

# The Interaction Between Acne Vulgaris and the Psyche

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*Acne is the most common problem that presents to dermatologists. Because it causes visible disfiguring of the face, it produces a great deal of embarrassment, frustration, anger, and depression in patients. In addition, acne is most common in adolescence and young adulthood, a time when patients are least capable of coping with additional stress. As a result, it is virtually impossible to separate acne from psychiatric disturbances. Some patients are severely affected and require more than just acne therapy. Dermatologists need to become more adept at diagnosing and treating causative, concomitant, and resultant psychiatric disturbances in patients with acne. This article is intended to highlight the scope of the problem, identify at-risk patients, and help dermatologists assist patients with both their acne and their psychologic response to it.*

Acne is the single most common skin problem in the United States, affecting 40 million adolescents and 25 million adults.<sup>1</sup> There are many opportunities for this condition to interface with the psychologic functioning of the patient. Although generally mild in severity, the coexisting psychologic abnormalities can be serious and even life threatening. This is not surprising because acne most often involves the face, which is visible to all. Also, it is most common during the time of life when patients are developing their sense of self and social skills. In many patients, acne is a disease in which the psychosocial consequences are more significant than the medical issues. We are well aware that successful acne treatment relies on the appropriate choice of therapeutic agents. We are less cognizant of the fact that

psychosocial counseling also may be an integral part of therapy.

According to R. Fried (written communication, October 1998), there are 5 general ways in which acne and the psyche interact: (1) acne can cause mental disturbances such as anger, depression, and frustration; (2) acne may worsen emotional factors in a patient's life; (3) acneform lesions can be a manifestation of mental disorders; (4) acne can decrease a patient's psychologic functioning and quality of life; and (5) acne medications may have psychiatric side effects. One difficulty in quantifying the significance of acne on quality of life is determining which is the chicken and which the egg—does acne cause the psychiatric distress, or does the stress of adolescence and other life changes exacerbate the acne?

## Effects of Acne on the Mental State

The impact of acne on the mental state of the patient has been recognized since at least 1948, when it was noted that "there is no single disease that causes more psychic trauma, more maladjustment between parents and children, more general insecurity and feelings of inferiority, and greater sums of psychic suffering than does acne vulgaris."<sup>2</sup> Since then, many studies have been performed that detail the detrimental effect of acne on the psyche.<sup>3-11</sup> Despite the abundance of these data, few practitioners spend adequate efforts evaluating the interactions between acne and the psyche.

The psychiatric effects of acne can be influenced by patient age and gender, baseline self-esteem issues, severity of the disease, response and support of friends and family, personality, and coping mechanisms. Its effects also can be influenced by underlying psychiatric disorders that may predate the onset of acne.

Adolescents are at the highest risk for mental disturbances from acne. Physical and emotional upheavals, which naturally occur at this time of life, can magnify the consequences of acne lesions. Hormonal volatility, issues relating to body image,

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sexuality, and dating can blow out of proportion even relatively minor acne lesions, resulting in long-term emotional and functional consequences. Studies have shown that 30% to 50% of adolescents have psychiatric disturbances related to their acne.<sup>3-8</sup>

Adult women may experience a resurgence or new onset acne vulgaris. Coupled with issues common to this age group, such as motherhood, sexuality, and occupational competence, these patients can experience psyche disturbances. Wu et al<sup>10</sup> found that adult women who either had or perceived themselves to have severe acne showed higher levels of anxiety and anger. Kellett and colleague<sup>9</sup> found that 44% of adult patients with acne also had clinically significant anxiety, and 18% reported depression. Women were more debilitated by acne than men.<sup>9</sup>

Studies have shown that these patients have increased anxiety and anger, in addition to documentably poor self-image.<sup>8</sup> Some studies show a link between acne severity and clinical depression.<sup>10,11</sup> However, even patients with mild to moderate acne vulgaris show significant psychiatric disturbances.<sup>12-14</sup> Gupta et al<sup>12</sup> showed that 3 of 10 patients with acne were clinically depressed. Treatment of acne in these studies resulted in amelioration of psychiatric disturbances, with the best response seen in patients with the best clinical improvement.<sup>12,15,16</sup> Treatment of acne scarring also may improve the psychiatric functioning of patients.<sup>17</sup>

