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The Safety and Efficacy of Spironolactone versus Oral Antibiotics for Moderate-severe Acne in Post-adolescent Females

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Introduction

- Acne is a common skin condition when the pores are clogged by particles like dead skin or oil, affecting approximately 50 million individuals in the U.S.¹
- Over a third of females experience moderate-severe forms that persist into adulthood and that number seems to be on the rise³
- Persistent moderate-severe acne often requires systemic medications and oral antibiotics are the most frequently prescribed therapy²
- Dermatologists prescribe more antibiotics per provider than any other specialty, and often for longer durations than recommended²
- The inappropriate use of oral antibiotics is contributing to bacterial resistance and disruption of the microbiome²
- Spironolactone is an androgen receptor antagonist that has been used off-label for acne treatment for over 30 years³
- A 2009 Cochrane review found that randomized trials evaluating spironolactone as a treatment for acne were too limited and small to support its clinical effectiveness¹
- There have since been multiple large studies supporting its utility¹

Purpose

- This review aims to shed light on whether spironolactone should be considered a safe and effective alternative to oral antibiotics for treating post-adolescent females with moderate-to-severe acne
- Additional goals include informing acne treatment guidelines, assisting healthcare providers in making informed decisions about treatment options, and guiding future investigations that should explore non-antibiotic alternatives

Methodologies

- A literature search was conducted between 1/23/2023 and 2/20/2023 through databases including PubMed and Google Scholar
- Keywords: *acne, post-adolescent females, spironolactone, oral antibiotics*
- Two retrospective studies published within the last five years were reviewed
- Both studies aimed to explore the role of spironolactone in the treatment of adult female acne by assessing its long-term efficacy and safety profile
- Inclusion Criteria: post-adolescent (18+) females, diagnosis of moderate-severe acne, utilization of spironolactone or oral antibiotics for acne treatment
- Exclusion Criteria: pre-adolescent females, diagnosis of only mild acne, publication before 2018
- Garg et al. employed the CASS, a 0-5 scale, with zero meaning the acne cleared and five representing that the acne is severe inflammatory acne with nodules and cysts
- Roberts et al. employed the 4-grade European classification system: comedonal acne (grade 1), mild to moderate papulopustular acne (grade 2), severe papulopustular/moderate nodular acne (grade 3), and severe nodular/conglobate acne (grade 4)
- Limitations: both studies were conducted at single academic medical centers and it is possible that concurrent therapies, such as topical retinoids, may have influenced the observed acne improvement during spironolactone treatment

Results

Garg et al. – 403 pts, median age 26 yo, median daily dose 100mg (range, 25-200)

- Study revealed that 75.5%, 84.0%, and 80.2% of patients experienced a reduction or complete clearance (CASS score = 0) of their acne on the face, chest, and back, respectively³
- Patients' CASS scores exhibited a mean decrease of 0.8³
- Acne clearance (44%) was the primary reason for treatment discontinuation with adverse effects (irregular menstruation, dizziness, headache, fatigue) accounting for only 23% of discontinuations³

