Category: Clinical Research

Title: Association of Doxycycline Use for Acne With Sexually Transmitted Infection Outcomes: A TriNetX Retrospective Cohort Study

Richard J. Moraga, BS[1]*, Hannah L. Cole, AB[2]*, Mitchell Hanson, BS[3], Lisa Y. Shen, MD[4], John S. Barbieri, MD, MBA[5] & John G. Zampella, MD[6]

[1] Rosalind Franklin University of Medicine and Science, North Chicago, IL
[2] Harvard Medical School, Boston, MA
[3] Medical College of Georgia, Augusta, GA
[4] Boston University Chobanian & Avedisian School of Medicine, Boston, MA
[5] Department of Dermatology, Brigham and Women's Hospital, Boston, MA
[6] The Ronald O. Perelman Department of Dermatology, NYU Grossman School of Medicine, New York, NY

*Denotes equal contribution

Abstract

Doxycycline is widely prescribed in dermatology for acne and other inflammatory dermatoses and is also active against several bacterial sexually transmitted infections (STIs). With increasing interest in doxycycline-based STI prophylaxis, it is unclear whether doxycycline prescribed for dermatologic indications is associated with differences in STI outcomes. We conducted a retrospective cohort study using the TriNetX federated network of de-identified electronic health records to evaluate STI outcomes among patients aged 15–45 years with acne receiving oral doxycycline compared with matched patients receiving non-doxycycline acne therapies. Propensity score matching balanced demographic characteristics, prior STI history, and exposure to HIV pre-exposure prophylaxis medications. The primary outcome was laboratory-confirmed chlamydia, gonorrhea, or syphilis within 1–180 days of the index encounter. After matching, 172,711 individuals were included in each cohort. Doxycycline use was associated with a lower risk of the composite bacterial STI outcome (HR 0.73; 95% CI 0.62–0.86), driven primarily by reduced detection of chlamydia (HR 0.61; 95% CI 0.50–0.75), while associations for gonorrhea and syphilis did not reach statistical significance. These findings suggest doxycycline prescribed for acne may be associated with reduced chlamydia detection, although acne therapies should not be prescribed to modify STI risk.

References

1. Bachmann LH, Barbee LA, Chan P, et al. CDC clinical guidelines on the use of doxycycline postexposure prophylaxis for bacterial sexually transmitted infection prevention, United States, 2024. MMWR Recomm Rep. 2024;73(2):1-8. doi:10.15585/mmwr.rr7302a1
2. Barbieri JS, Weiner DM, Kakpovbia E, Nagler AR. Validating the optimal classification approach using International Classification of Diseases, 10th Revision codes to identify dermatology patients with acne. J Am Acad Dermatol. 2021;84(5):1491-1493. doi:10.1016/j.jaad.2020.07.075
3. Falasinnu T, Gilbert M, Hottes TS, Gustafson P, Ogilvie G, Shoveller J. Predictors identifying those at increased risk for STDs: a theory-guided review of empirical literature and clinical guidelines. Int J STD AIDS. 2015;26(12):839-851. doi:10.1177/0956462414555930
4. Ho YA, Rahurkar S, Tao G, et al. Validation of International Classification of Diseases, Tenth Revision, Clinical Modification codes for identifying cases of chlamydia and gonorrhea. Sex Transm Dis. 2021;48(5):335-340. doi:10.1097/OLQ.0000000000001257
5. Bolan RK, Beymer MR, Weiss RE, Flynn RP, Leibowitz AA, Klausner JD. Doxycycline prophylaxis to reduce incident syphilis among HIV-infected men who have sex with men who continue to engage in high-risk sex: a randomized, controlled pilot study. Sex Transm Dis. 2015;42(2):98-103. doi:10.1097/OLQ.0000000000000216