Laxative Withdrawal and Anxiety in Bulimia Nervosa

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Symptoms of anxiety can be prominent during treatment of bulimia nervosa. Our experience is that bulimics who abuse laxatives have the most prominent symptoms of anxiety. We conducted ratings of anxiety in 23 bulimics who purge with laxatives and 17 who purge by vomiting. We found that the laxative-abusing group had higher levels of state but not trait anxiety and that they were more likely to be treated with medication for anxiety during hospitalization. These data suggest an association between laxatives and anxiety in bulimia nervosa. © 1995 by John Wiley & Sons, Inc.

It has been our clinical experience that it is particularly difficult to engage a subgroup of eating disorder patients in treatment, namely those who abuse laxatives containing phenolphthalein (Correctol, Ex-Lax, etc.) These patients tend to have high levels of anxiety when laxatives are acutely discontinued. These overwhelming symptoms of anxiety often cause these patients to want to flee treatment and thus they may leave the hospital against medical advice during the first week of hospitalization. This observation raises the question as to whether there is a link between laxative use and anxiety.

Laxative use is very common in Western culture with 4.9% of adult women reporting regular use of laxatives (Fairburn & Cooper, 1984). Studies suggest that the prevalence of laxative use is between 43 and 75% for patients with normal weight bulimia (Russell, 1979; Johnson & Berndt, 1983; Pyle, Mitchell, & Eckert, 1981; Abraham & Beumont, 1982;

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Mitchell, Hatsukami, Eckert, & Pyle, 1985) and 37% for bulimic anorexic patients (Casper, Eckert, Halmi, Goldberg, & Davis, 1980).

The aim of this pilot study was to compare levels of anxiety in two groups of bulimics, those who use laxatives on at least a weekly basis and those who have never used laxatives. We wanted to determine whether levels of anxiety were increased in a group of women with bulimia nervosa who had abused laxatives prior to admission compared to a group who had not.

METHOD

This study was conducted on the inpatient eating disorder unit at the University of Pittsburgh, Western Psychiatric Institute and Clinic. All subjects gave informed consent and were assessed after admission for inpatient treatment of bulimia nervosa. All subjects met criteria for bulimia nervosa by DSM-III-R.

Two groups of bulimics were chosen from sequential admissions. First, a group of bulimic patients who had no previous history of laxative use and second, a group of bulimic patients who used phenolphthalein-type laxatives weekly for at least 3 months were selected for the study. The second group of subjects could also purge by vomiting.

All subjects completed the State-Trait Anxiety Inventory (STAI; Speilberger, Gorush, & Lushene, 1970), a 40-question instrument designed to determine state- and trait-related anxiety. Patients were assessed a mean of 11.7 ± 11.2 (range 0 to 52) days after admission.

Data Analysis

Tests for normality and equality of variances were performed prior to parametric analysis. Variables not meeting these criteria were transformed prior to parametric analysis. Group comparisons were done using group t tests. All statistical analyses were done using BMDP statistical software (BMDP Statistical Software, 1988). Units are expressed as mean ± standard deviation.

RESULTS

Seventeen nonlaxative-abusing bulimics and 23 laxative-abusing bulimics were studied (Table 1). Both groups had similar demographic characteristics. The laxative-abusing patients used an average of 26 ± 36 phenolphthalein laxatives a week (range 5 to 140). Compared to the nonlaxative-abusing patients, we found that the laxative-abusing patients had significantly higher scores on the STAI-State (57.1 ± 14.6 vs. 46.8 ± 13.3; $t = 2.29$, $p \leq .05$; Figure 1A) but not on the STAI-Trait scales (58.1 ± 11.8 vs. 53.1 ± 10.9; Figure 1B). Scores on these scales did not correlate with age, duration of illness, purging frequency, or any other weight characteristics.

We also compared anxiety ratings in patients who received alprazolam during hospitalization to those who did not. The group that received alprazolam [$n = 13$; mean dose 2.2 mg/day (range .125 to 6 mg/day)] had significantly higher scores on the STAI-State (46.7 ± 14.6 vs. 60.3 ± 11.4, $t = 3.11$, $p \leq .01$) but not on the STAI-Trait (51.9 ± 11.1 vs. 58.1 ± 9.6, $t = 1.77$, $p = .09$) compared to the group that did not receive alprazolam. We found that significantly fewer of the nonlaxative-abusing patients (1 of 17) was treated