### Effects of Emotional Factors on Acne

The relationship between stress levels and acne is firmly entrenched in the patients' belief system. Our colleagues, who frequently blame all types of skin ailments on stress, perpetuate this belief. This topic has been poorly and insufficiently explored.<sup>17</sup> The relationship is at least theoretically possible. Stress results in an increase in glucocorticoids and androgens, which could result in an acne flare. Schulpis et al<sup>18</sup> showed an association between psychologic states and sympathoadrenal status in patients with acne. Griesemer<sup>19</sup> found that patients with acne reported a lag time of 2 days between a stressful episode and the exacerbation of acne. Lorenz et al<sup>20</sup> found that intense anger also may aggravate acne severity. Acne improvement has been shown to be related to a reduction in both depression and anxiety, as well as to an increase in body image.<sup>12</sup>

Studies of stress-relief biofeedback techniques have shown improvement in acne severity.<sup>21</sup> Subsequent discontinuation of the techniques resulted in clinical worsening. Insight-oriented psychotherapy was shown to improve inflammatory dermatoses in 4 patients with recalcitrant disease.<sup>22</sup>

The relationship between stress and acne is likely to be highly variable, depending in part on the ability of individuals to handle the stresses in their lives. Additionally, potential reductions in medication compliance during times of stress must be considered. Stressful situations are not conducive to the use of any medication, and topical acne preparations may be the first to be discontinued.

### Effect of Acne on Functional Status

It is clear that acne has profound effects on the functional status of patients. Do the emotional changes result in decreased social, vocational, and academic functioning? Studies have shown that acne interferes with social activities such as dating and sports.<sup>13,23</sup> The severity of acne in both males and females is related to their lack of participation in and enjoyment of social activities.<sup>11</sup> Patients with severe acne show poorer academic performance<sup>4</sup> and higher unemployment rates than adults without acne (16.2% vs 9.2%).<sup>24</sup>

Adults with acne may be even more impaired functionally. Lasek and Chren<sup>25</sup> found that adults with acne are more severely affected with emotional symptoms than are adolescents.

### Acneform Lesions Manifest Underlying Psychiatric Disorders

Manipulation of the skin can result in lesions that resemble acne but are actually the results of self-mutilation. Such manipulations can be purposeful, as in delusions of parasitosis and acne excoriata, or largely unconscious. The severity of acne does not necessarily correlate with self-excoriating behavior, as shown in a study of 56 women with mild to moderate facial acne.<sup>26</sup> In this study, the authors found that poor self-concept and compulsive and perfectionistic personality traits were more highly predictive of patients who picked at their acne than was the severity of the acne at which they picked.

Other manifestations of underlying psychiatric disorders can be very subtle, such as noncompliance with medication. The most common disorders to present in this fashion include anxiety disorders such as obsessive-compulsive disorder (OCD), personality disorders such as borderline personalities, depressive disorders, and body dysmorphic disorder.<sup>26</sup> Patients with body dysmorphic disorder may perceive their acne as worse than it is, and their level of psychologic dysfunction is more related to their perception than reality. Wu et al<sup>10</sup> showed that patients who self-rated their acne as moderate or severe exhibited greater anxiety and anger than patients who believed their acne was mild. The true clinical severity, as graded by the observing

dermatologist, did not necessarily agree with that which was perceived by the patient. Van der Meeren et al<sup>27</sup> found that patients with severe acne were more focused on bodily functions, had a more self-defensive attitude, and were more neurotic than patients without acne.

### Psychiatric Problems Caused by Acne Medications

Isotretinoin has been reported by the manufacturers to be associated with a less than 1% incidence of depression, psychosis, suicidal ideations, suicide attempts, and suicide.<sup>27</sup> Despite the recent resurgence in the medical and lay press, the possible association with depression has been known for more than 20 years. However, this association has been more recently reexamined in the literature. In several studies, researchers have found no increase in depression, suicidal ideations, and suicide attempts in patients treated with isotretinoin.<sup>9,15,16,28-30</sup> Reports regarding depression and isotretinoin are largely anecdotal. Only a small number of these patients experienced a positive dechallenge and challenge.<sup>30</sup>

In fact, most studies have shown a reduction in depressive symptoms in patients with acne on isotretinoin.<sup>9,15,16,28-31</sup> Depression itself is more common in the age group prone to acne. Looking at a 30-day time frame, Blazer et al<sup>32</sup> showed that 6.1% of 15- to 24-year-olds experience major depression. This is compared with 4.9% of the total population. Suicide is fourth on the list of causes of death in adolescents. Suicide rates tripled in this age group between 1950 and 1990.<sup>30</sup> Most of the individuals in this age group also have concomitant acne. Some of these patients will have severe acne that may be a cause of the depression that, in turn, can be alleviated by isotretinoin.

