

## Case Report

# Bulimia Nervosa and Attention Deficit Hyperactivity Disorder: A Possible Role for Stimulant Medication

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### ABSTRACT

**Background:** Bulimia nervosa and attention deficit hyperactivity disorder (ADHD) share several key features, including impulsivity and low self-esteem. Stimulant medications have been highly effective in the treatment of ADHD. However, medication management of bulimia with antidepressants has demonstrated only partial resolution of bulimic symptoms. To date, there are no published reports of controlled trials evaluating the efficacy of stimulants for bulimia. The purpose of this paper is to report 6 patients with comorbid bulimia and ADHD who were treated with the stimulant medication, dextroamphetamine.

**Results:** All 6 patients described reported complete abstinence from binge eating and purging after treatment with psychostimulants, and none of the patients discontinued taking the medication because of side effects. The side effect of decreased appetite proved beneficial in decreasing the desire to binge eat. However, all 6 patients remained within a healthy weight range.

**Conclusions:** Data from these case reports suggest a possible benefit of screening for ADHD as part of the overall evaluation of bulimia. In addition, these cases suggest the potential role of psychostimulants in the management of bulimia because of the high rate of abstinence from bulimic symptoms and the low rate of adverse side effects. Clinical trials are needed to fully evaluate the efficacy and tolerability of psychostimulants in the treatment of bulimia nervosa.

### INTRODUCTION

**B**ULIMIA NERVOSA (BN) AND attention deficit hyperactivity disorder (ADHD) share several key features, including impulsivity (lack of impulse control) and low self-esteem. However, these two disorders have not been described as comorbid conditions in the medical literature. Hudson et al.<sup>1</sup> discussed affective spectrum disorder, a group of 14 psychiatric and medical con-

ditions, including BN and ADHD, that aggregate in families. Genetic risk factors and the overlapping clinical characteristics would suggest that those two disorders may respond to the same pharmacological treatment.

Stimulant medications, including methylphenidate and dextroamphetamine, have been used for the treatment of ADHD and have proven to be highly effective.<sup>2</sup> However, medication management of BN with antidepressants, such as se-

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lective serotonin reuptake inhibitors (SSRIs), and tricyclic antidepressants (TCAs), such as desipramine, has shown only partial resolution of bulimic symptoms.<sup>3,4</sup> In addition to medication management, cognitive behavioral therapy (CBT) is also an integral part of the interdisciplinary treatment of BN. To date, studies evaluating CBT in BN have demonstrated only moderate effectiveness.<sup>5</sup>

A review of the medical literature revealed few papers related to the use of psychostimulants in BN. In 1983, Ong et al.<sup>6</sup> reported administration of intravenous methylamphetamine to 4 patients with BN, which decreased hunger and food consumption. Messner<sup>7</sup> treated 1 bulimic patient with methylphenidate in the postoperative period following an appendectomy, and the patient reported decreased desire to binge eat. Schweickert et al.<sup>8</sup> described complete resolution of binge eating and purging in a young woman with BN and ADHD after treatment with methylphenidate, and Sokol et al.<sup>9</sup> discussed significant improvement in 2 patients with BN following treatment with methylphenidate. Drimmer<sup>10</sup> used stimulant medication for 2 patients with comorbid BN and ADHD and 1 patient with BN without comorbid ADHD; all demonstrated a favorable response to stimulants. To date, there are no published reports of controlled trials evaluating the efficacy of stimulants for BN.

The rationale for the use of stimulant medication as a treatment for BN is twofold. First, the symptom of binge eating may result from impulsivity; therefore, decreasing impulsivity in BN through the use of stimulant medication could potentially decrease binge eating and purging behaviors. In addition, appetite suppression is a common side effect of stimulants and could be used to decrease the desire to binge eat.

The purpose of this paper is to report 6 patients with comorbid BN and ADHD who were treated with the stimulant medication, dextroamphetamine. All 6 patients were treated in an outpatient interdisciplinary eating disorder program, where each patient was individually evaluated by a physician throughout the course of treatment. These medical assessments included weight, height, and vital sign measurement, an extensive history evaluating eating disorder and attention symptoms, and a physical examination. Food journals and a series of self-report questionnaires were used in addition to the clinical interview.

