Received: 20 September 2024 | Accepted: 15 April 2025

DOI: 10.1111/jdv.20714

JEADV JOURNAL OF THE EUROPEAN ACADEMY OF DERMATOLOGY & VENEREOLOGY

LETTER TO THE EDITOR

High anal *Chlamydia trachomatis* load is associated with LGV and symptoms in MSM: Results of a cross-sectional study

Dear Editor,

Anorectal *Chlamydia trachomatis* infections, caused by *C. trachomatis* L or non-L genotypes, are common among men who have sex with men (MSM).[1] Lymphogranuloma venereum (LGV), caused by L genotypes, is a relatively common cause of proctitis. In contrast, anorectal infections caused by non-L genotypes are often asymptomatic. Bacterial load has been associated with disease severity in other sexually transmitted infections (STIs), such as *Mycoplasma genitalium* and *Neisseria gonorrhoeae*.[2,3] However, in *C. trachomatis*, it remains controversial.[4] Knowing which biological and clinical determinants are associated with high anorectal *C. trachomatis* load could offer valuable insights into clinical aspects of these infections and thus the duration of treatment.

We evaluated the chlamydial load in 850 anorectal *C. trachomatis*-positive specimens collected prospectively from men between September and November 2020.[5] Demographic, clinical, biological and sexual behaviour data were collected. Chlamydial load was quantified using a previously described method.[6]

We performed uni- and multivariate linear regression analyses of determinants associated with *C. trachomatis* load using the RStudio software (version 2024.9.1.394). *p*-values <0.05 were considered statistically significant, with *p*-values <0.001 indicative of strong significance.

Table 1 presents the characteristics of the individuals. Three-quarters of them were HIV-negative and did not report anorectal symptoms. The LGV positivity was 15.5% (132/850). Anorectal symptoms were reported in 65.2% (86/132) of LGV-positive subjects and in only 17% (122/718) of non-LGV individuals.

The *C. trachomatis* load was significantly higher in LGV-positive individuals than in non-LGV individuals ($p < 0.0001$) and in those with anorectal symptoms than in those without them ($p = 0.0005$) (Figure 1).

Among LGV-positive individuals, the *C. trachomatis* load was significantly higher in those with anorectal symptoms than those without symptoms ($p = 0.01$) (Figure 1). By contrast, no significant difference in the load was observed between non-LGV individuals with or without symptoms ($p = 0.91$).

Among individuals with anorectal symptoms, we found a strong association between high bacterial load and infection with L genotypes compared to infection with non-L genotypes ($p < 0.0001$) (Figure 1). Regarding asymptomatic individuals, those infected with L genotypes had a significantly higher chlamydial load than those infected with non-L genotypes ($p = 0.03$). Other factors, such as HIV status, the use of pre-exposure prophylaxis (PrEP) for HIV, *N. gonorrhoeae* coinfection and the number of non-steady sexual partners in the past 12 months did not influence the *C. trachomatis* load.

Our results showed that LGV and anorectal symptoms were strong determinants of high *C. trachomatis* load in anorectal specimens from men. A previous study showed that in LGV proctitis treated with a 21-day course of doxycycline, RNA persisted for up to 16 days.[7] In non-LGV chlamydia rectal infections, DNA was undetectable after 7 days. These

TABLE 1 Characteristics of the 850 individuals with *Chlamydia trachomatis*-positive anorectal specimens.

Characteristics (number of available data)	*N* (%)
Sexual orientation (*N* = 850)	
MSM	849 (99.9)
HIV status (*N* = 836)	
Living with HIV	205 (24.5)
Negative	631 (75.5)
PrEP use (*N* = 574)	
Yes	356 (62)
No	218 (38)
Anorectal symptoms (*N* = 850)	
Yes	208 (24.5)
No	642 (75.5)
Number of sexual non-steady partners in the past 12 months (*N* = 451)	
≤10	262 (58.1)
>10	189 (41.9)
C. trachomatis genotype (*N* = 850)	
L	132 (15.5)
Non-L	718 (84.5)
Neisseria gonorrhoeae coinfection (*N* = 804)	
Yes	236 (29.4)
No	568 (70.6)

Abbreviations: MSM, men who have sex with men; PrEP, pre-exposure prophylaxis for HIV.