Disregarding incidence reports, there is no rational reason to suspect that isotretinoin is capable of causing depression. There is no plausible mechanism of action by which retinoids would result in mood changes, and no other oral retinoid has ever been linked to depression.

Considering that isotretinoin clears or nearly clears acne in 75% of patients, it appears that more patients improve psychologically than deteriorate psychologically when on the drug. Suicide is multifactorial and is not a result of drug therapy without additional factors. It is my belief that all oral medications have the potential to cause psychiatric disturbances. However, drugs don't cause suicide. The most prudent approach is to make depression a part of the overall discussion of the risks and benefits of isotretinoin therapy and to

evaluate the patient at each visit using specific queries for symptoms of depression.

### Identifying Patients at High Risk for Acne-Related Psychiatric Problems

Now that we know to be clinically suspicious, how do we recognize these impaired patients, especially with our limited knowledge of clinical psychology and the patient visit time frames imposed by health maintenance organizations? We must be able to rapidly identify the patients with acne who need more than just prescriptions. This can be done by a brief and directed evaluation of psychiatric functioning. Motley and Finlay<sup>33</sup> recommend a simple method of identifying high-risk patients that requires minimal effort, psychiatric training, and ability. Utilizing a disability index obtained from a 5-minute questionnaire, patient perception of disease severity is compared with the clinical examination. Patients with highly disparate scores are those patients whose psychiatric issues are most important to address.<sup>33</sup> This technique also enables interpatient and inpatient evaluations over time as treatment continues.

High-risk patients may present subtly, as do those with body dysmorphic disorder. They may seem excessively concerned about very minor acne and may fail to recognize significant clinical improvement. Other high-risk patients have impaired basic interpersonal skills and disrupted family lives. There may be a concomitant change in peer groups and a decrease in academic functioning.

High-risk patients often engage in limited conversation with poor eye contact. They may show anger, irritability, depression, agitation, anxiety, or compulsive behaviors. Depression often manifests more subtly in patients with acne, including mild anhedonia, lethargy, pessimism, social withdrawal, and decreased compliance. There may be signs of self-mutilation and a history of drug or alcohol use. Suicidal and/or homicidal ideations rarely may be noted. The possibility of suicidal ideations or disorders of impulse control can be addressed directly.

Often, the ability to determine the level of psychiatric functioning of the patient is determined by our ability to have a one-on-one discussion with the teenage patient in private. The description of high-risk patients detailed above can easily be used to describe a sullen teenager with poor social skills. If possible, teenage patients should be examined in private, inviting parents in for the therapeutic discussion at the end of the visit. Malus et al<sup>34</sup> found that although acne was rated as a high-priority issue by adolescents, fewer than one third of them actually discussed the issue with their physicians.

Kligman<sup>35</sup> points out that it is rare for a teenager to not have some degree of acne. Perhaps because acne is considered to be a normal part of adolescence, it is often overlooked or trivialized by parents. Because virtually 100% of adolescents experience some acne, clinicians should not focus on whether or not it exists but how much exists and how much it bothers the patient.<sup>35</sup> It is unimportant to consider how much it would bother us or how much it bothers the parents of the patient. Many adolescents consider acne to be a normal part of growing up and are more bothered by medications and their side effects than by a few lesions. Forcing treatment on them will only worsen the doctor-patient relationship. It also puts further strain on the parent-child relationship when the medication does not get used. Clinicians must recognize the child who does not want to be treated and honor that decision. We are the referees between the patient and parent in this situation, and it is incumbent upon us to suggest that treatment and office visits be terminated when the patient does not desire treatment.

### Intervention

Intervention designed to impact on the interrelationship between the psyche and acne can begin by focusing on improving the cutaneous abnormalities, the psychiatric abnormalities, or both, depending on which the clinician believes is the inciting or more significant event.

*Acne Treatment in the Patient With Psychiatric Disturbances*—Several issues must be considered when treating patients with acne who are psychiatrically disturbed. Speed of improvement and the ability of the patient to tolerate potential side effects may alter the approach generally used. Patients with severe psychiatric disturbances resulting from their acne may warrant a more aggressive therapeutic plan than their clinical appearance indicates. For these patients, any evidence of improvement can be of enormous importance, and the sooner this is accomplished the better. Aggressive intralesional steroids, acne surgery, desquamating treatments, and occasionally oral corticosteroids speed initial improvement.

