



Assessing the Burden of Post-Acne Erythema among Individuals Affected by Acne Vulgaris

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Abstract

While certain acne erythema lesions may naturally ameliorate over time, the lingering red marks post the resolution of acute inflammation, which is known as post-acne erythema (PAE), a common experience for most patients, are deemed cosmetically undesirable. Even though we know that acne affects about 9.4% of people, we are not exactly sure how common or widespread PAE is. Assessment of the prevalence and significance of PAE as potential sequelae following the resolution of acne vulgaris. This study was conducted on 267 acne vulgaris patients who attended the dermatology outpatient clinic in Minia university hospital. The patient undergo history taking and clinical classification of skin type according to Fitzpatrick skin types scale. This study revealed that only 10.11% of acne patients experience the burden of PAE. Skin type 3 followed by type 2-represent majority of cases presented with PAE. No significant differences in terms of patient age, gender and erythema duration between individuals with light skin types and those with dark skin types. Post-acne erythema is considered a complication arising from acne vulgaris affecting only a minority of patients. However, its impact is notably more pronounced among individuals with lighter skin types with no significant difference in incidence among individual with various skin colors.

Keywords: post-acne erythema, acne vulgaris

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1. Introduction

Acne vulgaris represents a prevalent and persistent chronic inflammatory skin condition affecting the pilosebaceous unit, exhibiting manifestations through both non-inflammatory and inflammatory lesions. Globally, it ranks as the eighth most widespread disease [1-2]. Dyspigmentation and scarring emerge as consequential outcomes in the natural progression of acne vulgaris. Dyspigmentation, in turn, is categorized into hyperpigmentation and macular erythema. The presence of macular erythema is indicative of ongoing inflammation, either persisting independently or contributing to atrophic scarring [3-4]. While certain acne erythema lesions may naturally ameliorate over time, the lingering red marks post the resolution of acute inflammation, a common experience for most patients, are deemed cosmetically undesirable. The persistence of post-acne erythema (PAE) poses a significant therapeutic challenge, potentially resulting in frustration and psychological distress. It is noteworthy that in certain cases, achieving complete clearance of post-inflammatory erythema

remains an elusive goal [5]. Furthermore, despite the well-established knowledge regarding the prevalence of acne vulgaris affecting approximately 9.4% of the general population, the precise scope and prevalence of PAE remain elusive and undetermined [6]. The primary objective of this study was to assess the prevalence and significance of PAE as potential sequelae following the resolution of acne vulgaris.

2. Materials and Methods

This study was conducted on 267 acne vulgaris patients who attended the dermatology outpatient clinic in Minia university hospital from October 2022 to April 2023. The sample size was calculated by epi info™ 7 program at 95% confidence limits, 50% expected prevalence and the population size was equal 879 patients. The patient undergo history taking and clinical classification of skin type according to Fitzpatrick skin types scale.

3. Results and discussion

This study revealed only a fraction of patients with acne vulgaris, specifically 27 (10.11%) individuals, experience the burden of PAE. The age of patients with PAE mean ± SD was 22.7 ± 5.3 years. However, the duration of PAE mean ± SD was 6.8 ± 2.6 months. Females represent majority of patients suffer from PAE represented 77.8% of cases (table 1). Moreover, skin type 3 followed by type 2-represent majority of cases with PAE representing 40.7% and 29.6% of cases respectively. However, individuals with skin type 4 and 5 represent the less extend of the cases representing 18.5% and 11.2% of cases respectively (table 1, figure 1). When comparing patients with PAE based on the Fitzpatrick skin types scale, our analysis revealed no significant differences in terms of patient age, gender and erythema duration between individuals with light skin types (type 1 – 3) and those with dark skin types (type 4 – 6), as indicated by the respective p-values 0.07, >0.99 and 0.936 (table 2). In our investigation, it became evident that the prevalence of PAE is relatively low among individuals diagnosed with acne. Despite its lower occurrence, the substantial prevalence of acne vulgaris as a disease highlights the consequential reach of this complication. The sheer extent of individuals affected by acne vulgaris implies that even a low prevalence of PAE translates into a considerable number of cases, underscoring the clinical significance of addressing and understanding the implications of these dermatological sequelae [7]. Moreover, this study revealed that the main burden of the diseases lies on individual with light skin types. This phenomenon can be

elucidated by considering that skin inflammation leads to color changes in both lightly and darkly pigmented skin. While redness is a common indicator in individuals with lighter skin tones, those with darker skin may exhibit a range of colors such as violaceous, grey, brown, dark brown, or black, alongside redness. Detecting these changes in darker skin requires attention to other inflammation signs. Importantly, redness may or may not be associated with inflammation, and inflammation may or may not manifest as redness [8]. Additionally, it is noteworthy that erythema, when observed in individuals with darker skin types, commonly appears as a distinctive violaceous hue, or may take on a nuanced spectrum ranging from ashen gray to a deeper brown color. This variation underscores the importance of nuanced observations when evaluating skin conditions in individuals with diverse pigmentation, as it contributes to a more comprehensive understanding of the spectrum of color changes indicative of erythema in different skin tones [9]. To our knowledge, this study stands as the inaugural exploration into the realm of PAE. The absence of prior extensive investigations on this specific aspect of acne sequelae highlights the pioneering nature of our research. By delving into this uncharted territory, our study aims to establish a foundation for future investigations, contributing valuable insights to the scientific community and emphasizing the importance of addressing this previously overlooked facet of acne-related dermatological concerns.