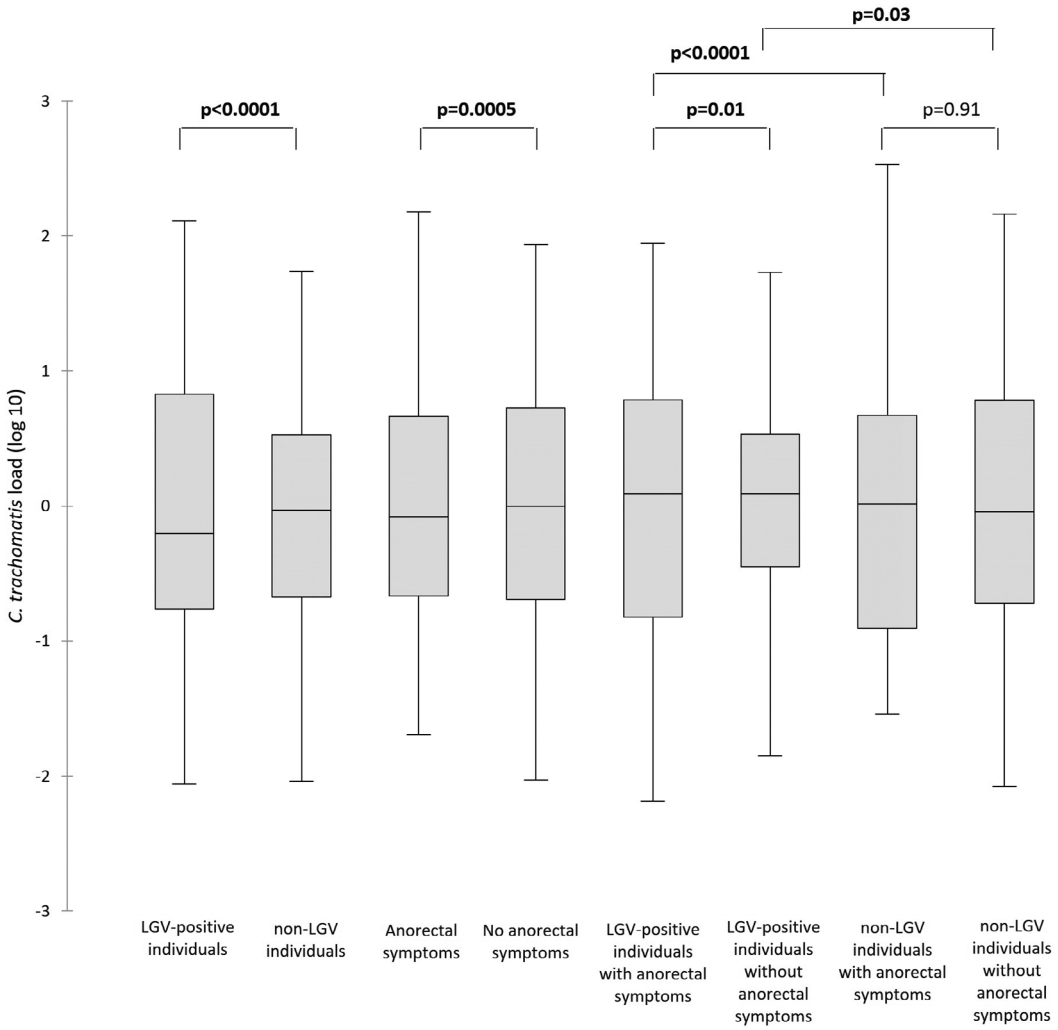

FIGURE 1 *Chlamydia trachomatis* load (Log_{10} per μL) in anorectal specimens according to lymphogranuloma venereum status and anorectal symptoms. The median is shown as the central horizontal line. The lower and upper limits of the boxes are the first and third quartiles.

findings and ours support that individuals with symptomatic anorectal infection should receive initial treatment with a 7-day course of doxycycline while awaiting the results of *C. trachomatis* genotyping for LGV.[1] Treatment should be extended to 21 days if LGV is confirmed.[8] However, we observed that asymptomatic LGV-positive individuals had significantly lower chlamydial load than those with symptomatic LGV but a higher load than asymptomatic non-LGV individuals. This result needs to be confirmed because of the low number of asymptomatic LGV cases compared with asymptomatic non-LGV cases (46 vs. 596) in our work. Nevertheless, these findings raise questions about the effectiveness of a 7-day course of doxycycline for the treatment of asymptomatic LGV. Two recent retrospective studies reported successful rectal LGV cures with this regimen.[9,10] Controlled trials are needed to confirm these findings.

