Safety and effectiveness of amoxicillin in the treatment of inflammatory acne

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Acne is a common disease of the pilosebaceous unit, predominantly affecting teenagers and young adults. First-line treatment strategies are aimed at its pathogenetic mechanisms, including keratinocyte hyperproliferation, seborrhea, colonization of follicular ducts by Propionibacterium acnes, and inflammation (James, 2005). Systemic antibiotic therapy, when prescribed in combination with topical retinoids, benzoyl peroxide, hormonal therapy, and/or topical antibiotics, is indicated for moderate-to-severe inflammatory acne, typically in the form of tetracyclines, macrolides, and trimethoprim-sulfamethoxazole (Zaenglein et al., 2016). However, in certain cases, these antibiotics and other commonly prescribed treatments including oral contraceptives, spironolactone, and isotretinoin may be prohibited. These cases often involve pregnancy, drug intolerance, allergy, cost, and/or patient preference. In this retrospective study, we assessed the safety and efficacy of systemic amoxicillin, which has a favorable tolerability profile and compatibility with pregnancy in the treatment of inflammatory acne.

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In this retrospective series, 84.6% of patients demonstrated clinical improvement in inflammatory acne with systemic amoxicillin prescribed in addition to topical and hormonal treatments. We recommend systemic antibiotics only in moderate-to-severe acne and in cases in which other regimens are poorly tolerated or contraindicated. Of note, the tetracycline class is considered first-line with doxycycline and minocycline demonstrating comparable efficacy (Garner et al., 2012). However, in addition to its contraindication in pregnancy, this antibiotic class is associated with adverse effects, including gastrointestinal distress and photosensitivity (doxycycline), and dizziness, tinnitus, and cutaneous pigment deposition (minocycline).

Limited data support the use of azithromycin (Fernandez-Obregon, 2000), cephalaxin (Fenner et al., 2008), and trimethoprim-sulfamethoxazole (Jen, 1980; Turowski and James, 2007) as second-line agents but they may be considered in patients who are intolerant of tetracyclines or with refractory disease. Limiting antibiotic use to the shortest possible duration is critical and may be facilitated with concomitant use of retinoids, benzoyl peroxide, and/or hormonal therapy or a retinoid/benzoyl peroxide regimen (Zaenglein et al., 2016). In patients for whom prolonged antibiotic therapy is required, regular follow-up and reassessment are paramount. Nonetheless, amoxicillin may represent a valuable second-line treatment option in inflammatory acne that warrants prospective exploration for its tolerability profile and pregnancy category B classification.

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### Table 1
Baseline demographics

| Total patients treated (n) | 26 |
|---------------------------|----|
| Female patients (%)       | 12 (46.2%) |
| Mean patient age (SD)     | 28.4 (7.2) |
| Patients on 1000 mg daily dose (%) | 14 (53.8%) |
| Patients on 1500 mg daily dose (%) | 12 (46.2%) |
| Median CASS score on face (range) | 2 (0-4) |
| Median CASS score on chest (range) | 1 (0-4) |
| Median CASS score on back (range) | 1 (0-4) |

CASS, Comprehensive Acne Severity Scale; SD, standard deviation

### Table 2
Post-treatment outcomes

| Cases with improvement on face (%) | 23 (82.1%) |
| Mean improvement in CASS on face (SD) | −1.8 (1.4) |
| Cases with improvement on chest (%) | 24 (85.7%) |
| Mean improvement in CASS on chest (SD) | −0.5 (0.8) |
| Cases with improvement on back (%) | 20 (71.4%) |
| Mean improvement in CASS on back (SD) | −0.6 (1.0) |

CASS, Comprehensive Acne Severity Scale; SD, standard deviation

* Outcomes are inclusive of cases that had no disease involvement of the respective treatment area at baseline.