Mycoplasma genitalium as a human pathogen and its potential role in infertility

Molecular, diagnostic and clinical trials

Helle Friis Svenstrup, MSc

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Official opponents: Birger Reinholt Møller, Søren Ladefoged, and Knud Poulsen.

Supervisors: Gunna Christiansen and Jens Fedder.

Correspondence: Helle Friis Svenstrup, 68 Blackheath Park, London SE3 0ET, United Kingdom.

Email: helle@svenstrup.net

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ABSTRACT

Mycoplasma genitalium is a wall-less bacteria causing non-chlamydial non-gonococcal urethritis (NCNGU) in men. It is sexually transmitted and associated with urogenital diseases of women. Like infections with *Chlamydia trachomatis*, the infections with *M. genitalium* can be both symptomatic and asymptomatic; however, symptomatic urethritis is more common in men infected with *M. genitalium* than with *C. trachomatis*. In women, *M. genitalium* is associated with cervicitis and pelvic inflammatory disease (PID). If the PID develops into salpingitis it can lead to occlusion of the Fallopian tubes and infertility. The most common causes of PID are sexually transmitted microbes such as *Neisseria gonorrhoea* and *C. trachomatis*. Because these microorganisms cannot explain all cases of PID and infertility we wanted to study the role of *M. genitalium* in infertility.

In a retrospective study of 308 couples attending fertility clinics for infertility workup in Denmark during 1997-2000 we showed an association of antibodies to *M. genitalium* and women with tubal factor infertility (TFI). Of the women with TFI 29 22% had antibodies against *M. genitalium* as compared to 11 (6%) of women with normal tubes. The correlation was independent of antibodies to *C. trachomatis* which showed an even higher prevalence among the women with TFI. Later, in a prospective study during the years 2002-2005 cervical swabs and blood samples were collected from 212 women attending Danish fertility clinics for fertility work-up. None of the women were PCR positive to *M. genitalium* indicating that the women did not have an acute infection with *M. genitalium*. Also in this study a significant association between antibodies to MgPa and women with TFI was shown.

Other studies have demonstrated that *M. genitalium* is sexually transmitted, but the mech-anism of transmission is unknown. Most likely, the microorganisms attach to the epithelial cells of the lower genital tract and cause cervicitis followed by a spread to the upper genital tract. In addition, there may be alternative routes of transmission. We demonstrated by immunofluorescence microscopy that *M. genitalium* was able to bind to motile spermatozoa suggesting that spermatozoa may act as vectors for the transportation of *M. genitalium* to the upper genital tract.

In conclusion, we have shown indirect evidences that *M. genitalium* is associated with TFI and thus emphasise the importance of studying the role of this pathogen in acute PID and long-term sequela.