Alternatively, patients who are already decompensating from their acne may be unable to incur any additional problems caused by medication side effects. In these patients, it is not advisable to use medications that are more likely to result in adverse effects. We must help patients weigh the risks and benefits of each medication and be willing to alter our usual approach to accommodate their particular needs. Involving the patient in the therapeutic

choices establishes a better relationship than simply thrusting them prescriptions without an explanation of the decision-making process. Some patients actually come to relish the desquamation and irritation that can accompany retinoid use because they perceive the side effects to be evidence that a treatment is finally working.

Whatever the approach, all patients benefit from calm, unhurried discussions coupled with written instructions addressing the most common issues they will face during therapy. Realistic therapeutic goals and expectations should be discussed, especially at the initial visit. Patients must be warned about the lag time between beginning medication and experiencing clinical improvement. Frustration with initial flares of disease or time to improvement often results in medication discontinuation. It is well known that patients who discontinue medications before seeing improvement are reluctant to retry them.

Acne discussions are not complete until patients are fully aware of all aspects of facial skin care. Soaps, moisturizers, sunscreens, and cosmetics must be discussed. Irritating substances such as astringents, masks, and scrubs that may worsen acne or affect the patients' ability to use their medications should be noted and discontinued. The use of acnegenic and comedogenic substances such as hair pomades and cocoa butter products should be elicited. Myths concerning food and beverage consumption should be debunked. Patients appreciate specific recommendations and brand names of products, even if we truly have no preferences. Patients also benefit from and appreciate cosmetic tips for concealing lesions. Clinicians and their staff can discuss this with them, or they can read about it in literature. The fewer decisions that traumatized patients make on their own, the better. Pharmaceutical Web sites have been established to help patients with acne to better understand their condition. Thus, teens who may be uncomfortable asking questions can read about their concerns or "ask the experts" anonymously.

*Treatment of Psychiatric Disturbances Associated With Acne*—After psychiatrically disturbed patients are identified, how can they realistically be helped given the time restraints, knowledge base, and talents of clinicians? Most practitioners believe these patients should be treated by specialists with more training; however, they also recognize that most patients will refuse psychiatric referral, which puts them in the position of being a psychocutaneous physician as a temporizing measure. Considering that acne is the most common skin disorder and that many such patients have

Table 1.

**Intervention**

## Nonpharmacologic

Empathy

Support groups

Biofeedback

## Pharmacologic

Anxiolytics

Antidepressants

Antipsychotics

Table 2.

**Anxiolytics and Their Starting Doses\***

## Benzodiazepines

Alprazolam (Xanax®) 0.025–0.5 mg QHS

Lorazepam (Ativan®) 1 mg QHS

Olanzapine (Zyprexa®) 2.5 mg QHS

## Nonbenzodiazepines

Hydroxyzine (Atarax®) 50 mg QHS

Diphenhydramine (Benadryl®) 50 mg QHS

Buspirone (BuSpar®) 5–10 mg TID

\*QHS indicates every night; TID, 3 times a day.

psychiatric issues, it is incumbent upon dermatologists to learn to treat these patients effectively.

The level of distress and disturbance that the patient manifests dictates intervention. Intervention techniques can be nonpharmacologic, pharmacologic, or a combination of the two (Table 1).

Nonpharmacologic interventions include empathy, support, and validation of the patients' feelings. The actual laying on of hands can be very helpful in patients with disorders such as acne, which can make them feel ugly and untouchable. Informative literature on the causes, prognosis, and treatment of acne can go a long way in allaying fears. Support

groups are often very helpful, especially for teenage patients. Biofeedback training and individual and group psychotherapy may be necessary.

Pharmacologic interventions include anxiolytics, antidepressants, and antipsychotics in low doses to avoid side effects. It is easiest for beginning clinicians to choose a single agent from each group until they are comfortable with their use. As they become more experienced, they can branch out to other agents.

Anxiolytics (Table 2) such as the benzodiazepines and nonbenzodiazepines are particularly helpful in patients with OCD. Olanzapine has been reported to work well in the treatment of acne excoriation.<sup>36</sup> Long-term management with the benzodiazepines, however, may result in addiction and rebounding issues. Hydroxyzine and diphenhydramine are mild anxiolytics, but the side effect of sedation often precludes their use. Buspirone is a more efficacious drug that is less likely to cause addictive behavior and therefore is a good introduction to the anxiolytics.

