

Quantitative Documentation of a Premenstrual Flare of Facial Acne in Adult Women

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Objective: To quantitatively document the presence and extent of a late luteal (premenstrual) acne flare in adult women.

Design: Case series.

Setting: Subjects were recruited from a general community dermatology practice and by advertising.

Subjects: Adult women 18 to 44 years old with normal periods who were receiving no treatment for their acne.

Main Outcome Measures: Acne lesion counts were

surveyed over the follicular and luteal phases of 2 full menstrual cycles.

Results: Most (63%) of these women showed a 25% premenstrual increase in the number of inflammatory acne lesions.

Conclusion: This is the first quantitative documentation of the presence and degree of premenstrual acne flares in adult women.

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ALTHOUGH SEVERAL investigators have reported the presence of a flare in facial acne during the luteal phase of the menstrual cycle (the premenstrual flare), the presence and degree of flare have not been quantitatively assessed.¹⁻⁵ The exact hormonal cause for this flare is yet to be elucidated. On the basis of the effect of androgens on sebum production and follicular keratosis, hormonal therapy with oral contraceptives⁶ or with a physiologic dose of corticosteroids⁴ has been suggested and examined. The present study describes the results of a survey of acne lesion counts in the follicular and luteal phases of the menstrual cycle over 2 full cycles.

temic retinoids were allowed within 12 months, no systemic antimicrobials or topical retinoids within 1 month, and no other topical acne treatments within 2 weeks of enrollment. A subject was eligible for admission if at the pre-study visit she had at least mild inflammatory acne, defined as a minimum of 3 inflammatory lesions at least 2 mm in diameter and any number of comedones. These same subjects were subsequently enrolled in a separate controlled study of the effect of a 6% formulation of benzoyl peroxide (data on file, Medicis Pharmaceutical Corporation, Scottsdale, Ariz).

Subjects were evaluated over the course of 2 menstrual cycles for a total of 5 visits: a prestudy visit and 2 visits each during cycles 1 and 2—one between day 7 and day 12 (the late follicular phase), the other between day

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METHODS

STUDY DESIGN

This 2-month nontreatment study was conducted at an investigational center. It was designed to determine whether there was a premenstrual flare of acne in adult women. The study included institutional review board approval, and all subjects gave signed informed consent.

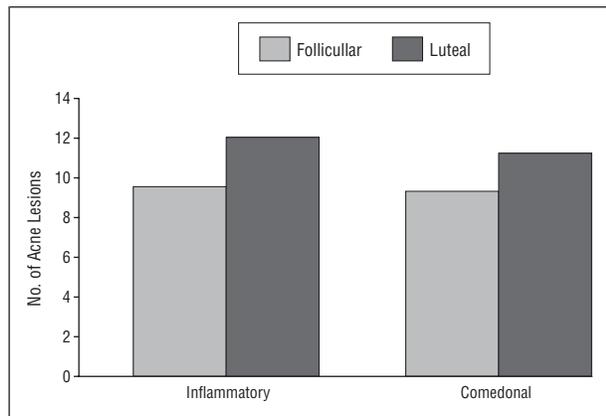
Subjects were nonpregnant, nonlactating women at least 18 years old in good general health and with regular menses. They were receiving no treatment for their acne. No sys-

temic retinoids were allowed within 12 months, no systemic antimicrobials or topical retinoids within 1 month, and no other topical acne treatments within 2 weeks of enrollment. A subject was eligible for admission if at the pre-study visit she had at least mild inflammatory acne, defined as a minimum of 3 inflammatory lesions at least 2 mm in diameter and any number of comedones. These same subjects were subsequently enrolled in a separate controlled study of the effect of a 6% formulation of benzoyl peroxide (data on file, Medicis Pharmaceutical Corporation, Scottsdale, Ariz).

Subjects were evaluated over the course of 2 menstrual cycles for a total of 5 visits: a prestudy visit and 2 visits each during cycles 1 and 2—one between day 7 and day 12 (the late follicular phase), the other between day 22 and day 28 (the late luteal phase). Clinical evaluations were limited to acne lesion counts.

