites
    - osteoarticular
    - Genitourinary: epididymo-orchitis
    - Hepatosplenic
    - Endocarditis (very rare: 2%)
    - CNS

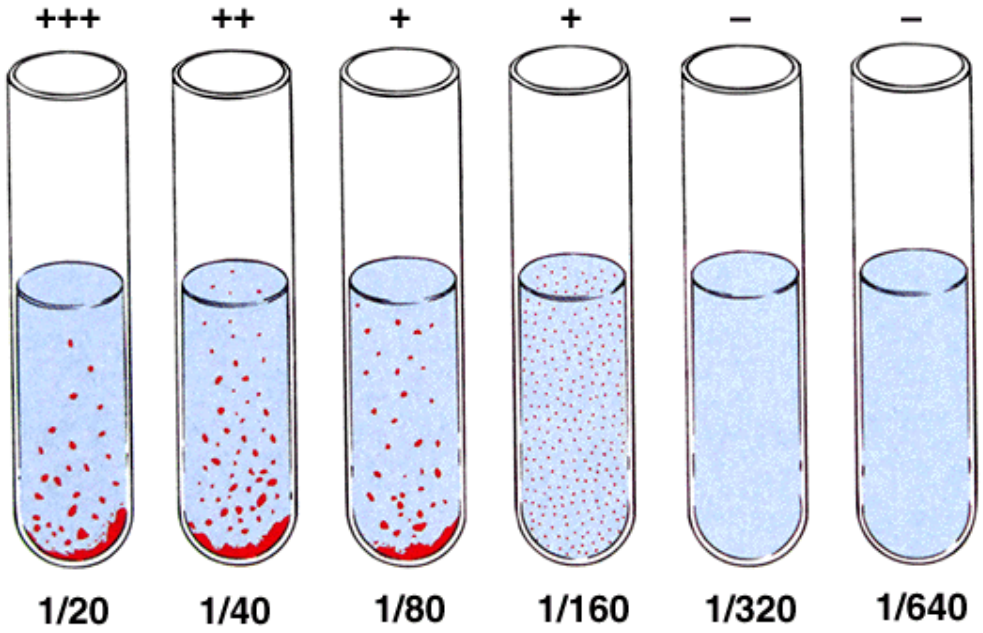
Presentation

- Osteoarticular
  - symptoms affect 20-60% of patients
  - the most commonly reported complications
  - sacroiliitis is the most common

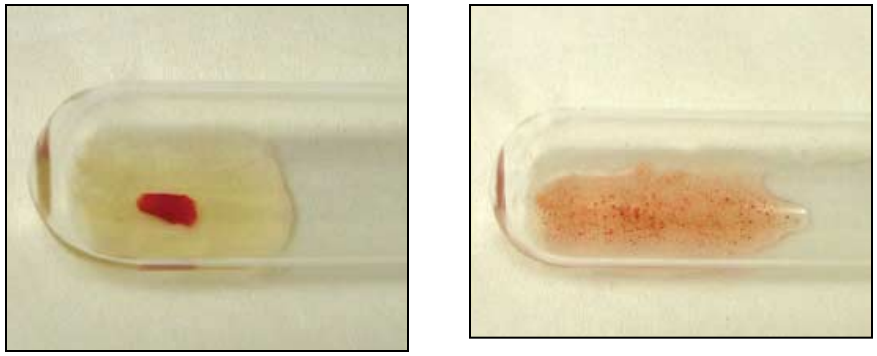
Diagnosis

  - ↓ WBC
  - relative lymphocytosis
  - Pancytopenia
- Elevation in liver enzymes
- Culture
- Serology – titers
  - Standard tube agglutination
- PCR: not yet in clinical practice

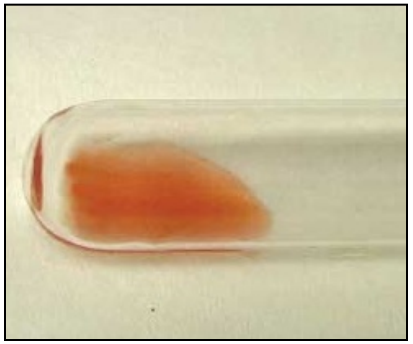
Standard tube agglutination



Titer = 1/160



Reaction



No reaction

Treatment

- Multidrug regimens are the mainstay of therapy
    - because of high relapse rates reported with monotherapy
- Doxycycline and rifampin:
  - 6 weeks
- Doxycycline (6 weeks) + streptomycin (2-3 weeks)
  - more effective
- **Children** < 8 years
  - The use of rifampin + (TMP-SMX) for 6 weeks
- **Pregnant**:
  - Brucellosis treatment is a challenging problem
  - limited studies
  - rifampin alone or in combination with TMP-SMX

Doxycycline and teeth

شكرا