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Prevalence of *Trichomonas vaginalis* and co-infection with genital mycoplasmas in symptomatic and asymptomatic female patients in Vienna.

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Introduction

Sexually transmitted diseases (STDs) are a major burden on the health care systems worldwide. According to the WHO (2018) more than one million sexually transmitted infections (STIs) are accounted globally every day.

Trichomoniasis is the most common, curable, non-viral genitourinary STI in the world. It is caused by the non-invasive mucosal protist *Trichomonas vaginalis* More than 160 million *T. vaginalis* infections are registered annually. Although trichomoniasis can be treated, the current challenge concerns the high rate of asymptomatic infections in men and women

Genital mycoplasmas are known as sexually transmitted agents, frequently isolated from the female genital tract. Symbiosis between *Mycoplasma* species and *T. vaginalis* have been described and linked to numerous reproductive morbidities

Some of the most prevalent genital mycoplasmas are *Mycoplasma hominis*, *Mycoplasma genitalium* and *Ureaplasma urealyticum*. Published data support the role of genital mycoplasmas as etiological agents of bacterial vaginosis (BV), adverse pregnancy outcomes

Material & Methods

Phase I - 319 samples, April 2021
Phase II – 263 samples, September 2021

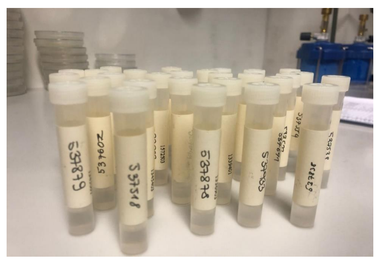


Figure 3. Vaginal swab specimens of patients transferred into the collection tubes.

DNA isolation

PCR amplification with specific primers

Agarose GEP of DNA Product

Sanger sequencing

20 *T. vaginalis* cultured strains

Figure 4 .*T. vaginalis* strains cultured micro-aerobically in selective TYM medium, in 35mL tissue culture flasks.

Genital mycoplasmas

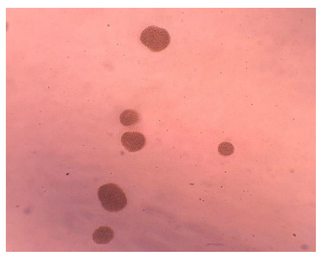


Figure 1. *Ureaplasma* spp , exhibiting dark, granulated appearance.

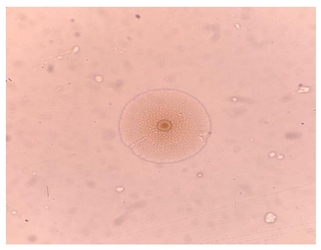


Figure 2. *Mycoplasma hominis* Colony exhibiting a fried-egg appearance.

DNA isolation workflow

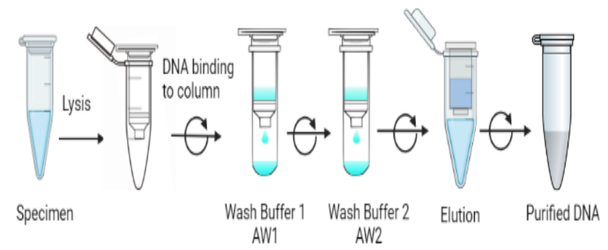
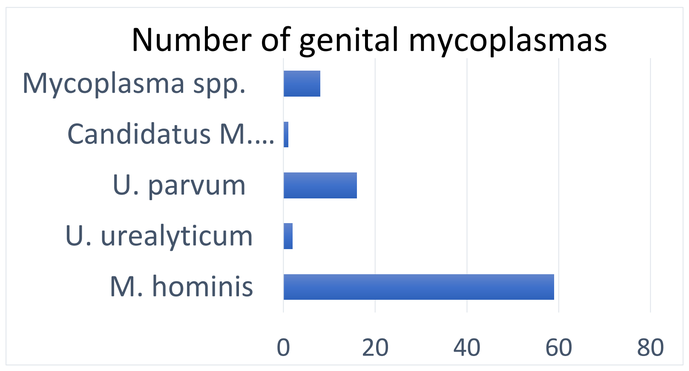


Figure 5. DNA purification procedure, consisting of five steps. The image is an adaptation of the DNA extraction scheme by QIAamp

Phase I of the study



Prevalence of genital mycoplasmas
M. hominis - 18.5%

U. parvum – 5%

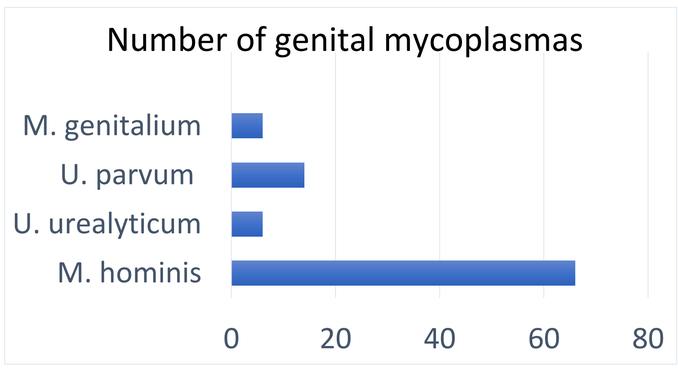
U. urealyticum – 0.6%

Ca. M. girerdii – 0.3%

First DNA sequence of *Ca. M. girerdii*

	Total (n=319)
	***T. vaginalis* (n=3)**
M. hominis	***2***
***Ca*. M. girerdii**	**1**

Phase II of the study



Prevalence of genital mycoplasmas
M. hominis – 25%

U. parvum – 5.3%

U. urealyticum – 2.3%

M. genitalium – 2.3%

Conclusions

- High prevalence of infections with genital (non STI) mycoplasmas among women of reproductive age
- *M. hominis* and *U. parvum were* the most prevalent species
- **The presence of *Candidatus* Mycoplasma gierdii was confirmed in a specimen positive *for T. vaginalis* for the first time in Austria**
- Cultured *T. vaginalis* samples harbored *M. hominis* intracellularly (10%)
- High mean age (56) of women positive for *T. vaginalis* infection
- **The reported findings of *Ca* M. girerdii are very recent & limited knowledge on its metabolic strategies and pathogenic potential is available**

References: Fettweis, J. M., Serrano, M. G., *et al.* (2014) ‘An Emerging Mycoplasma Associated with Trichomoniasis, Vaginal Infection and Disease’, *PLoS ONE*, 9(10). doi: 10.1371/JOURNAL.PONE.0110943
Fürnkranz, U., Henrich, B. and Walochnik, J. (2018a) ‘Mycoplasma hominis impacts gene expression in Trichomonas vaginalis’, *Parasitology Research 2018 117:3*, 117(3), pp. 841–847. doi: 10.1007/S00436-018-5761-Kissinger, P. and Muzny, C. A. (2019) ‘Treatment recommendations for trichomoniasis in women’, *The Lancet Infectious Diseases*, 19(1), pp. 20–21. doi: 10.1016/S1473-3099(18)30720-5.

This study was approved by the ethic commission of the Medical University of Vienna; EK Nr: 1965/2017.