## CASE REPORTS

### Case 1

Case 1 is a 19-year-old, white female with past medical history significant for thyroid ablation, secondary to Graves' disease, who sought outpatient treatment of BN. Her eating disorder symptoms began at age 16 and included daily binge eating, obsessive exercise, purging (two to three times per week), food restriction, and preoccupation with thoughts of food. She showed some initial improvement with a structured meal plan and individual psychotherapy, but her eating disorder symptoms worsened when she began her freshman year of college. At that time, the patient complained of difficulty concentrating, impulsivity, distractibility, and feeling restless. Her weight was 149 pounds, height was 67 inches, and body mass index (BMI) was 23.3 kg/m<sup>2</sup>.

The patient met the diagnostic criteria for ADHD, inattentive type, according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV-TR).<sup>11</sup> She was started on 5 mg dextroamphetamine sulfate three times a day. Within 2 weeks, she reported complete resolution of binge eating and purging. She also reported improved attention and mood and reduced preoccupation with food. She was exercising but not obsessively. Because of increasing problems with attention, the patient's dose was increased to 15 mg three times per day. She has been evaluated regularly over the past 15 months and reports no eating disorder symptoms at the present time. Her weight remains stable (weight 142 pounds, BMI 22.2 kg/m<sup>2</sup>).

### Case 2

Case 2 is an 18-year-old white female with an unremarkable past medical history, who sought outpatient treatment of BN after a year and a half history of eating disorder symptoms. Her family history included a younger sister with ADHD. She described her symptoms as frequent binge eating, followed by restrictive intake, laxative use, and obsessive exercise. She also reported feeling overwhelmed in school, impulsivity, and difficulty paying attention and described herself as "a day dreamer." She and her mother noted that these symptoms had been present since childhood. The patient's history was consistent with ADHD, inattentive type. Her initial weight

was 122 pounds, height was 61.5 inches, and BMI was 22.7 kg/m<sup>2</sup>. She was prescribed 5 mg dextroamphetamine sulfate three times a day. After the initial day of treatment, she complained of feeling jittery and difficulty sleeping. Her dose was decreased to 5 mg twice a day, and the jitteriness and insomnia resolved. She reported no episodes of binge eating since beginning the medication. She was able to increase the medication dose to 10 mg three times a day without recurrence of the initial side effects. At present, 15 months after initiating treatment with dextroamphetamine, the patient's eating disorder symptoms have resolved, her attention and school performance have improved, and she has maintained a stable weight (weight 122 pounds, BMI 22.7 kg/m<sup>2</sup>).

#### Case 3

Case 3 is a 21-year-old white female with a 5-year history of BN and an otherwise unremarkable past medical history. Her previous eating disorder treatment included family psychotherapy and medication management with an SSRI. She had discontinued therapy and medication because she did not feel they were beneficial; however, she admitted that she was inconsistent with both forms of treatment. Her eating disorder symptoms included daily binge eating and purging and obsessive thoughts about food and body image. In addition, she described herself as impulsive, disorganized, easily distracted, and fidgety. Her symptoms were consistent with ADHD, inattentive type. The patient's weight was 121 pounds, height was 67.5 inches, and BMI was 18.7 kg/m<sup>2</sup>. She was treated with 5 mg dextroamphetamine sulfate three times a day and subsequently increased to 10 mg three times a day. She reported decreased desire to binge eat, decreased anxiety about food and body image, and improved attention and moods. Since beginning the dextroamphetamine, she had only two episodes of binge eating and purging. These two episodes occurred while away on vacation, having forgotten to take the medication. At the current time, almost 2 years after beginning treatment with dextroamphetamine, the patient denies binge eating, purging, or obsessiveness about food, and her weight has remained stable (weight 125 pounds, BMI 19.3 kg/m<sup>2</sup>). She reports substantial improvement in her academic performance, mood, and self-confidence.