Antidepressants include the tricyclics and the selective serotonin reuptake inhibitors (SSRIs) (Table 3). The majority of dermatologists are most comfortable using the SSRIs, which avoid the tricyclic side effects of sedation, anticholinergic effects, and possible cardiotoxicity. Also, many patients already have been on one or more of these drugs without side effects. Patients with OCD do particularly well with the SSRIs. Doxepin is a mild, sedating antipsychotic that can decrease itch; thus, it may be a helpful drug for depressed patients to use at night. Dermatologists often are more comfortable with doxepin than with antipsychotics that are more prone to side effects.

Antipsychotics also include haloperidol and pimozide (Table 4). Haloperidol, and to a lesser extent pimozide and risperidone, can cause problematic extrapyramidal side effects, including tardive dyskinesia. Because pimozide use can result in prolongation of the Q-T interval, frequent electrocardiograms are recommended in the early phases of treatment. Although the entire class can cause sedation and hypotension, risperidone does so most notably. As a result, many dermatologists are not comfortable with this class of medications. However, doxepin is a mild antipsychotic with few side effects and a long dermatologic track record. Some patients will agree to a consultation with a psychopharmacologist who will make therapeutic suggestions and monitor response without psychotherapy.

**Conclusion**

There is a strong interaction between acne and psychiatric functioning. Psychiatric illness can be

Table 3.

**Antidepressants and Their Starting Doses\***

## Tricyclics

Doxepin (Sinequan®, Adapin®) 25–75 mg QHS

Nortriptyline (Pamelor®) 25–75 mg QHS

Amitriptyline (Elavil®) 25–75 mg QHS

## Selective serotonin reuptake inhibitors

Fluoxetine (Prozac®) 10–20 mg QD

Sertraline (Zoloft®) 50 mg QD

Paroxetine (Paxil®) 10–20 mg QD

Nefazodone (Serzone®) 50–100 mg QD

\*QHS indicates every night; QD, every day.

Table 4.

**Antipsychotics and Their Starting Doses\***

Haloperidol (Haldol®) 1–2 mg QD

Pimozide (Orap®) 1–6 mg QD

Risperidone (Risperdal®) 2–8 mg QD

Doxepin (Sinequan®, Adapin®) 25–75mg QHS

\*QD indicates every day; QHS, every night.

causal for acneform eruptions or sequelae to living with the skin disease. Regardless of which is the chicken and which is the egg, acne can alter the mental and functional status of the patient. It is incumbent upon dermatologists to recognize the troubled patient and offer assistance. Earlier, effective cutaneous therapy can improve psychiatric functioning. More aggressive treatment may be indicated earlier in selected patients whose quality of life is severely impaired. Because many patients are not willing to seek psychiatric help, it is our job to provide empathy and other forms of nonpharmacologic therapy as we become more adept at pharmacologic therapy.

**REFERENCES**

- White GM. Recent findings in the epidemiologic evidence, classification, and subtypes of acne vulgaris. *J Am Acad Dermatol.* 1998;39(suppl):S34-S37.
- Sulzberger MB, Zaidems SH. Psychogenic factors in dermatological disorders. *Med Clin North Am.* 1948;32:669-673.
- Feldman W, Hodgson C, Corber S, et al. Health concerns and health-related behaviours of adolescents. *CMAJ.* 1986;134:489-493.
- Jowett S, Ryan T. Skin disease and handicap: an analysis of the impact of skin conditions. *Soc Sci Med.* 1985;20:425-429.
- Gupta MA, Gupta AK, Schork NJ. Psychosomatic study of self-excoriate behaviour among male acne patients: preliminary observations. *Int J Dermatol.* 1994;33:846-848.
- Gupta MA, Gupta AK. Depression and suicidal ideation in dermatology patients with acne, alopecia areata, atopic dermatitis and psoriasis. *Br J Dermatol.* 1998;139:846-850.
- Morgan M, McCreedy R, Simpson J, et al. Dermatology quality of life scales—a measure of the impact of skin diseases. *Br J Dermatol.* 1997;136:202-206.
- Koo J. The psychosocial impact of acne: patient's perceptions. *J Am Acad Dermatol.* 1995;32(suppl):S26-S30.
- Kellett SG, Gawkrödger DJ. The psychosocial and emotion impact of acne and the effect of treatment with isotretinoin. *Br J Dermatol.* 1999;140:273-282.
- Wu SF, Kinder BN, Trunnell TN, et al. Role of anxiety and anger in acne patients: a relationship with the severity of the disorder. *J Am Acad Dermatol.* 1988;18:325-333.
- Pearl A, Arroll B, Lello J, et al. The impact of acne: a study of adolescents' attitudes, perception and knowledge. *N Z Med J.* 1998;111:269-271.
- Gupta MA, Gupta AK, Schork NJ, et al. Psychiatric aspects of the treatment of mild to moderate facial acne: some preliminary observations. *Int J Dermatol.* 1990;29:719-721.
- Motley RJ, Finlay AY. How much disability is caused by acne? *Clin Exp Dermatol.* 1989;14:194-198.
- Niemeier V, Kupfer J, Demmelbauer-Ebner M, et al. Coping with acne vulgaris. evaluation of the chronic skin disorder questionnaire in patients with acne. *Dermatology.* 1998;193:108-115.
- Rubinow DR, Peck GL, Squillace KM, et al. Reduced anxiety and depression in cystic acne patients after successful treatment with oral isotretinoin. *J Am Acad Dermatol.* 1987;17:25-32.
- Newton JN, Mallon E, Klassen A, et al. The effectiveness of acne treatment: an assessment by patients of the outcome of therapy. *Br J Dermatol.* 1997;137:563-567.
- Jordan R, Cummins C, Burls A. Laser resurfacing of the skin for the improvement of facial acne scarring: a systematic review of the evidence. *Br J Dermatol.* 2000;142:413-423.