Table 1. Patient Characteristics

	Nonlaxative Patients (N = 17)	Laxative Patients (N = 23)
Current age (years)	20.3 ± 5.0	22.3 ± 5.2
Duration of illness (years)	5.0 ± 4.4	6.3 ± 3.6
Current weight (% ABW)	97.9 ± 14.4	92.3 ± 15.5
Lowest weight (% ABW)	81.7 ± 10.8	82.9 ± 2.6
Highest weight (% ABW)	118.7 ± 18.6	116.8 ± 19.4
Binge frequency (binges/week)	14.0 ± 9.4	10.6 ± 8.9
Vomit frequency (vomit/week)	16.3 ± 9.8	11.1 ± 9.9
STAI-State*	46.8 ± 13.3	57.1 ± 14.6
STAI-Trait	53.1 ± 10.9	58.1 ± 11.8

Note. ABW = average body weight for height; STAI = State-Trait Anxiety Inventory.
* $p \leq .05$.

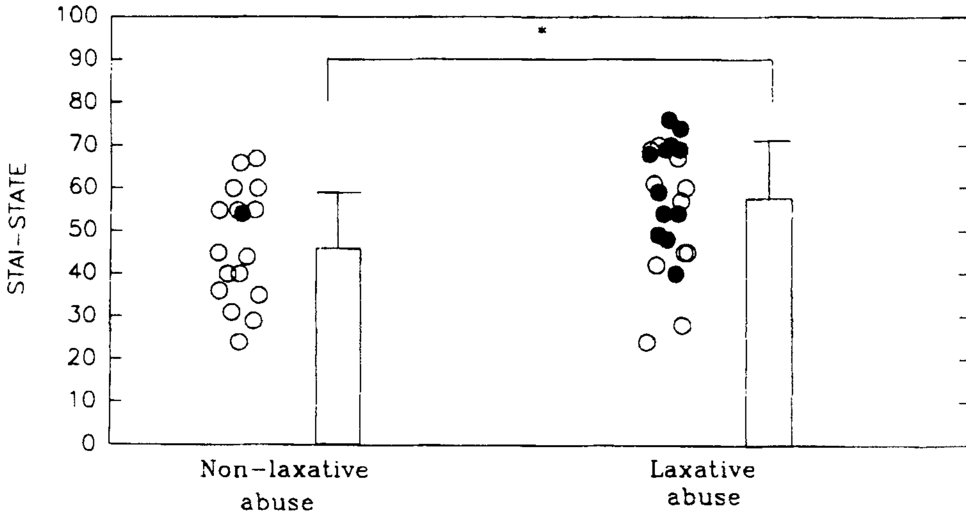
with alprazolam compared to 12 of the 23 laxative-abusing patients (Fisher's exact test statistic = 9.920, $p \leq .01$).

DISCUSSION

This study provides evidence supporting our clinical observation that laxative discontinuation in eating disorder patients is associated with increased levels of anxiety. The clinical importance of addressing laxative abuse as a problem with these patients cannot be overemphasized. Frequently bulimic patients admitted for inpatient treatment experience anxiety symptoms severe enough to inhibit eating. In our experience, laxative-abusing patients have the most significant levels of anxiety that often contribute to premature termination of treatment. In these situations, a brief course of alprazolam may facilitate treatment, particularly in a structured inpatient program.

Mitchell, Boutacoff, Hatsukami, Pyle, and Eckert (1986) reported that laxative abusers, in addition to having increased diuretic and diet pill use, had an increased prevalence of suicide attempts, self-injurious behaviors, and inpatient treatment for depression suggesting greater psychopathology in this population. A recent study has examined anxiety in laxative-and nonlaxative-abusing patients with bulimia nervosa and found that levels of anxiety were not increased in the laxative-abusing bulimics (Waller, Newton, Hardy, & Svetlik, 1990). However, bulimics in that study were evaluated during an outpatient intake evaluation and presumably were still using laxatives. This finding could be consistent with our finding of no difference between laxative and nonlaxative-abusing groups on the STAI-Trait anxiety scale. Of clinical significance is our finding that anxiety symptoms were elevated during a time period that coincided with the abrupt discontinuation of laxative use. Subjects were evaluated during the phase of laxative discontinuation. Thus, our finding may represent an increase in anxiety that is related to the discontinuation of laxative use during a critical time at the initiation of treatment.

