

RESEARCH IN BRIEF

Mood changes and clinical decision making in adolescent patients on isotretinoin therapy for acne vulgaris

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Abstract

Although numerous studies have demonstrated no causal relationship between isotretinoin and depression or suicide, subtle mood changes and idiosyncratic mood symptoms have been reported in patients on isotretinoin treatment for acne vulgaris, and few studies have described the full range of mood symptoms and clinical course after a mood change arises. We reviewed 247 patients, ages 10–25 years, with acne vulgaris on isotretinoin and found that 26/247 (10.5%) patients experienced mood changes, the most common being depressive symptoms, anxiety, aggression, and emotional lability. Regardless of treatment management, 22/25 (88%) patients experienced improvement of mood symptoms to baseline, and 22/25 (88%) were able to complete their isotretinoin course without symptom recurrence. Our findings highlight the importance of monitoring for a broad range of mood changes in patients on isotretinoin, especially those related to a pre-existing mood disorder and including those which do not meet formal criteria for a psychiatric disorder.

KEYWORDS

acne vulgaris, adolescent, depression, isotretinoin, mood changes

1 | INTRODUCTION

Isotretinoin is a highly efficacious therapy for moderate to severe acne vulgaris.¹ Psychiatric disturbances have been reported in patients on isotretinoin, though recent literature does not support a causal relationship between isotretinoin and depression or suicidality.^{2–4} However, this does not preclude idiosyncratic reactions or more subtle mood changes that can occur during isotretinoin treatment.⁵ Current recommendations suggest that clinicians closely monitor patients on isotretinoin for psychiatric symptoms.⁶ In this study, we aimed to describe the range and clinical course of mood changes that occurred during isotretinoin treatment in adolescents and young adults to aid providers in screening and managing these symptoms.

Kelsey Gradwohl and Michelle Verghese contributed equally to this study.

2 | METHODS

We conducted a retrospective chart review and identified 315 patients with acne vulgaris who received isotretinoin treatment between August 1 2010 and August 31 2021 at the University of Chicago Dermatology Clinic, and were ages 10–25 years old at the time of treatment initiation. Sixty-seven patients were excluded for having only one visit without documented follow-up during the study period.

A mood change was defined by any mention of a change in mood in the patient's electronic medical record (EMR), including the visit note. A pre-existing mood disorder included any formally diagnosed psychiatric disorder, or mood symptoms (history of aggressive behavior), noted via self-reporting in the EMR. To compare characteristics of patients with mood changes versus those without, we used chi-squared tests for categorical variables and two-sided independent

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TABLE 1 Characteristics of adolescent patients with versus without mood changes while on isotretinoin therapy.

Characteristic	No./total (%)			p-value
	Full sample	Experienced mood change		
		Yes	No	
No. of patients	247	26/247 (10.5)	221/247 (89.5)	
Age				
Mean (SD)	18.3 (3.1)	16.6 (2.8)	18.5 (3.1)	.004 ^a
Sex				
Female	107/247 (43.3)	7/26 (26.9)	100/221 (45.2)	.074 ^b
Male	140/247 (56.7)	19/26 (73.1)	121/221 (54.8)	
Pre-existing mood disorders				
Yes	42/247 (17.0)	10/26 (38.5)	32/221 (14.5)	.002 ^b
No	205/247 (83.0)	16/26 (61.5)	189/221 (85.5)	
Race				
White	163/247 (66.0)	19/26 (73.1)	144/221 (65.2)	.789 ^b
Asian/Mideast Indian	34/247 (13.8)	4/26 (15.4)	30/221 (13.6)	
Black	25/247 (10.1)	2/26 (7.7)	23/221 (10.4)	
Multiple races	19/247 (7.7)	1/26 (3.8)	18/221 (8.1)	
Patient declined	6/247 (2.4)	0/26 (0)	6/221 (2.7)	
Ethnicity				
Hispanic/Latino	34/247 (13.8)	5/26 (19.2)	29/221 (13.1)	.562 ^b
Not Hispanic/Latino	209/247 (84.6)	21/26 (80.8)	188/221 (85.1)	
Patient declined	4/247 (1.6)	0/26 (0)	4/221 (1.8)	
Scarring present				
Yes	148/247 (59.9)	20/26 (76.9)	128/221 (57.9)	.061 ^b
No	99/247 (40.1)	6/26 (23.1)	93/221 (42.1)	
Duration of treatment, days				.028 ^a
Mean (SD)	210.8 (142.5)	268.8 (233.6)	203.9 (126.7)	
Cumulative dose, mg/kg				
Mean (SD)	131.3 (64.1)	125.6 (65.8)	132.0 (64.1)	.636 ^a

^aP-values determined using two-sided independent sample t-test.