#### Case 4

Case 4 is a 24-year-old, white female with past medical history significant for hypothyroidism and a 9-year history of BN. Her eating disorder began at age 15 with restrictive eating and weight loss, followed by the development of binge eating and purging. In the past, she had been treated with CBT as well as with numerous medications for BN and depression, including several SSRIs and antiepileptics, with only partial relief of her symptoms. She sought outpatient treatment of BN but also reported symptoms of ADHD, including impulsivity and difficulty paying attention, and met DSM-IV-TR<sup>11</sup> criteria for ADHD, inattentive type. Her weight was 136 pounds, height was 67 inches, and BMI was 21.3 kg/m<sup>2</sup>. She was initially started on 5 mg dextroamphetamine sulfate three times a day and reported rapid improvement, including decreased desire to binge eat, improved moods, and less preoccupied thoughts about food. She denied insomnia or other side effects. The dose of dextroamphetamine was increased to 10 mg three times a day. During the past 4 months, the patient reported only two episodes of binge eating and purging, and both episodes occurred on occasions when she missed a dose of dextroamphetamine. Her weight has remained stable throughout this time period (weight 137 pounds, BMI 21.5 kg/m<sup>2</sup>).

#### Case 5

Case 5 is a 15-year-old, white male with past medical history significant for ADHD and a 1-year history of BN. He had been involved in family therapy for several months, without significant improvement. His eating disorder symptoms included binge eating followed by restrictive intake and significant weight loss. Additional symptoms included headaches, dizziness, and irritability for the previous 6 months. At the time of presentation for outpatient eating disorder treatment, he had been absent from school for 4 weeks because of these symptoms. The patient also reported impulsiveness and easy distractibility. His weight was 152 pounds, height was 70 inches, and BMI was 21.8 kg/m<sup>2</sup>.

The patient had been diagnosed at 11 years old with ADHD, inattentive type, and had been treated with methylphenidate for approximately 1 year. Both he and his mother reported that the medication had been helpful academically. How-

ever, the medication had been discontinued after 1 year for unknown reasons. No other medications had been prescribed in the past for ADHD.

He was started on 10 mg dextroamphetamine, three times a day. After 1 week on the medication, he reported no further episodes of binge eating or restrictive intake. In addition, the headaches, dizziness, and irritability resolved, and he was able to return to school. Over the past 6 months, his weight has remained stable (weight 155 pounds, BMI 22.4 kg/m<sup>2</sup>), and he reports complete resolution of his eating disorder symptoms, as well as improved attention and moods.

#### Case 6

Case 6 is a 17-year-old, white female with an unremarkable past medical history who was referred for outpatient treatment of BN following a 20-pound weight loss. Her symptoms began at age 16 and included restrictive eating, binge eating, purging, obsessive exercise, and amenorrhea. On initial physical examination, the patient's weight was 128 pounds, height was 64 inches, and BMI was 22.0 kg/m<sup>2</sup>. However, her heart rate was 40 beats per minute, and an ECG revealed sinus bradycardia. Her heart rate improved following increased dietary intake and decreased obsessive exercise; however, she continued to binge and purge daily.

The patient described herself as easily distracted, impulsive, and moody. She also complained of difficulty paying attention in school and difficulty following a meal plan because of her "short attention span." Her symptoms were consistent with ADHD, inattentive type. Dextroamphetamine sulfate (5 mg) three times a day was prescribed initially and then increased to 10 mg three times a day. The patient reported rapid improvement, including no further binge eating or purging, improved attention, and improved ability to meal plan. Her vital signs and weight have remained stable (weight 136 pounds, BMI 23.3 kg/m<sup>2</sup>) over the past 17 months since beginning treatment with dextroamphetamine.

## DISCUSSION

To date, pharmacological interventions for BN have produced only modest results. Although studies evaluating the effectiveness of antidepressants, specifically SSRIs, and TCAs have

demonstrated some reduction in the frequency of binge eating and purging, remission rates (complete abstinence from bulimic symptoms) were low.<sup>3,4</sup> In addition, CBT has demonstrated only partial reduction of bulimic symptoms.<sup>5</sup>

Four of the six patients participated in psychotherapy prior to the initiation of stimulant medication, without significant reduction in their eating disorder symptoms. However, all of the 6 patients described reported complete abstinence from binge eating and purging following treatment with psychostimulants. None of the patients discontinued taking the medication because of side effects. The simultaneous high symptom remission rate and high tolerability of the medication suggest a role for psychostimulants in the treatment of BN. In addition, these cases suggest a potential benefit of screening for ADHD as part of the overall evaluation and treatment of BN.