18. Schulpis K, Georgala S, Papakonstantinou ED, et al. Psychological and sympatho-adrenal status in patients with cystic acne. *J Eur Acad Dermatol Venereol.* 1999;13:24-27.
19. Griesemer RD. Emotionally triggered disease in a dermatologic practice. *Psychiatr Ann.* 1978;8:407-412.
20. Lorenz TH, Graham DT, Wolf S. The relation of life stress and emotions to human sebum secretion and to the mechanism of acne vulgaris. *J Lab Clin Med.* 1953;41:11-28.
21. Hughes H, Brown BW, Lawlis GF, et al. Treatment of acne vulgaris by biofeedback, relaxation, and cognitive imagery. *J Psychosom Res.* 1983;27:185-191.
22. Koblenzer CS. Psychotherapy for intractable inflammatory dermatoses. *J Am Acad Dermatol.* 1995;32:609-612.
23. Krowchuk DP, Stancin T, Keskinen R, et al. The psychosocial effects of acne on adolescents. *Pediatr Dermatol.* 1991;8:332-338.
24. Cunliffe WJ. Acne and unemployment [letter]. *Br J Dermatol.* 1986;115:386.
25. Lasek RJ, Chren MM. Acne vulgaris and the quality of life of adult dermatology patients. *Arch Dermatol.* 1998;134:454-458.
26. Gupta MA, Gupta AK, Schork NJ. Psychological factors affecting self-excoriative behavior in women with mild-to-moderate facial acne vulgaris. *Psychosomatics.* 1996;37:172-180.
27. Accutane [package insert]. Nutley, NJ: Roche Pharmaceuticals; 2000.
28. van der Meeren HL, van der Schaar WW, van den Hurk CM. The psychological impact of severe acne. *Cutis.* 1985;35:84-86.
29. Peck GL, Olsen TG, Butkus D, et al. Isotretinoin versus placebo in the treatment of cystic acne: a randomized double-blind study. *J Am Acad Dermatol.* 1982;6(4 pt 2 suppl):735-745.
30. Koo J. Is depression from isotretinoin real? Presented at: 26th Annual Hawaii Dermatology Seminar; February 1, 2002; Maui, Hawaii.
31. Jick SS, Kremers HM, Vasilakis-Scaramozza C. Isotretinoin use and risk of depression, psychotic symptoms, suicide, and attempted suicide. *Arch Dermatol.* 2000;136:1231-1236.
32. Blazer DG, Kessler RC, McGonagle KA, et al. The prevalence and distribution of major depression in a national community sample. *Am J Psych.* 1994;151:979-986.
33. Motley RJ, Finlay AY. Practical use of a disability index in the routine management of acne. *Clin Exp Dermatol.* 1992;17:1-3.
34. Malus M, LaChance PA, Lamy L, et al. Priorities in adolescent health care: the teenager's viewpoint. *J Fam Pract.* 1987;25:159-162.
35. Kligman AM. An overview of acne. *J Invest Dermatol.* 1974;62:268-287.
36. Gupta MA, Gupta AK. Olanzapine may be an effective adjunctive therapy in the management of acne excoriata: a case report. *J Cut Med Surg.* 2001;5:25-27.