

THE PATHCARE NEWS

PITFALLS IN LABORATORY CONFIRMATION OF SOUTH AFRICAN TICK BITE FEVER

During the month of January 2023, Pathcare confirmed a number of *Rickettsia* infections although both serological confirmation as well as PCR confirmation have significant limitations.

The two common spotted fever diseases in Southern Africa are boutonneuse fever-like tick bite fever (BFL-TBF), caused by *Rickettsia conorii*, and African TBF, caused by *R. africae*.¹

R. conorii is usually transmitted by dog and kennel ticks (*Haemaphysalis elliptica* and *Rhipicephalus simus*) in peri-urban or peri-domestic situations. In contrast, *R. africae* is typically transmitted by particular cattle and game ticks (*Amblyomma hebraeum*) in rural settings.¹

The clinical presentation varies from very mild to severe and even fatal disease. Complications include encephalitis, confusion or coma, pneumonia, pulmonary embolism following deep vein thrombosis, bleeding, gangrene, hepatorenal failure, and myocarditis.

Especially if diagnosis and treatment are delayed, BFL-TBF cases can present with multi-organ involvement and mimic meningococcal septicaemia, other fulminant Gram-negative septicaemia with disseminated intravascular coagulopathy, or viral haemorrhagic fever such as Crimean-Congo haemorrhagic fever.

The triad of fever, eschar, and rash occurs in 50–75% of cases of TBF, but there are less typical presentations. The rash may suggest rubella, measles, secondary syphilis, disseminated gonococcal disease, enterovirus or arbovirus infections, leptospirosis, typhoid, immune complex vasculitis, or drug reactions. Meningococcal rashes can look similar, but the onset and progression of the illness is much faster than with TBF.¹

Early serological tests are generally negative and repeat testing is required. **Treatment should not be delayed** solely because of negative antibody tests.

In a study by Fournier *et al*² it was found that the **median times to seroconversion with IgM and IgG were 25 and 28 days after onset of symptoms for *R. africae*, versus 16 and 22 days for *R. conorii*.**

Renvoise *et al*³ analysed 643 clinical specimens from 465 patients with a **real-time PCR test: among the positive clinical samples, 68.9% were cutaneous biopsies, 17.8% cutaneous swabs, and only 4.4% of blood samples and 8.9% of serum samples were positive.**

Biopsies of eschars yield the best results and swabs of eschars may be useful when biopsies are difficult to perform.

As severe TBF can be life-threatening in patients of any age group, initial treatment with the most effective agent, doxycycline, should be considered for all patients with more than the mildest symptoms. Pre- or post tick bite antibiotic prophylaxis is reputed to be of no value as it merely prolongs the incubation period.

1. Freaun J, Grayson W. South African Tick Bite Fever: An Overview. *Dermatopathology* 2019;6(2):70–76.
2. Fournier P, Jensenius M, Laferl H, Vene S, Raoult D. Kinetics of Antibody Responses in *Rickettsia africae* and *Rickettsia conorii* Infections. *Clin Diagn Lab Immunol* 2002;9(2):324-328.
3. Renvoise A, Rolain J, Socolovschi C, Raoult D. Widespread use of real-time PCR for rickettsial diagnosis. *FEMS Immunol Med Microbiol* 2012;64:126–129.

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