MEDICAL HEALTH OFFICERS **ALERT** FOR PHYSICIANS

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Recurrent High Fever?
Consider Relapsing Fever Due to Borrelia Hermsii

Two human cases of tick-borne relapsing fever (TBRF) were recently identified in the Interior of BC. While not reportable, TBRF is endemic in this region and a small number of human cases occur every year.

TBRF is an infection caused by the *Borrelia hermsii* spirochete. The *Ornithodoros hermsi* soft-sided tick is the known vector. *O. hermsi* ticks live in rodent burrows and humans are most often exposed while sleeping in cabins, tents or in forested areas. Bites are typically brief (less than 30 minutes) and painless. Most people are unaware that they have been bitten and this infection does not typically produce the bulls-eye rash of Erythema migrans.

Clinical Symptoms

TBRF is characterized by recurring episodes of high fever (≥39.2°C) that usually last less than 30 minutes followed by diaphoresis, hypotension and a decrease in temperature. Febrile episodes can reoccur over 3 days, followed by 7 days without fever, followed by another 3 days of fever. Without antibiotics, this process can repeat several times. Non-specific symptoms may include chills, sweats, headaches and body aches, rash, nausea, vomiting, dry cough, neck pain, eye pain, confusion and dizziness. The average incubation period is 7 days (range: 4 to 18 days). Long-term sequelae of TBRF are rare, but can include iritis, uveitis, cranial nerve and other neuropathies. TBRF infection during pregnancy can cause spontaneous abortion, premature birth, or neonatal death.

Testing

The BCCDC Public Health Laboratory offers testing services for TBRF using light microscopy, dark field microscopy, immunofluorescence assay, western blots, and polymerase chain reaction (PCR). *B. hermsii* organisms are best detected in blood obtained when the case is febrile (highest spirochete loads) and prior to antibiotic therapy. Physicians should be aware of cross reactivity of serologic tests for *B. hermsii* and *B. burgdorferi*.

Treatment

Given appropriate treatment, most TBRF cases recover within a few days. *B. hermsii* TBRF is treated effectively using doxycycline/tetracycline or macrolides such as erythromycin or penicillin. Current recommendations for antibiotic therapy indicate 7 days of oral or parenteral therapy. Young children and pregnant women should be treated with either erythromycin and/or penicillin.

Please consider the following recommendations

1. Consider TBRF in patients with history of recurrent fever and potential exposure to soft bodied ticks (case may not be aware of tick exposure).
2. Assess risk factors such as history of spending nights in tents or cabins, bite mark of an insect after spending nights in forested areas, and/or travel history in an endemic region.
3. Refer clinical samples for testing. Specimens should be provided for testing in a red top serum separator tube for serology and an EDTA tube for Giemsa staining and PCR. For serology, a convalescent specimen is required 2 to 4 weeks after collection of the first specimen. Your local lab may be able to prepare a blood smear for direct examination which can accelerate diagnosis if positive.

References

Benerjee et al. (1998). Tick-borne relapsing fever in British Columbia, Canada: first isolation of *Borrelia hermsii*. J. Clin Microbiol, 36(12): 3505-3508.

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