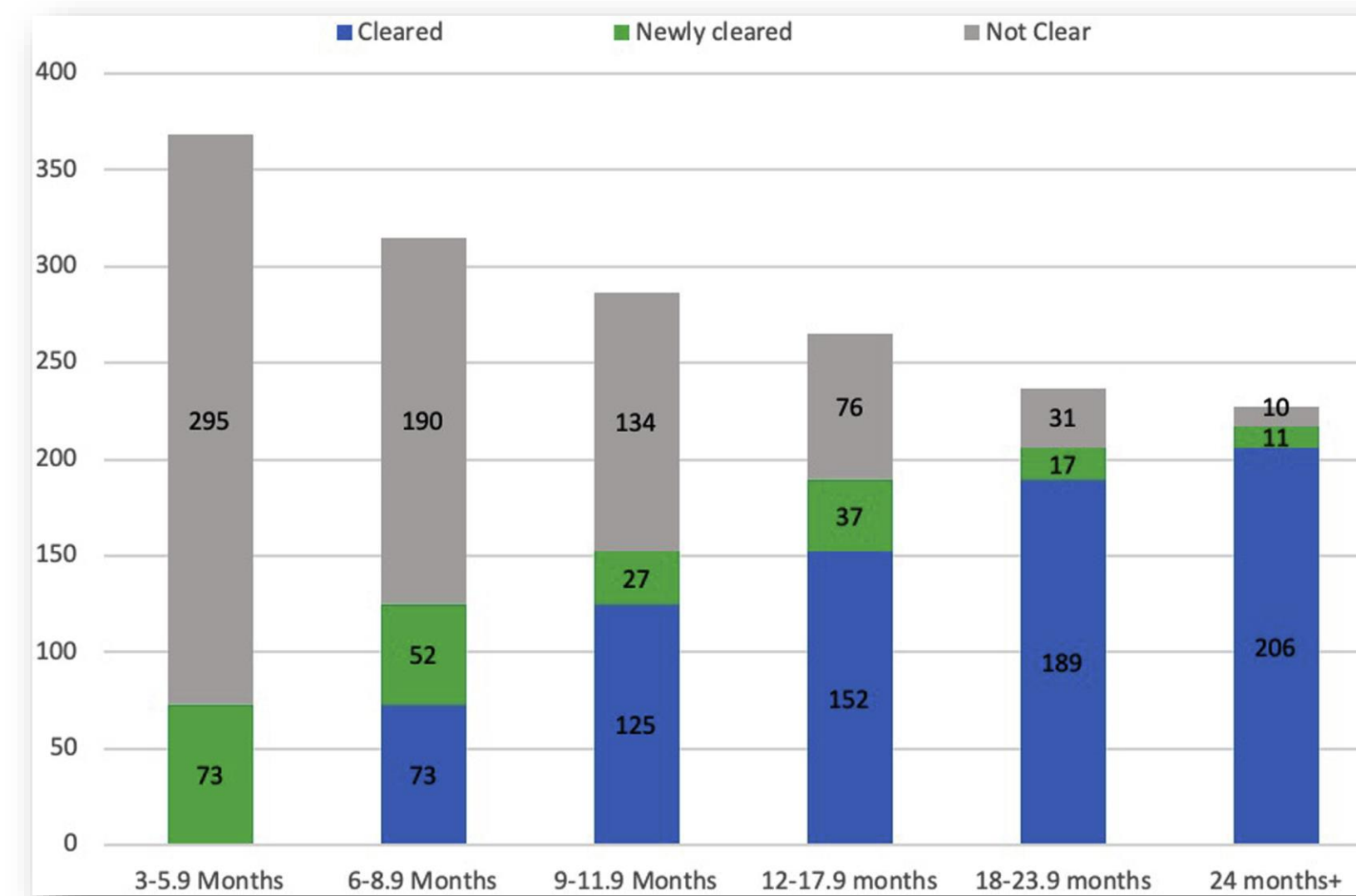


Figure 1: Clearance rates at follow-up visits among those available for follow-up³

20% of patients achieved acne clearance within 3-5.9 months, 40% within 6-8.9 months, and 53% within 9-11.9 months³

By the end of the study, 96% of patients had achieved clearance³

Roberts et al. - 395 pts, median age 32 yo, median daily dose 100mg (range, 25-200)

- Study reported a reduction in acne for 91.4% of patients taking Spironolactone⁴
- Among them, 66.1% experienced a complete response (>90% improvement), 19.0% had a partial response with more than 50% improvement, and 6.3% had a partial response with less than 50% improvement⁴
- Only 8.6% of patients exhibited a lack of response, indicating no improvement with spironolactone treatment⁴
- Median time to initial treatment response was 3 months and median time to maximal treatment response was 5 months⁴
- 10.4% of patients experienced adverse effects and only 6.3% of patients discontinued treatment due to those effects⁴

