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Tropheryma whipplei DNA testing at Micropathology Ltd.

Tropheryma whipplei is a Gram-positive rod-shaped bacterium and the causative agent of Whipple's disease. The human intestine is the only known natural niche of this organism and is where most pathology is observed. This chronic systemic disease primarily causes malabsorption in the gut and common symptoms are diarrhoea, abdominal pain, weight loss, and arthritis. There may be some neurological effects and CNS involvement if left untreated, which is a serious complication with permanent damage to nerves. The sequelae are very highly variable since this bacterium may affect any part of the body, and has been shown to cause pneumonia and endocarditis amongst others.

Not much is known about the route of transmission and epidemiology although faecal-oral route and human-to-human transmission has been suggested. It is frequently diagnosed in middle-aged Caucasian males typically 40 years plus, however, the disease is relatively rare. There is also a minority of asymptomatic carriers (estimated to be around 1.5%-4% in the general population of Europe, although higher in sewage workers and the homeless^{1,2}). One study carried out in Europe and Senegal showed antibody carriage to be in 48% and 72% of participants, respectively. Symptomatic patients seem to have a predisposition for susceptibility to *T. whipplei*, with a defective immune response. Immunosuppressive treatment seems to accelerate the onset of symptoms.

The prognosis is fatal within 12 months if left untreated. However, if diagnosed, most treated patients do well, particularly those without CNS involvement. Treatment is typically two weeks of IV ceftriaxone followed by a year of co-trimoxazole.

Whipple's disease is often diagnosed at the late stages because it is rare and has a non-specific presentation. In the early stages, diagnostic markers may not be present. Culture for this organism is not an option, therefore most laboratories rely on either periodic acid-Schiff (PAS) staining or PCR testing of histopathology specimens. Using PAS staining, operators look for numerous stained foamy macrophages filling the lamina propria and prominent dilated lacteals. This approach however is tricky and non-specific, as similar staining may be seen with other organisms such as *Mycobacterium avium intracellulare* or *Cryptococcus*.

PCR is another useful option to aid diagnosis, as it provides a more sensitive and more specific test for the presence of the organism, and therefore it is particularly useful for biopsies of the affected area. Often two or more specimens are taken for PCR to confirm results.

At Micropathology Ltd, EDTA whole blood, CSF and tissue specimens are validated sample types for *T. whipplei* DNA detection, though other samples may be tested and reported along with an appropriate caveat stating that the sample is not validated for this assay. We accept any cellular material but ask that serum samples are not sent for testing.

REFERENCES

1. Fenollar F, Keita AK, Buffet S, and Raoult D. 2012. Intrafamilial circulation of *Tropheryma whipplei*, France. *Emerg Infect Dis*18:949–955
2. Fenollar F, Laouira S, Lepidi H, Rolain JM, and Raoult D. 2008. Value of *Tropheryma whipplei* quantitative polymerase chain reaction assay for the diagnosis of Whipple disease: usefulness of saliva and stool specimens for first-line screening. *Clin Infect Dis*47:659–667.