
Patterns of antimicrobial resistance in lesions of hidradenitis suppurativa



Alexander H. Fischer, MPH,^a Alessandra Haskin, BA,^b and Ginette A. Okoye, MD^a
Baltimore, Maryland, and Washington, District of Columbia

Background: Antibiotic therapy is commonly used to treat hidradenitis suppurativa (HS). Although concern for antibiotic resistance exists, data examining the association between antibiotics and antimicrobial resistance in HS lesions are limited.

Objective: We sought to determine the frequency of antimicrobial resistance in HS lesions from patients on antibiotic therapy.

Methodology: A cross-sectional analysis was conducted on 239 patients with HS seen at the Johns Hopkins Medical Institutions from 2010 through 2015.

Results: Patients using topical clindamycin were more likely to grow clindamycin-resistant *Staphylococcus aureus* compared with patients using no antibiotics (63% vs 17%; $P = .03$). Patients taking ciprofloxacin were more likely to grow ciprofloxacin-resistant methicillin-resistant *S aureus* compared with patients using no antibiotics (100% vs 10%; $P = .045$). Patients taking trimethoprim/sulfamethoxazole were more likely to grow trimethoprim/sulfamethoxazole-resistant *Proteus* species compared with patients using no antibiotics (88% vs 0%; $P < .001$). No significant antimicrobial resistance was observed with tetracyclines or oral clindamycin.

Limitations: Data on disease characteristics and antimicrobial susceptibilities for certain bacteria were limited.

Conclusions: Antibiotic therapy for HS treatment may be inducing antibiotic resistance. These findings highlight the importance of stewardship in antibiotic therapy for HS and raise questions regarding the balance of antibiotic use versus potential harms associated with antibiotic resistance. (J Am Acad Dermatol 2017;76:309-13.)

Key words: acne inversa; antibiotics; antimicrobial resistance; hidradenitis suppurativa.

Hidradenitis suppurativa (HS), or acne inversa, is a chronic, inflammatory disease that affects the hair follicles in apocrine gland-bearing skin.¹ Although HS is not primarily caused by bacterial infection,² it often presents with painful subcutaneous nodules and abscesses,¹ from which bacterial specimens can often be isolated.³ Studies exploring the bacteriology of HS have isolated a wide array of different bacterial organisms from lesions, with the majority of lesions

Abbreviations used:

HS: hidradenitis suppurativa
SMX: sulfamethoxazole
TMP: trimethoprim

characterized by a polymicrobial microflora dominated by coagulase-negative staphylococcal species and mixed anaerobic bacteria, with *Staphylococcus*

From the Department of Dermatology, Johns Hopkins University School of Medicine, Baltimore,^a and Howard University College of Medicine, Washington.^b

Funding sources: None.

Conflicts of interest: None declared.

Accepted for publication August 1, 2016.

Reprint requests: Alexander H. Fischer, MPH, Johns Hopkins University School of Medicine, Edward D. Miller Research

Bldg, 733 N Broadway, Suite 137, Baltimore, MD 21205-2196.

E-mail: afisch11@jhmi.edu.

Published online October 11, 2016.

0190-9622/\$36.00

© 2016 by the American Academy of Dermatology, Inc.

<http://dx.doi.org/10.1016/j.jaad.2016.08.001>

aureus and streptococcal species also commonly isolated from a substantial proportion of lesions.⁴

Antibiotics are frequently used as first-line management of HS, primarily for their anti-inflammatory properties, with additional contributions via antimicrobial and immunomodulatory effects.^{5,6} Topical clindamycin and tetracyclines are the mainstays of antibiotic use in HS, although use of these therapies is largely based on clinical experience and few clinical trials.¹ Given the prodigious use of antibiotics in HS, there is concern for antibiotic resistance in these patients.³ The emergence of resistant bacterial strains can reduce antibiotic effectiveness in HS, increase susceptibility to infectious disease, and promote comorbidities linked to altered microbial flora, such as pseudomembranous colitis and antibiotic-associated diarrhea.^{2,7}

The objective of our study was to examine whether presence of antimicrobial resistance in bacteria cultured from HS lesions differed between patients who were taking antibiotics at the time of the culture and those who were not.

METHODS

Study population

After institutional review board approval, we conducted a cross-sectional analysis of 632 patients with a dermatologist diagnosis of HS who were seen at the Johns Hopkins Medical Institutions from 2010 to 2015. We included 239 patients who had bacterial culture data from HS lesions, all of which were sampled using swabs.

Definition of variables

Using information from electronic medical records, the first recorded bacterial culture for each patient was examined to collect data on the isolated bacterial species and the associated antibiotic susceptibilities for bacteria in the phyla of Firmicutes (coagulase-negative staphylococci, *Streptococcus anginosus*, viridans streptococci, group B streptococci, peptostreptococci, and enterococci) and Proteobacteria (*Escherichia coli*, *Proteus*, *Acinetobacter*, *Klebsiella*, *Pseudomonas*, and *Morganella*). Information on

patient characteristics and antibiotic use indicated for HS at the time of culture was also collected.

Statistical analyses

Associations of antibiotic use with bacterial species and antimicrobial resistance were evaluated using χ^2 and Fisher exact tests (Stata 14.0, StataCorp, College Station, TX). Differences in the associations between antibiotic use and antimicrobial resistance were examined by race with interaction analyses using logistic regression by adding a cross-product term into the model and conducting a Wald test. As the documented information on antimicrobial susceptibilities depended on the specific microbe that was isolated, we limited comparative analyses of antibiotic use with bacteria and antimicrobial resistance to specific combinations of antibiotics and bacteria. Certain combinations of antibiotics and bacteria

were not included in the final analysis if antimicrobial susceptibilities were not reported, if there was not enough antimicrobial resistance data for meaningful results ($N < 10$), or in cases in which more than 25% antimicrobial susceptibility data were missing (Supplemental Table I, available at <http://www.jaad.org>).

RESULTS

Of the patients with information on antibiotic use at the time of bacterial culture ($N = 227$), 122 (54%) had documented antibiotic use (Table I). Individuals receiving antibiotics showed similar characteristics according age, gender, ethnicity, and body mass index compared with individuals not receiving antibiotics at the time of bacterial culture ($P > .05$ for all). The most common antibiotics used were tetracyclines (26%), topical clindamycin (19%), oral clindamycin (9%), and trimethoprim/sulfamethoxazole (TMP/SMX) (8%), with less than 5% of individuals using each of rifampin, topical mupirocin, cephalosporin, ciprofloxacin, topical metronidazole, and penicillin (Table II). Use of multiple antibiotics was documented in 21% of patients.

When compared with patients who were not using any antibiotics at the time of their culture, a higher proportion of patients using topical clindamycin grew clindamycin-resistant *Staphylococcus aureus* (63% vs

CAPSULE SUMMARY

- Antibiotics are commonly used to treat hidradenitis suppurativa (HS), yet concerns about antimicrobial resistance have rarely been addressed in this condition.
- Proportions of HS lesions growing clindamycin-resistant *Staphylococcus aureus*, ciprofloxacin-resistant methicillin-resistant *S aureus*, and trimethoprim/sulfamethoxazole-resistant *Proteus* species were higher than in comparative groups.
- Antibiotic therapy for HS treatment may be inducing antibiotic resistance.

Download English Version:

<https://daneshyari.com/en/article/5648456>

Download Persian Version:

<https://daneshyari.com/article/5648456>

[Daneshyari.com](https://daneshyari.com)