

Evolving Concepts in the Pathogenesis of Acne Vulgaris



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Acne is perhaps the most prevalent skin disease in Western societies,¹ yet our understanding of it still remains largely incomplete. We know that the primary pathogenic factors in acne vulgaris are increased sebum production, faulty keratinization, inflammation, and bacterial colonization by *Propionibacterium acnes*;^{2,3} yet the precise influence of these elements and their interactions is questioned.

However, we now have some well accepted facts:

- Acne vulgaris is not an infectious disease
- Acne vulgaris is primarily an inflammatory disease
- The role of *P. acnes* is more inflammatory than infectious
- The presence of inflammation is continuous throughout the disease process from beginning to end—if there is an end—causing postinflammatory erythema, hyperpigmentation, and scarring
- Finally, acne vulgaris is a chronic disease requiring ongoing therapy

The chronic inflammatory nature of acne has become an important consideration in treatment, which should be aimed not only at eradicating existing lesions but also preventing long-term sequelae such as scarring or postinflammatory hyperpigmentation. This treatment goal can only be achieved by preventing new lesion formation. Therapeutic options targeted at rapidly reducing inflammation by optimizing therapy with a combination of anti-inflammatory agents, and thus decreasing the disease burden, will reduce the likelihood of unwanted adverse effects.

We have now learned that the old way of “dubbing the medicine on the pimples” is not going to work, and that treating both lesional and non-lesional normal appearing skin is the key to successful management of acne vulgaris. This treatment style reflects an understanding of the concept of “subclinical inflammation” in acne vulgaris, which has been clearly elucidated. Unfortunately, this message in itself is very challenging. I myself find that patients have difficulty in accepting treatment for something that is not there and that they do not see.

Next, this leads us to the maintenance therapy of acne vulgaris, where long-term use of antibiotics as monotherapy without benzoyl peroxide contributes to the development of antibiotic resistance. Antibiotic resistance is described as “a global public health challenge” and “a major health security challenge of the 21st century” by global health authorities.^{4,5} Antibiotic stewardship is a multidisciplinary initiative promoted by Centers for Disease Control, which assures that patients receive: “The right dose of the right antibiotic at the right time for the right duration”^{6,7} It is notable that dermatologists represent 1% of all healthcare providers, and yet they prescribe approximately 4.9% of antibiotics.⁸ Therefore, the use of benzoyl peroxide in combination with topical or oral antibiotics to prevent antibiotic resistance or avoid the use of monotherapy antibiotics should now be part of our regimen for the management of acne vulgaris. Hopefully, this will fulfill our specialty’s commitment to antibiotic stewardship.

The pages ahead will explore my perspective, as well as that of my colleagues Dr. Whitney Bowe and Dr. Andrew Alexis, on the novel findings related to acne vulgaris and the development of a new treatment paradigm that emphasizes the importance of antibiotic stewardship.

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