In conclusion, a significant association was observed between the *C. trachomatis* anorectal load and symptomatology and LGV. The impact of the chlamydial load on the duration of doxycycline treatment for LGV cases remains to be investigated.

ACKNOWLEDGEMENTS

We thank Laura Albucher for technical assistance. We thank all clinicians and biologists participating in the STI surveillance networks.

FUNDING INFORMATION

None.

CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The patients in this manuscript have given written informed consent to the publication of their case details.

ETHICAL APPROVAL

The French national sentinel surveillance for anorectal *C. trachomatis* infections was approved by the French Data Protection Authority (CNIL, no. 10.362).

Arabella Touati[1]
Cécile Laurier-Nadalié[1]
Charles Cazanave[1,2,3]
Cécile Bébéar[1,3]
Olivia Peuchant[1,3]

[1]*CHU Bordeaux, Bacteriology Department, National Reference Centre for Bacterial Sexually Transmitted Infections, Bordeaux, France*
[2]*CHU Bordeaux, Infectious and Tropical Diseases Department, Bordeaux, France*
[3]*Univ. Bordeaux, UMR 5334 CNRS Microbiologie Fondamentale et Pathogénicité (MFP), ARMYNE, Bordeaux, France*

Correspondence
Olivia Peuchant, National Reference Centre for Bacterial Sexually Transmitted Infections, Bacteriology Department, Bordeaux University Hospital, 33000 Bordeaux, France.
Email: olivia.peuchant@u-bordeaux.fr

ORCID

Olivia Peuchant https://orcid.org/0000-0002-5358-8990

REFERENCES

1. Lanjouw E, Ouburg S, de Vries HJ, Stary A, Radcliffe K, Unemo M. European guideline on the management of *Chlamydia trachomatis* infections. Int J STD AIDS. 2016;27(5):333–48.
2. Bissessor M, Tabrizi SN, Fairley CK, Danielewski J, Whitton B, Bird S, et al. Differing *Neisseria gonorrhoeae* bacterial loads in the pharynx and rectum in men who have sex with men: implications for gonococcal detection, transmission, and control. J Clin Microbiol. 2011;49(12):4304–6.
3. le Roux MC, Hoosen AA. Quantitative real-time polymerase chain reaction for the diagnosis of *mycoplasma genitalium* infection in south African men with and without symptoms of urethritis. Sex Transm Dis. 2017;44(1):17–20. https://doi.org/10.1097/OLQ.0000000000000540
4. Vodstrcil LA, McIver R, Huston WM, Tabrizi SN, Timms P, Hocking JS. The epidemiology of *chlamydia trachomatis* organism load during genital infection: a systematic teview. J Infect Dis. 2015;211(10):1628–45.
5. Peuchant O, Laurier-Nadalié C, Albucher L, Balcon C, Dolzy A, Hénin N, et al. Anorectal lymphogranuloma venereum among men who have sex with men: a 3-year nationwide survey, France, 2020 to 2022. Euro Surveill. 2024;29(19):2300520.
6. Peuchant O, Lhomme E, Martinet P, Grob A, Baita D, Bernier C, et al. Doxycycline versus azithromycin for the treatment of anorectal *chlamydia trachomatis* infection in women concurrent with vaginal infection (CHLAZIDOXY study): a multicentre, open-label, randomised, controlled, superiority trial. Lancet Infect Dis. 2022;22(8):1221–30.
7. de Vries HJ, Smelov V, Middelburg JG, Pleijster J, Speksnijder AG, Morré SA. Delayed microbial cure of lymphogranuloma venereum proctitis with doxycycline treatment. Clin Infect Dis. 2009;48(5):e53-6. https://doi.org/10.1086/597011
8. de Vries HJC, de Barbeyrac B, de Vrieze NHN, Viset JD, White JA, Vall-Mayans M, et al. 2019 European guideline on the management of lymphogranuloma venereum. J Eur Acad Dermatol Venereol. 2019;33(10):1821–8.
9. Bilinska J, Artykov R, White J. Effective treatment of lymphogranuloma venereum with a 7-day course of doxycycline. Sex Transm Dis. 2024;51(7):504–7.
10. Simons R, Candfield S, French P, White JA. Observed treatment responses to short-course doxycycline therapy for rectal lymphogranuloma venereum in men who have sex with men. Sex Transm Dis. 2018;45(6):406–8. https://doi.org/10.1097/OLQ.0000000000000772