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Molecular diagnosis of Lymphogranuloma venereum (LGV) infection

Chlamydia trachomatis is a Gram negative, non-motile, obligate intracellular bacterium which exists outside host cells as inactive elementary bodies but can infect host cells via endocytosis and reside as membrane protected inclusion bodies intracellularly.

There are 15 known serovars and three biovars which cause distinct clinical syndromes:

- Serovars Ab, B1, B2 and C cause chronic follicular keratoconjunctivitis or 'trachoma' which may lead to chronic scarring and the most common cause of preventable blindness worldwide
- Serovars D-K cause both common STI infections resulting in urethritis, pelvic inflammatory disease, ectopic pregnancy and infertility, but can also affect neonates born to positive mothers causing pneumonia and conjunctivitis.
- Lymphogranuloma venereum: **LGV** (serovars L1, L2 and L3) causing an endemic sexually transmitted infection (STI) in Africa, India, South-East Asia, South America and the Caribbean. It is more likely to be detected in the UK in MSM detected from rectal swabs

The serovars causing LGV were regarded relatively rare in Western Europe and the USA for many years, but outbreaks of infection have occurred amongst MSM since 2003, with most cases appearing in HIV positive individuals (van de Laar, 2006). Evidence suggests the number of LGV diagnoses being reported has increased in England, following a period of decline, and that changes in HIV prevention since 2017 may have further facilitated a change in the epidemiology of LGV (PHE, 2019).

The clinical manifestations which arise from infection can include tenderness in the groin region, femoral lymphadenopathy and self-limiting genital ulcers or papules. Rectal exposure to these strains may also result in proctitis or proctocolitis (inflammation of the rectum/colon) which can cause symptoms mimicking those caused by inflammatory bowel disease. Asymptomatic infection may also occur (CDC, 2015). Since 2015 the UK national guideline for the management of infection with *Chlamydia trachomatis* recommends that all individuals with symptoms consistent with LGV and all GBMSM (Gay, bisexual, men who have sex with men) living with HIV with positive CT at any site regardless of LGV symptoms should be tested for this serovar (Nwokolo, N., 2016).

Updated guidance issued in 2023 clarifies that in both asymptomatic or symptomatic testing of GBMSM, any positive rectal or pharyngeal sample, or anogenital ulcer swabs for *C. trachomatis* should be typed for LGV (Coleman *et al.* 2023).

The recommended course of antibiotic treatment for LGV infection is significantly longer than that recommended for treatment against general *C. trachomatis* infection (CDC, 2015) therefore confirmation of the presence of an L serovar is clinically useful. Due to the fastidious nature of this intracellular organism nucleic acid amplification tests (NAATs) are exclusively the test of choice targeting the unique gap present in the DNA sequence of LGV strains compared to other of *Chlamydia trachomatis* serovars making this target a highly specific option.

At Micropathology Ltd we use a probe-based PCR to identify LGV serovars.

Accredited specimen types for this assay are swabs, urine and tissue.

Appropriate swab sites will include the rectum, vagina, penis and lymph nodes dependent on clinical presentation. By extension, rectal and lymph node biopsies are considered the most clinically relevant tissue types for *C. trachomatis* detection in suspected cases of LGV. First-catch urine specimens can be used when urethritis and/or inguinal lymphadenopathy is present and LGV is suspected as the cause. Enlarged or fluctuant lymph node or buboe aspirate may also be useful to test where a patient presents with inguinal lymphadenopathy.

Other samples may be tested and reported along with an appropriate caveat stating that the sample is not validated.

References

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