Funding sources: Northwestern Medicine Enterprise Data Warehouse is supported by the National Institutes of Health's National Center for Advancing Translational Sciences (grant number UL1TR001422).

Conflicts of interest: None disclosed.

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Correspondence to: Beatrice Nardone, MD, PhD, 676 N St. Clair St, Ste 1600, Chicago, IL 60611

E-mail: b-nardone@northwestern.edu

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https://doi.org/10.1016/j.jaad.2018.10.052

The effect of antimicrobial washes on antibacterial resistance in hidradenitis suppurativa lesions

To the Editor: Hidradenitis suppurativa (HS) is a chronic relapsing inflammatory skin condition that results in painful nodules, abscesses, and sinus tracts typically in intertriginous body sites.[1] Topical and oral antibiotics are the first-line treatment for HS[2,3]; however, there is concern regarding antibiotic resistance in target and nontarget bacteria, as well as regarding the growth of opportunistic pathogens.[4] Some clinical practice guidelines for HS recommend concomitant antimicrobial washes, including chlorhexidine, bleach baths, and benzoyl peroxide for reducing inflammation and antibacterial resistance rates.[2,3] Importantly, for acne, studies have found that combining benzoyl peroxide with standard antibiotics can significantly reduce the antibacterial resistance in those lesions.[5] In this study, we sought to examine the association between antibiotic resistance in HS lesions and antimicrobial washes.

Table I. Descriptive characteristics of patients and bacterial cultures

Characteristic	Value
Patients (N = 80)	
Age, y	
Mean (SD)	35.5 (14.4)
Sex, n (%)	
Female	59 (73.8%)
Male	21 (26.3%)
Cultures and washes (N = 121 cultures)	
Body site of culture, n (%)	
Axilla	49 (40.5%)
Buttocks and groin	34 (28.1%)
Trunk	13 (10.7%)
Head and neck	12 (9.9%)
Thigh	10 (8.3%)
Arm	2 (1.7%)
Not specified	1 (0.8%)
Use of antibiotics* and/or wash, n (%)	
No antibiotics or wash	50 (41.3%)
Antibiotics + wash	35 (28.9%)
Antibiotics alone	25 (20.7%)
Wash alone	11 (9.1%)
Type of antimicrobial wash, n (%)	
No wash	75 (62.0%)
Chlorhexidine	17 (14.1%)
Dilute bleach bath	8 (6.6%)
Benzoyl peroxide	4 (3.3%)
≥2 washes	17 (14.1%)

SD, Standard deviation.
*Oral or topical antibiotics.

We conducted a cross-sectional analysis of 80 patients with HS who had a total of 121 HS lesional cultures; the 80 patients were from 2 academic medical centers in Pennsylvania and California. Information on demographics, culture results with the isolated species and associated antibiotic susceptibilities, use of oral and/or topical antibiotics within 1 month before or concurrent with culture, and use of an antimicrobial wash within 1 month before or concurrent with culture was collected and analyzed.

Patient and HS lesional culture characteristics are outlined in Table I. The most common sites of culture were the axillae, buttocks, and groin. Many of the cultures (41.3%) were performed in the absence of oral or topical antibiotic or antimicrobial wash use. Chlorhexidine was the most commonly used antimicrobial wash, but dilute bleach baths, benzoyl peroxide washes, or combinations of all 3 antimicrobial washes were also documented. Table II demonstrates the variation among groups that received antibiotic treatment only, antimicrobial washes only, both, or neither and the associated

Table II. Patterns of antibiotic resistance by antibiotic class and use of antibiotic and antimicrobial wash

	Percent resistance					
Antibiotic class tested	**All samples**	**Antibiotic alone**	**Antibiotic + wash**	**Wash alone**	**Neither**	***P* value***
Penicillins	155/360 (43.1%)	44/88 (50.0%)	44/85 (51.8%)	9/33 (27.3%)	58/154 (37.7%)	**.02**
Cephalosporins	19/146 (13.0%)	9/27 (33.3%)	4/44 (9.1%)	1/15 (6.7%)	5/60 (8.3%)	**.02**
Tetracyclines	17/91 (18.7%)	2/21 (9.5%)	8/23 (34.8%)	1/6 (16.7%)	6/41 (14.6%)	.15
Trimethoprim-sulfamethoxazole	9/122 (7.4%)	2/25 (8.0%)	3/34 (8.8%)	1/14 (7.1%)	3/49 (6.1%)	.96
Fluoroquinolones	17/187 (9.1%)	2/45 (4.4%)	4/46 (8.7%)	1/20 (5.0%)	10/76 (13.7%)	.37
Clindamycin	21/72 (29.2%)	3/20 (15.0%)	9/20 (45.0%)	1/6 (16.7%)	8/26 (30.8%)	.18

*Chi-square test was used to calculate this *P* value. Boldface indicates statistical significance.

rates of antibiotic resistance to 6 classes of antibiotics commonly used to treat HS.

Across all cultures, the highest rate of antibiotic resistance was seen against penicillins. Rates of resistance to penicillins and cephalosporins differed among the 4 treatment groups, although there were no significant differences in resistance rates across the treatment groups for clindamycin, tetracyclines, fluoroquinolones, or trimethoprim-sulfamethoxazole. Surprisingly, rates of resistance to tetracyclines, fluoroquinolones, and clindamycin trended higher in the group using antibiotics with a concomitant wash than in the group using only antibiotics. Although rifampin is a commonly used antibiotic in the treatment of HS, cases of sensitivity to it were not reported in our cultures.

A previous cross-sectional analysis found that antibiotic therapy for HS treatment may be inducing antibiotic resistance.[4] We hypothesized that the use of concomitant antimicrobial washes with oral or topical antibiotics would decrease rates of resistance to antibiotics. Our data suggest that antibiotic and antimicrobial wash treatments are associated with different rates of antibiotic resistance in some classes of antibiotics. In particular, concomitant use of an antimicrobial wash was associated with lower rates of resistance to cephalosporins in HS lesions. Although rates of antibiotic resistance differed across all treatment groups, there was no difference between the group treated with an antibiotic alone and that treated with an antibiotic and concomitant wash.

The results of this study should be considered along with its limitations. We had a small sample size of subjects using antibiotics and/or antimicrobial washes, which could reflect misclassification bias, as antimicrobial wash use may not have been documented. The results were also influenced by selection bias, as we only had data on HS lesions that were selected by clinicians to be cultured. Prospective studies are needed to understand the role that antimicrobial washes might play in mitigating bacterial resistance to antibiotic therapies, thus improving the efficacy of antibiotic therapies for HS, and potentially altering disease activity and progression with continued use.

Paul Leiphart, BA,[a] Heather Ma, BS,[b] Haley B. Naik, MD, MHSc,[b] and Joslyn S. Kirby, MD, MS, MEd[c]

From the Department of Dermatology,[c] Penn State College of Medicine, Hershey, Pennsylvania,[a] and Program for Clinical Research, Department of Dermatology, University of California, San Francisco, San Francisco, California[b]

Funding sources: None.

Conflicts of interest: None disclosed.

Correspondence to: Paul Leiphart, BA, Penn State College of Medicine, 500 University Dr, Hershey, PA 17033

E-mail: pleiphart@pennstatehealth.psu.edu

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https://doi.org/10.1016/j.jaad.2018.10.063