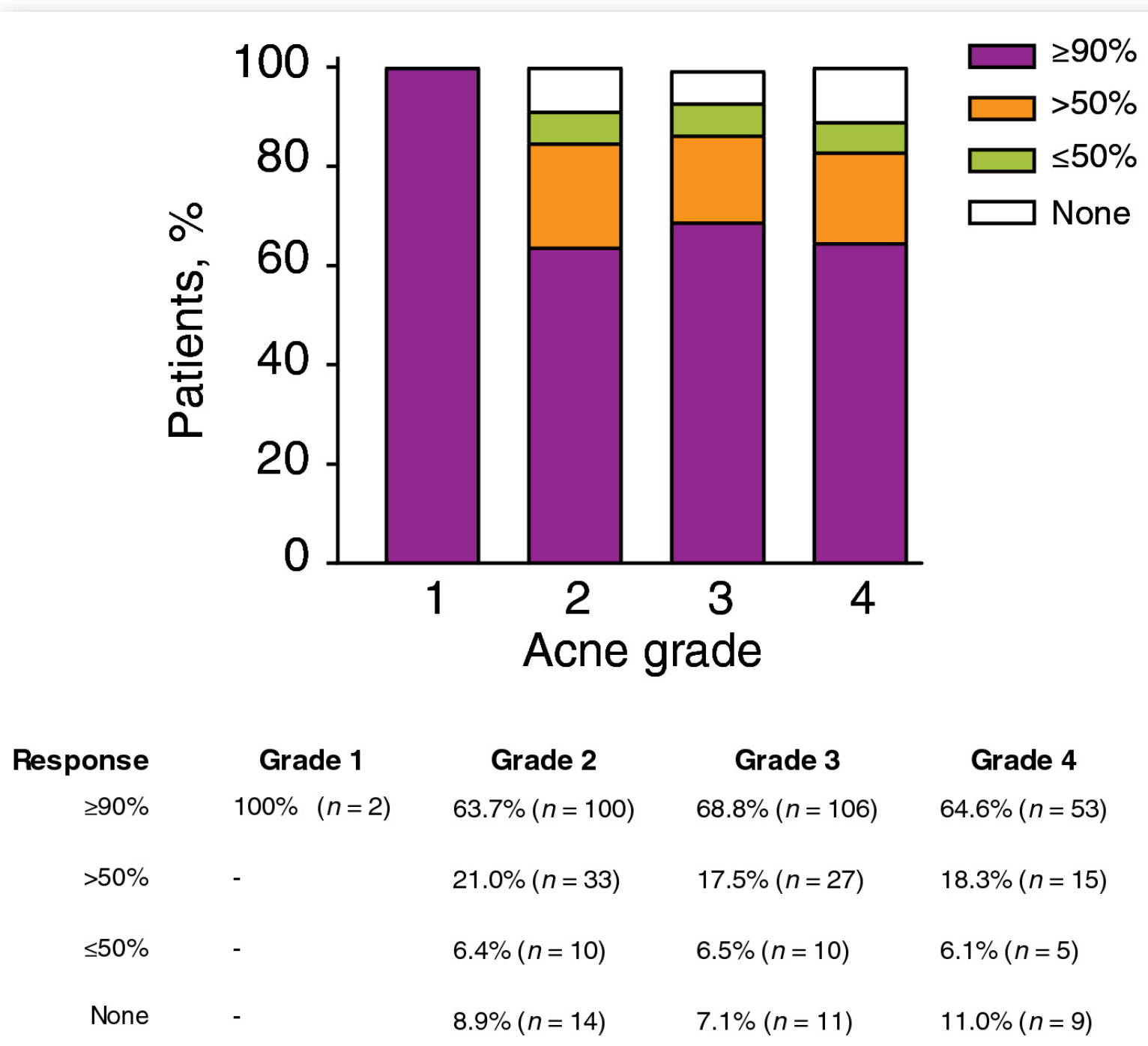


Figure 2: Prevalence of acne grades among the 395 patients and response to spironolactone treatment⁴

Utilizing the European severity classification system, the researchers observed that 64.6% of patients with grade 4 acne achieved a complete response, while 18.3% experienced a partial response with over 50% improvement⁴

Similar positive outcomes were observed for grade 2 and grade 3 acne, while 100% of patients with grade 1 acne exhibited a complete response to spironolactone treatment⁴

Discussion & Conclusions

- Both retrospective studies reported high rates of acne clearance or reduction, with minimal discontinuations resulting from adverse effects of spironolactone treatment
- Many patients saw a treatment response within months, and a large percentage achieved total acne clearance in less than a year
- Rates of treatment discontinuation due to adverse effects were low, and even if adverse effects were present, they were acceptable by most patients
- Considering the escalating rates of bacterial resistance and the negative consequences associated with oral antibiotics, it is imperative for clinicians to have alternative therapeutic options that effectively and safely address mod-severe acne
- These positive clinical outcomes and low discontinuation rates indicate that spironolactone therapy is both effective and well-tolerated in post-adolescent females with moderate-to-severe acne
- **Based on the evidence presented, it is recommended that spironolactone be considered a safe and effective alternative to oral antibiotics in the treatment of post-adolescent females with moderate-severe acne.**

Implications & Future Directions

- The results of these studies present a critical opportunity to offer an alternative treatment option for this patient population while addressing the pressing issue of antibiotic resistance
- By incorporating spironolactone into acne treatment guidelines and clinical practice, physician assistants and other healthcare providers can contribute to improved patient outcomes and promote antimicrobial stewardship
- Future research should incorporate randomized controlled trials and other prospective studies to further investigate spironolactone's efficacy and use in this patient population
- Ongoing studies, such as the randomized, double-blind trial conducted by Poinas et al., directly comparing spironolactone with oral antibiotics in acne treatment, will undoubtedly contribute valuable insights into optimizing acne management

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