Compliance with the nontreatment regimen and use of concurrent medications was assessed at each visit. Urine pregnancy tests were performed at the late luteal visit for both cycles. The primary measure of outcome analyzed was the premenstrual flare measured as the percent change in mean nontreatment acne lesions from the late follicular to the late luteal stage of the menstrual cycle.

From Dermatology Research Associates, Cincinnati, Ohio. The author has no relevant financial interest in this article.



Inflammatory and comedonal acne lesion counts at the follicular and luteal (premenstrual) phases of the menstrual cycle. The mean number of inflammatory lesions increased 25.3% ($P=.02$) and mean comedonal lesions increased 21.2% ($P=.05$) in the luteal phase of the menstrual cycle in 48 observations of 25 subjects over 2 cycles.

STATISTICAL ANALYSIS

The t test was used to compare the changes in lesions from late follicular to late luteal menstrual phase. All statistical analyses were performed using SAS software (SAS Institute Inc, Cary, NC), version 8.1.

RESULTS

DATA SET ANALYZED

Forty-one subjects were initially enrolled in the study. All subjects who were available for both the late follicular and the late luteal phase visits were considered for evaluation of premenstrual flare. This included 25 subjects in month 1 and 23 subjects in month 2 for a total of 48 evaluation points.

COMPLETIONS AND DISCONTINUATIONS

Of the 41 subjects initially enrolled in the study, 18 did not complete the protocol: 2 were excluded owing to irregular menses, 2 were lost to follow-up, and 14 dropped out because of the requirement to not treat their acne for 2 months, despite their knowledge of this requirement at enrollment.

EVALUATION OF PREMENSTRUAL FLARE

There were 48 subject evaluations comparing the follicular to the luteal acne lesion counts. In the whole group, the mean age was 31 ± 7.9 years (ranging from 18 to 44 years) with a mean duration of acne of 13.9 ± 8.8 years.

The degree of acne flare was measured as an increase in the mean number of inflammatory lesions from the follicular to the luteal phase of the menstrual cycle. The mean number of inflammatory lesions increased from 9.5 to 11.9, or 25.3%, a statistically significant premenstrual acne flare ($P=.02$). The comedonal lesion counts also showed a statistically significant increase from 9.2 to 11.1, or 21.2% ($P=.05$) (Figure). An increase in the number of inflammatory lesions in the luteal phase was

seen in 63% (30) of those evaluations. An increase in comedones was seen in 54% (26) of the evaluations.

COMMENT

Although it is widely quoted and seems to be common knowledge among the lay public, there is surprisingly little documentation of a premenstrual acne flare in adult women. Early articles quote the prevalence of premenstrual acne flares as high as 60% to 70%¹ and as low as 27%,⁷ but no data are presented to support either statement. Although there has been a lot of speculation about the effect of hormones on the menstrual flare of acne, no hypotheses or data are available. Fortunately, in 2001 Stoll et al⁵ published the first well-documented study of the effect of the menstrual cycle on acne. They administered a questionnaire to 400 patients with acne during treatment encounters and found an overall 44% prevalence of premenstrual flare. The 39% of adult women (aged 20-33 years) who had flare was similar.

The present study is the first to document the premenstrual acne flare with acne lesion counts. In this study, 63% of 25 adult women had more acne in the late luteal (premenstrual) than in the late follicular phase of their menstrual cycle. Furthermore, there was a 23.2% increase in total acne lesions, 25.3% being inflammatory lesions and 21.2% comedones. The higher prevalence of women with premenstrual acne flares that we found compared with the study conducted with questionnaires⁵ may reflect the difference in methods for assessing acne (acne lesion counts vs questionnaires), the difference in ascertainment of patients (volunteers for a study vs patients seeking care in an office), and the smaller number of subjects in our study. However, we believe that our observational data complement and confirm the results obtained by questionnaire that a significant number of adult women have a premenstrual flare of acne.⁵

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