A number of methodological problems exist in this study. First, differences in state anxiety between laxative-and nonlaxative-abusing patients, although significant, were not great. One reason for this may be that a substantial number of the laxative-abusing patients were assessed while on alprazolam–a medication that is likely to reduce anxiety-state scores. This research was conducted in a clinical treatment setting. Therefore, we were not able to control for the use of alprazolam because administration of anxiolytic



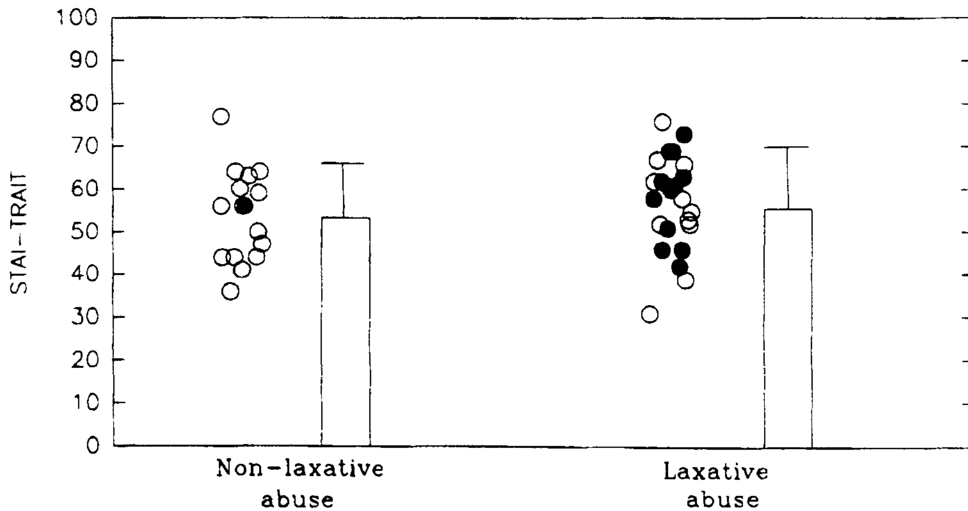


Figure 1. STAI-State (Figure 1A) and STAI-Trait (Figure 1B) scores for nonlaxative-vs. laxative-abusing subjects. Data presented as individual data points (open circle = did not receive alprazolam, closed circle = received alprazolam) and mean ± SD (bar graph). $^{*}p \leq .03$.

medication is often necessary to help patients remain in treatment. Second, we do not have prehospitalization anxiety ratings in these two groups. Therefore we do not know if the laxative group was more anxious in general rather than a result of laxative withdrawal.

Laxative use is eight times or more prevalent in eating disorders compared to the general population. Clinically, patients with eating disorders report that they use laxa-

tives to counteract the effects of binge eating and to lose weight. However, two studies suggest that laxatives do not counteract binge eating or facilitate weight loss (Lacey & Gibson, 1985; Bo-Linn, Santa Ana, Morawski, & Fordtran, 1983).

A second explanation for the high prevalence of laxatives in eating disorder patients may be related to their possible effect on anxiety. Our data suggest that anxiety is prominent after laxative use has been discontinued. This raises a question of whether laxatives are used because they reduce anxiety, either due to high baseline levels of anxiety or due to withdrawal from previous laxative abuse. Although the relationship of laxatives and anxiety has not been well studied, it has been reported that binging and vomiting are increased by stress and are followed by reduced anxiety (Kaye, Gwirtsman, George, Weiss, & Jimerson, 1986). Possible mechanisms by which laxatives may decrease anxiety are not known. These mechanisms may include a false perception that laxatives will get rid of the food from a binge, a decrease in appetite secondary to abdominal distress, or perceived weight loss from water loss. However, a more intriguing possibility is that laxatives may have effects on the autonomic nervous system, which, in turn, may affect anxiety. Alternatively, it is conceivable that laxatives (Donowitz, 1979) may affect gastrointestinal peptides, such as cholecystokinin (CCK), which is known to have profound effects on anxiety or panic.

Finally, the impact of laxative abuse on clinical treatment is relatively understudied. In our experience, significant anxiety not only inhibits compliance with normalization of eating and work in cognitive psychotherapy but frequently leads to impulsive decisions to leave treatment, sometimes the same day of admission. Anxiety can be related to weight gain from water retention, eating, and/or craving laxatives. Also, patients frequently report increased irritability and mood lability that make working in a structured treatment program difficult. Although aggressive attempts at decreasing anxiety, either pharmacologically or using relaxation techniques, may moderate the impact of this phenomenon, high levels of anxiety do become obstacles to treatment in many cases. Furthermore, the efficacy of anxiolytic treatment in bulimic patients who abuse laxatives is unclear.

In summary, laxative abuse is a common problem in eating disorders. We found that women with bulimia who abused laxatives had higher levels of anxiety compared to nonlaxative-abusing women with bulimia after laxative use was discontinued. The reasons for this are not clear. However, future research exploring the physiological sequelae of laxative abuse may shed light on the addictive qualities of laxatives and facilitate the development of better treatments for this problem.

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