Mycoplasma genitalium (MG) is a cause of urethritis, asymptomatic rectal infection, and symptomatic proctitis among men who have sex with men (MSM). MG can facilitate HIV infection through mucosal disruption, an inflammatory response that recruits HIV susceptible cells to the mucosal surface, and direct HIV replication through transcytosis.

MG is a fastidious organism that is best diagnosed using nucleic acid amplification tests (NAAT) that are not only available in resource-limited areas where there is a disproportionate burden of new HIV infections, such as Nigeria.

Characterizing the burden of MG among populations at risk for HIV may inform HIV prevention interventions and sexually transmitted infection (STI) treatment in high-risk populations.

We retrospectively stored specimen for evidence of unreported and unconfirmed MG among Nigerian MSM and transgender women (TGW) in Lagos, Nigeria.

METHODS

The Lagos arm of the TRUST/VAX/THIN cohort studied recruited Nigerian MSM and TGW aged ≥18 or older, who reported insertive or receptive anal intercourse with at least one male partner in the 12 months prior to enrollment into HIV testing, prevention, and treatment services at a community-based health center using respondent-driven sampling (RDS). Participants were followed every three months for up to 18 months with visits that included:

- Demographic and behavioral data collection using a standardized questionnaire administered by a trained interviewer.
- A complete medical examination and documentation of medical history.
- Physician assessment for signs and symptoms of STIs.
- Screening for STIs, including:
  - Fingertip blood samples tested for HIV using a parallel algorithm of two rapid tests and a third-tier test, as needed.
  - Urinalysis and rectal swabs specimens tested for (1) Neisseria gonorrhoeae and Chlamydia pneumonia using the Aptima Combo 2® assay (Hologic, Bedford, MA, USA).

Participants were categorized based on whether MG was detected at any site and at any time based on availability of MG NAAT.

For these analyses, first and last available enrolled urinalysis and rectal swabs specimens underwent additional retrospective testing using the Aptima MG trans-cription-mediated amplification assay (Hologic, Bedford, MA, USA) for qualitative detection of MG DNA.

Participants were categorized based on whether MG was detected at any site and at any time following up.

- Demographic and other characteristics were compared between groups using Fisher’s exact test or Pearson’s Chi-square test.

- MG incidence rate and exact 95% confidence interval was calculated for each evaluated group.

Participants who enrolled in the study from 13 May 2014 through 25 July 2016 were included in these analyses.

RESULTS

A total of 413 participants were screened for Mycoplasma genitalium.

Participants who enrolled in the study from 13 May 2014 through 25 July 2016 were included in these analyses.

STRENGTHS AND LIMITATIONS

- The use of the RDS recruitment strategy for this study enabled characterization of an epidemiologically
  - high-risk population in Nigeria.

- Unusual comparison between MG and other STIs provided a comprehensive assessment of the total burden of disease in this high-risk population.

- Testing for MG was not conducted at regular intervals, but rather on first and last specimens only, which may have led to underestimation of incidence rates.

- A selection bias toward asymptomatic disease may have led to underestimation of symptoms associated with asymptomatic MG were more likely to be diagnosed and treated as part of routine care outside of this study.

- Conclusions drawn from a large urban population in Lagos may not be generalizable to other Nigerian MSM communities.

CONCLUSIONS

MG was highly prevalent among MSM and TGW in this study, particularly HIV-infected participants.

- Most cases of MG were asymptomatic and the vast majority of MG diagnosis and management in Africa is syndromic in nature, there is likely to be a substantial burden of undiagnosed MG that may mediate HIV transmission.

- MG should be considered among cases of MG that fail to respond to conventional therapies, particularly in populations with a high burden of HIV, STIs, and frequent drug exposures that may compromise antiretroviral therapy adherence.

- Further research is needed to inform the management of asymptomatic MG.

ACKNOWLEDGMENTS

The study team would like to thank the study participants for their valuable contributions to this research. The TRUST, VAX/THIN Study, Investigators include Principal Investigators: Manhattan Charurat (IHV, University of Maryland, Baltimore, MD, USA), John Crowell (IHV, University of Maryland, Baltimore, MD, USA), Andrew Marsters (IHV, University of Maryland, Baltimore, MD, USA), Volders, Olusola, Yinka, Sosthenes, Ketende, Afoke Kokogho, Stefan Baral, Erik Hill, Trevor Croswell, Geraldine Davis, Michael Chirwa, Sunthia Sampa, Kimberly Quick, Christian Robins, Christian Stewart, Ari David, Bowling, Shane. NUSP Study, Investigators include Principal Investigators: Sylvia Adebajo, Stefan Baral, Erik Hill, Trevor Croswell, Geraldine Davis, Michael Chirwa, Sunthia Sampa, Kimberly Quick, Christian Robins, Christian Stewart, Ari David, Bowling, Shane. NUSP Study, Investigators include Principal Investigators: Sylvia Adebajo, Stefan Baral, Erik Hill, Trevor Croswell, Geraldine Davis, Michael Chirwa, Sunthia Sampa, Kimberly Quick, Christian Robins, Christian Stewart, Ari David, Bowling, Shane.

The study team would like to thank the study participants for their valuable contributions to this research. The TRUST, VAX/THIN Study, Investigators include Principal Investigators: Manhattan Charurat (IHV, University of Maryland, Baltimore, MD, USA), John Crowell (IHV, University of Maryland, Baltimore, MD, USA), Andrew Marsters (IHV, University of Maryland, Baltimore, MD, USA), Volders, Olusola, Yinka, Sosthenes, Ketende, Afoke Kokogho, Stefan Baral, Erik Hill, Trevor Croswell, Geraldine Davis, Michael Chirwa, Sunthia Sampa, Kimberly Quick, Christian Robins, Christian Stewart, Ari David, Bowling, Shane. NUSP Study, Investigators include Principal Investigators: Sylvia Adebajo, Stefan Baral, Erik Hill, Trevor Croswell, Geraldine Davis, Michael Chirwa, Sunthia Sampa, Kimberly Quick, Christian Robins, Christian Stewart, Ari David, Bowling, Shane.

DISCLAIMERS

The views expressed on behalf of the authors and of the study should not be construed to represent the positions of the U.S. Army Medical Research and Material Command. The content of this publication does not necessarily reflect the views or policies of the Department of Defense or the U.S. Government.

FUNDING

This work was supported by a cooperative agreement between the Henry J. Kaiser Family Foundation for the Advancement of Military Medicine, Inc., and the U.S. Department of Defense (DHHS/PCORI-FIC-1204-01173). The National Institutes of Health (NIH), National Cancer Institute; Department of Defense (DOD)-funded, National Heart, Lung, and Blood Institute (NHLBI)-funded, and the U.S. Department of Defense (DOD)-funded, National Heart, Lung, and Blood Institute (NHLBI)-funded, and the U.S. Department of Defense (DOD)-funded, National Heart, Lung, and Blood Institute (NHLBI)-funded, and the U.S. Department of Defense (DOD)-funded, National Heart, Lung, and Blood Institute (NHLBI)-funded, and the U.S. Department of Defense (DOD)-funded, National Heart, Lung, and Blood Institute (NHLBI). The views expressed are those of the authors and should not be construed to represent the positions of the U.S. Army Medical Research and Materiel Command. The content of this publication does not necessarily reflect the views or policies of the Department of Defense or the U.S. Government.