

Tularemia

-First described by Sir Edward Francis in Tulare, California in 1911.

Francisella tularensis

-The bacteria is Gram-, encapsulated, non-motile, coccobacillus, intercellular, facultative, and pleomorphic.

-Four subspecies of *F. tularensis* exist; *F.t. A I* and *A II*, *F.t. holarctica*, *F.t. mediasiatica*, and *F.t. novicida*.

-SchuS4 strain of *A I* and *A II* is most the most virulent in humans.

Tularemia

-Disease can present as ulceroglandular, glandular, typhoidal/septicaemic, oculoglandular, oropharyngeal, gastrointestinal, and pneumonic

-long incubation period of 2-10 days along with sudden onset flu-like symptoms.

-Clinical cases can last a few days to a few weeks.

-Septicemia and Pneumonia infections caused by type *A I* or *A II* subspecies are most serious, causing 30-60% mortality.

-Vectors can be numerous mammals and insects, especially rabbits and ticks.

-Transmission can be through vector bites, physical contact with infected medium, ingestion or inhalation

Within the Host

-can enter through intact skin and cross mucous membranes

-replication may begin at site of infection, mainly takes place within macrophages

-uses the lymphatic system to cause systemic infection

-Bacterial Lipopolysaccharide (LPS) causes infected cells to release cytokines and activate inert immune cells, causes more phagocytosis and more replication

-23-kDa protein aids adaptation to intercellular environment and replication

-body's immune response causes tissue damage through granuloma formation

-can activate apoptosis pathway similar to Cytochrome C pathway used by mitochondria

-main cause of death in patients is organ failure

Treatment

-Streptomycin is main antibiotic used for treatment

-after recovery, long lived immunity to the disease lasts for at least ten years

-vaccines are used in areas prone to epidemic tularemia