^bP-values determined using chi-squared test.

t-tests for continuous variables. P values <.05 were considered statistically significant.

3 | RESULTS

Of the 247 patients included in the analysis, 26 (10.5%) experienced mood changes (Table 1). Patients who experienced mood changes during treatment with isotretinoin were younger than patients who did not (16.6 ± 2.8 vs. 18.5 ± 3.1, *p* = .004). Additionally, patients who experienced mood changes while on isotretinoin were more likely to have pre-existing mood disorders than those that did not experience mood changes (38.5% vs. 14.5%, *p* = .002). Patients who experienced mood changes had a longer duration of treatment than patients without mood changes (268.8 ± 233.6 days vs. 203.9 ± 126.7 days, *p* = 0.028), though there was no difference in cumulative dose (*p* = .636).

Depressive symptoms were the most common mood change described (29.7%), followed by anxiety (24.3%), aggression (10.8%), and emotional lability (10.8%) (Table 2). Other, less common, mood symptoms included insomnia, difficulty concentrating, irritability, compulsive behaviors, and decreased libido. 3/26 (11.5%) experienced mood changes that resulted in a new psychiatric diagnosis noted in their EMR within 2 months of stopping isotretinoin. Mood changes occurred at an average of 2.79 ± 2.13 months after initiation of treatment, at an average daily dose of 0.70 ± 0.29 mg/kg and cumulative dose of 66.7 ± 69.4 mg/kg.

Upon the emergence of mood changes, 10/26 (38.5%) chose to continue treatment at the same dose; 8/26 (30.8%) chose to reduce their dosage by half; and 8/26 (30.8%) chose to stop isotretinoin. Excluding one patient who was lost to follow-up, 22/25 (88%) experienced improvement of mood symptoms back to baseline, with an even distribution across the three groups, and 22/25 (88%) completed their course without recurrence of mood symptoms. Symptoms improved in an average of 4.58 ± 4.31 weeks.

TABLE 2 Types of mood changes and their rates of occurrence in adolescent patients on isotretinoin therapy.

Mood change	Descriptors included	No./total mood changes (%)
Depressive symptoms	Low mood, in a lull, felt sad, anhedonia, feeling lonely, decreased appetite	11/37 (29.7)
Anxiety	Anxiety, nervousness, social anxiety, stress	9/37 (24.3)
Aggression or impulsivity	Aggressive, hitting others, short temper, quick to anger	4/37 (10.8)
Emotional lability	Mood swings, moody/erratic, moodiness	4/37 (10.8)
Insomnia	Insomnia	3/37 (8.1)
Difficulty concentrating	Difficulty concentrating, distractibility	2/37 (5.4)
Irritability	Irritable	1/37 (2.7)
Compulsive behaviors	Compulsive skin picking	1/37 (2.7)
Decreased libido	Decreased libido	1/37 (2.7)

4 | DISCUSSION

Overall, the prevalence of mood changes in our study is comparable to previously published results.^{7,8} The majority of mood changes observed here were short lasting and did not meet formal criteria for a mood disorder. Additionally, the resolution of mood symptoms among patients who stayed at the same isotretinoin dose, and the lack of mood symptom recurrence among patients who stopped and restarted isotretinoin supports that changes in mood during isotretinoin treatment are likely multifactorial. They may also, in part, reflect a high baseline rate of mood symptoms in young adults, with national estimates reporting that 14.3% of adolescents meet criteria for mood disorders, 31.9% for anxiety disorders, and 19.1% for behavioral disorders.⁹

Limitations include that the study was conducted at a single site which may limit generalizability. The study was not designed to assess causality, thus the observed mood changes may be multifactorial and not solely due to isotretinoin. Mood changes and pre-existing disorders were recorded from the EMR which can contain documentation errors. Finally, the small sample size of patients with mood changes limited our ability to determine significant differences in outcome measures between treatment courses.

5 | CONCLUSION

In conclusion, we observed a range of mood changes in adolescents during isotretinoin treatment, most of which were short in duration and improved to baseline regardless of treatment management. Our

findings emphasize the importance of screening acne patients on isotretinoin for pre-existing mood disorders and monitoring for a broad range of mood symptoms at monthly visits.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

CONSENT STATEMENT

Consent was not required since data were de-identified. Study was approved by the University of Chicago Biological Sciences Division Institutional Review Board (IRB21-1712).

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