

Tick-Borne Relapsing Fever



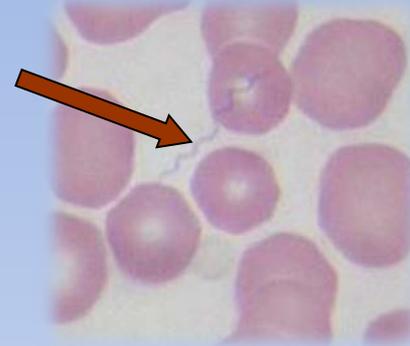
Ornithodoros hermsi

Tick-borne Relapsing Fever (TBRF)



Agent

- *Borrelia hermsii*, *B. parkerii*, *B. turicatae*
- Visible on stained red blood smear



Source: Gary Green, M.D., Sonoma Co.

Vector



- Soft (Argasid) ticks, *Ornithodoros* spp.
- In U.S., *O. hermsii*, *O. parkeri*, *O. turicata*
- Transmitted from infected female tick to her progeny (transovarial transmission) and from one life stage to next (transtadial transmission)

Reservoir

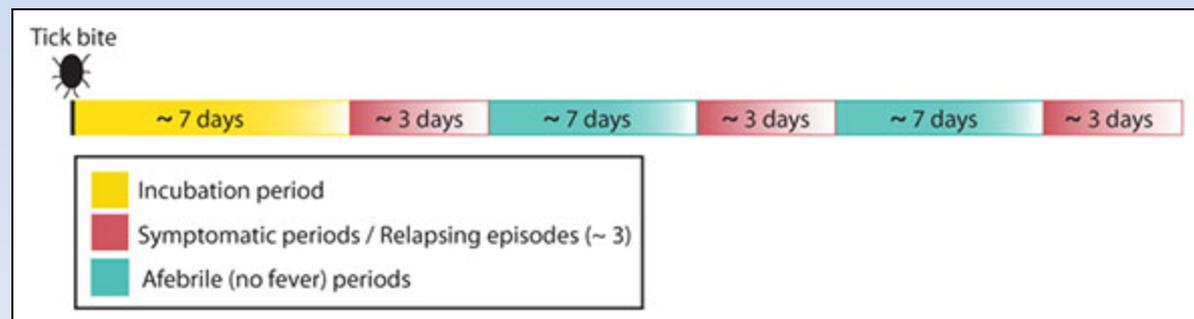
- Peridomestic rodents
 - Chipmunks, squirrels, rats, mice
- Infected animals carry the organism in their blood
- A soft tick acquires infection when they take a blood meal from an infected animal



Tick-borne Relapsing Fever



- TBRF is a serious disease
 - However, if treated the case fatality rate is less than 5%
 - If acquired during pregnancy, TBRF poses a high risk of fetal loss (up to 50%)
- Symptoms
 - Incubation period: 1 to 14 days
 - Fever, headache, chills, myalgia
 - Febrile episodes 1 to 7 days separated by afebrile periods of 1 to 5 (up to 20) days
 - Up to 10 relapses



Reported Cases of Tick-borne Relapsing United States



Cases of Tick-borne Relapsing Fever - United States, 1990 - 2011



■ Each dot, placed randomly within the county of exposure (where known), represents one case.



■ Each dot, placed randomly within the county of residence, represents one case.

National Center for Emerging and Zoonotic Infectious Diseases
Division of Vector Borne Diseases



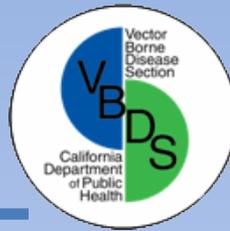


Tick-borne relapsing fever in California

10 year summary: 2005-2014

- 53 cases over last 10 years
- Median of 5 cases each year (range = 1 - 11)
- Case age range from 1 to 79 years
 - Median 36 years
 - Males more than females (30 to 23)
- Most cases contracted in summer months
 - June to September
- Most frequent counties of exposure (all in the Sierra mountain range)
 - Mono > El Dorado > Nevada > Inyo > Fresno

Tick-borne relapsing fever in California, 1997 – 2014*



The majority of TBRF cases in California are acquired in mountainous regions



* CDPH surveillance data

Tick-borne Relapsing Fever Exposure

- High risk sites:
 - Rodent-infested cabins 3000 - 9000 feet elevation
 - coniferous forest
- Soft ticks live in rodent nests in building
 - Seek out blood meal when rodents vacate nest
 - Humans vulnerable when sleeping on floor or in beds in contact with walls



Tick-borne Relapsing Fever Exposure



Cabins in northern California where TBRF cases were exposed

In the United States, TBRF exposure most often occurs in a rustic cabin where rodents have made their nests



Preventing Tick-borne Relapsing Fever

- Prevent rodent infestations of dwellings



- Discourage feeding of chipmunks and squirrels
- Store firewood away from dwelling



Preventing Tick-borne Relapsing Fever

- Keep beds away from walls
- Removal of rodents from structure without ectoparasite control may increase disease potential
 - chemicals may not penetrate cracks in walls
 - attempt to identify and remove rodent nests





To find out more about tick-borne relapsing fever in California, visit the CDPH website at:

<http://www.cdph.ca.gov/HealthInfo/discond/Pages/TickBorneRelapsingFever.aspx>



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