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Ureaplasma urealyticum/parvum

Ureaplasma urealyticum and *Ureaplasma parvum* are the two species of *Ureaplasma* which are associated with humans. Though they can be found as commensals of the urogenital tract in 40% to 85% of women, they are also implicated in disease. Primarily this is split between non-gonococcal urethritis, and respiratory disease in neonates. Other morbidities are also correlated with *Ureaplasma* presence but causation has not yet been demonstrated, these include preterm delivery and pelvic inflammatory disease.

Non-gonococcal urethritis (NGU)

Urethritis is defined by inflammation of the urethra and is often associated with urethral discharge, dysuria, and urethral discomfort. This is then described as either gonococcal or non-gonococcal (also known as non-specific urethritis, NSU). The most common causes of NGU are *Chlamydia trachomatis* and *Mycoplasma genitalium*, followed by *Ureaplasma* (11%-26% of cases). There are reports of patients suffering from recurrent NGU caused by *Ureaplasma* being cured only when their partner has been treated (BASHH, 2015).

Neonatal disease

Vertical transmission of *Ureaplasma* can occur both in-utero and during labour. Risk of *Ureaplasma* infection is inversely proportional to gestational age, the most premature neonates are the most affected. The association between both *Ureaplasma urealyticum* and *Ureaplasma parvum* and neonatal brochopulmonary disease (BPD) is well established, and may lead to chronic disease or even death (Stol et al., 2021).

Ureaplasma has recently been suggested as a possible cause of both neonatal sepsis and meningitis, which may have been previously underestimated due to the challenges associated with culture of *Ureaplasma.* A recent study found *Ureaplasma* to be among the most frequently isolated pathogens in blood from neonates with suspected sepsis, with 86% of *Ureaplasma* positive cases being preterm neonates (Velaphi et al., 2019).

Neonatal *Ureaplasma* infections are particularly challenging to treat as *Ureaplasma* is intrinsically resistant to beta-lactam, glycopeptide, and sulphonamide antibiotics (Beeton & Spiller, 2017). *Ureaplasma* infections can be treated with macrolides,

quinolones, chloramphenicol, or tetracyclines. However, these options all have potentially serious and long-lasting side effects when used in neonates, and often have limited bioavailability in the CSF (Stol et al., 2021).

Diagnosis

Ureaplasma species lack a cell wall and it is, therefore, more challenging to keep organisms viable during transport. Additionally, they have fastidious nutritional requirements and require specific expertise to distinguish from other commonly isolated bacteria including *Mycoplasma* species and *Staphylococcus* species. The culture process may take up to seven days.

Nucleic acid amplification tests (NAATs) are unaffected by organism viability, and DNA is generally more resilient. This makes NAAT an excellent choice for *Ureaplasma* detection, along with shorter turnaround time. Furthermore, typically culture only allows identification of *Ureaplasma* to genus level, whereas PCR can often be used to differentiate *urealyticum* and *parvum* by sequencing, if required.

Micropathology assay

Our assay is UKAS accredited for detection of *Ureaplasma urealyticum/parvum* in urine, NPA, semen, thin prep, and genital swabs.

References

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