



COMMENTARY

# Postinflammatory Papule: A Tentative New Designation for Acne Vulgaris

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Received: August 10, 2021 / Published online: October 16, 2021  
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**Keywords:** Acne; Postinflammatory papule; New designation

## Key Summary Points

A tentative new designation of “postinflammatory papule (PIP)” for acne vulgaris is proposed.

PIP is defined as brown and dark-brown papules that form from red papules and pustules, resulting in postinflammatory hyperpigmentation (PIH) and scarring.

We define PIP as transitional eruption between red papules, pustules, and postinflammatory hyperpigmentation (PIH).

To the best of our knowledge, the concept of PIP has not been described.

We recommend topical benzoyl peroxide (BPO)/adapalene as treatment for PIP to prevent formation of atrophic scars.

Further investigation of histopathological findings in PIP is necessary to confirm whether inflammation still exists.

## COMMENTARY

Acne vulgaris begins as minute pathological microcomedones. Microcomedones usually develop into either open comedones (blackheads) or closed comedones (whiteheads), both of which are visible to the naked eye and eventually develop into inflamed lesions such as red papules and pustules [1, 2]. After the inflammation subsides, inflammatory lesions turn into postinflammatory erythema (PIE) and postinflammatory hyperpigmentation (PIH), on which atrophic and hypertrophic scars may form. In addition, when the follicular walls in the comedo are dilated, cysts or nodules are formed. Furthermore, hypertrophic scars and keloids occasionally occur in acne conglobata [1, 2].

Postinflammatory papule (PIP) is proposed herein as a tentative new designation for acne vulgaris. PIP is defined as brown and dark-brown papules that form from red papules and

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pustules, resulting in postinflammatory hyperpigmentation (PIH) and scarring. We define PIP as transitional eruption between red papules, pustules, and postinflammatory hyperpigmentation (PIH). When inflammation (manifesting as red papules or pustules) subsides, brown and dark-brown papules remain as PIP. PIP is not a macule, such as a PIH, but a papule.

In PIP, histopathology is necessary to confirm inflammation, noninflammatory infiltration, and scar tissue. To the best of our knowledge, the concept of PIP has not yet been described. However, PIP is usually encountered in acne lesions. We observed that PIP develop after formation and resolution of inflammatory red papules and pustules, with or without medication, and this lesion can develop into three types of eruptions: PIH, hypertrophic scars, and atrophic scars. Therefore, it is important that PIP is not treated with antimicrobial therapy. Instead, we recommend topical benzoyl peroxide (BPO)/adapalene as treatment for PIP to prevent formation of atrophic scars. Topical BPO/adapalene is used to reduce the risk of acne scars [3]. Treatment of acne cannot be achieved by antimicrobial therapy alone. Topical BPO/adapalene has antiinflammatory and skin-lightening effects. In addition, PIP has been successfully treated with a Smoothbeam laser (1450-nm diode laser with cryogen spray cooling) [4].

Tan et al. described postinflammatory lesions with erythema and postinflammatory lesions with hyperpigmentation that included PIE, PIP, and PIH, and reported a standard terminology that incorrectly and inadequately described acne [5]. Moreover, a representative case of PIP was demonstrated. The color of postinflammatory papules (PIP) on the patient's mandibular area varies from brown to dark brown (Fig. 1). We hereby define PIP as a transitional eruption from red papules or pustules to PIH. Thus, we propose a new designation as "postinflammatory papule" for acne vulgaris. Nevertheless, further case reports are necessary to establish the concept of "postinflammatory papule." In addition, histopathological studies are necessary to confirm the presence of inflammation, noninflammatory infiltration, and scar tissue in PIP.



**Fig. 1** The color of postinflammatory papules (PIP) (arrow) on the patient's mandibular area varies from brown to dark brown

## ACKNOWLEDGEMENTS

**Funding.** No funding or sponsorship was received for this study or publication of this article.

**Authorship.** All named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for this article, take responsibility for the integrity of the work as a whole, and have given their approval for this version to be published.

**Author Contributions.** All authors contributed to the manuscript conception and design. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

**Disclosures.** Toshitatsu Nogita, Yuko Nomura and Ichiro Kurokawa, have nothing to disclose.

**Compliance with Ethics Guidelines.** This article is based on previously conducted studies

and does not contain any new studies with human participants or animals performed by any of the authors.

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