Table 1. Demographic data of patients with post acne erythema

		Cases N= 27
Gender: Male Female	N (%)	6 (22.2%) 21 (77.8%)
Age (years)	Mean ± SD	22.7 ± 5.3
Fitzpatrick skin type: Type 2 Type 3 Type 4 Type 5	N (%)	8 (29.6%) 11 (40.7%) 5 (18.5%) 3 (11.2%)
Erythema duration (months)	Mean ± SD	6.8 ± 2.6

Table 2. Demographic data comparison based on skin type of patients

		Light skin N= 19	Dark skin N= 8	p value
Gender: Male Female	N (%)	4 (21.1%) 15 (78.9%)	2 (25.0%) 6 (75.0%)	>0.99
Age (years)	Mean ± SD	21.5 ± 4.4	25.5 ± 6.4	0.07
Erythema duration (months)	Mean ± SD	6.8 ± 2.4	6.7 ± 3.4	0.936

Independent samples t-test for quantitative data, Fisher’s exact test for qualitative data *: significant level at p value <0.05

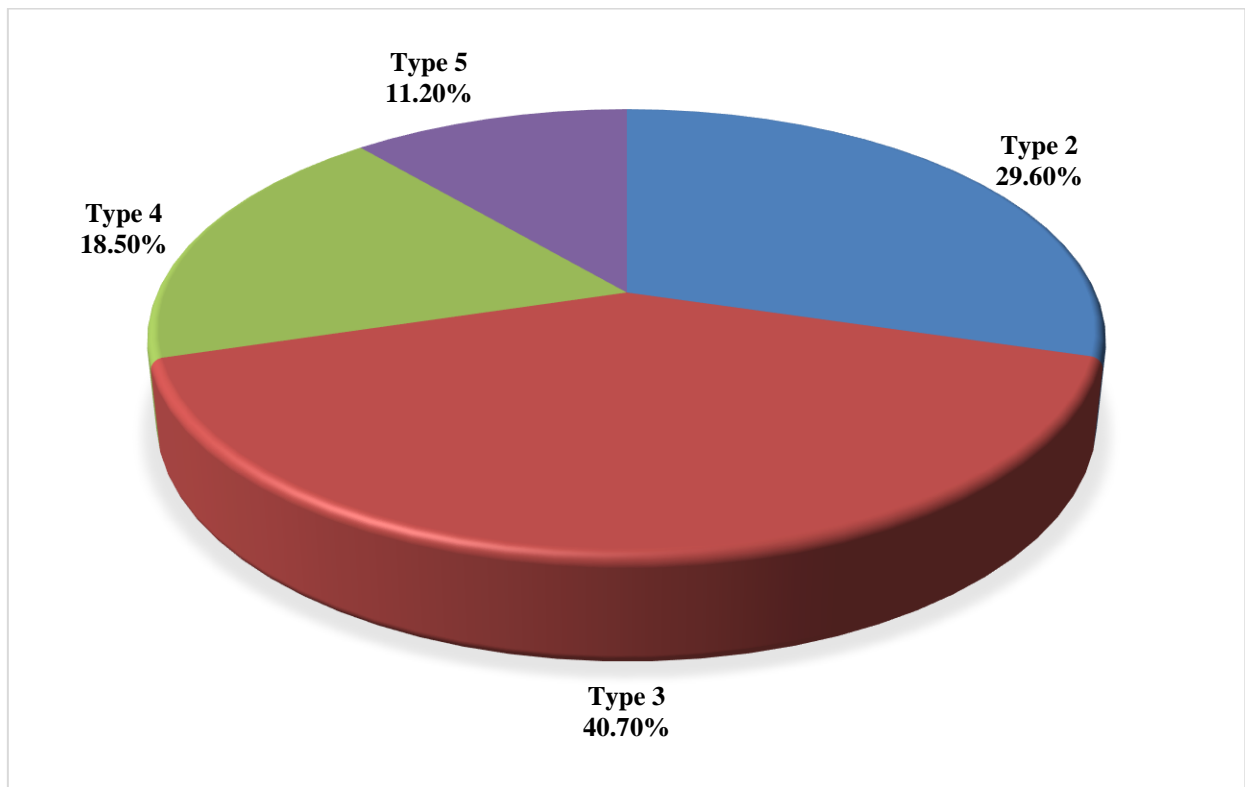


Figure 1. Pie chart of Fitzpatrick skin type of the studied patients

4. Conclusions

Post-acne erythema is considered a complication arising from acne vulgaris affecting only a minority of patients. However, its impact is notably more pronounced among individuals with lighter skin types with no significant difference in incidence among individual with various skin colors.

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