A possible explanation for the effectiveness of psychostimulants in BN is the hypothesis that BN and ADHD share a common causal factor or several common factors. BN and ADHD are both prevalent and potentially disabling conditions; therefore, identification of a possible common pathophysiology between the conditions could have significant therapeutic benefit. An alternative explanation may be that symptoms of BN are the result of untreated ADHD. Specifically, impulsivity may result in binge eating followed by compensatory purging. Therefore, decreasing impulsivity through use of a stimulant medication may decrease the desire to binge eat. An additional explanation for the effectiveness of psychostimulants on bulimic symptoms in these 6 patients may be that the appetite-suppressing effects of stimulants resulted in a decreased desire to binge eat and, therefore, a decrease in compensatory purging.

In 5 of these 6 patients, ADHD had not previously been diagnosed, possibly because all the patients had the inattentive form of ADHD. Although all 6 patients reported frequent feelings of impulsiveness, none met the full criteria for the hyperactive/impulsive subtype of ADHD because of the absence of hyperactivity. Although the hyperactive/impulsive form of ADHD is well recognized, the inattentive form of ADHD often remains undiagnosed.<sup>12</sup> This disparity may be a result of the absence of hyperactivity in the inattentive form of ADHD, one of the primary differences between these two subtypes of ADHD. In the hyperactive/impulsive subtype of ADHD,

the presence of hyperactivity may cause significant disruption in school and home environments and, therefore, result in a more rapid diagnosis. Conversely, it is probable that many people with the inattentive form of ADHD remain undiagnosed because the symptoms of distractibility and difficulty sustaining attention are less disruptive to others than the symptom of hyperactivity.

According to recent studies, females with ADHD are more likely to have the inattentive form of the disorder and, thus, are less likely to be diagnosed or treated.<sup>13,14</sup> The tendency to underdiagnose females with ADHD may be the result of the more internalized symptoms of inattentive ADHD. Unfortunately, untreated ADHD places females at risk for chronic low self-esteem and depression. Chronic low self-esteem and depression are also risk factors for BN and, therefore, represent another potential link between ADHD and BN.

Although many people with ADHD have persistent symptoms of the disorder as adults, a misperception exists that ADHD is only a disorder in childhood.<sup>15</sup> Also, many healthcare providers report having inadequate training in the diagnosis and management of ADHD in adults, which may result in missed or incorrect diagnoses.<sup>16</sup> Concerns about the potential adverse effects of psychostimulants may also contribute to the underdiagnosis of ADHD in adolescents and adults. These concerns include the possible side effects of the medications and the risk of abuse of the medication. Practitioners need to be aware of the potential for misuse of stimulant medication by individuals with eating disorders in an attempt at further weight loss. Therefore, close monitoring is essential.

Adolescents and adults with BN are at increased risk for substance abuse.<sup>17</sup> People with untreated ADHD also demonstrate increased risk for alcohol and substance abuse.<sup>18</sup> Therefore, there is concern about the use of psychostimulants in this population and the potential for abuse of stimulants, alcohol, or other drugs. However, several studies have documented that appropriate treatment for ADHD actually decreases the risk for drug or alcohol abuse, potentially because of decreasing the need to self-medicate.<sup>19,20</sup> None of these 6 patients demonstrated increased use of recreational drugs or prescription medication.

None of these 6 patients discontinued the medication because of side effects. All patients denied

untoward effects of the stimulants. In addition, the side effect of decreased appetite proved beneficial in decreasing the desire to binge eat. All patients received nutritional education and meal planning guidance as part of their overall treatment program. Patients were told that if significant weight loss occurred while they were taking dextroamphetamine, the medication would be discontinued. All patients were monitored clinically by a physician throughout the course of treatment, and all 6 patients remained within a healthy weight range.

In conclusion, given the underdiagnosis of ADHD in females and the predominance of BN in females, data from these case reports suggest a possible benefit of screening for symptoms of ADHD as part of the overall evaluation of BN. In addition, these cases suggest the potential role of psychostimulants in the management of BN because of the high rate of abstinence from bulimic symptoms and the low rate of adverse side effects. Notwithstanding the limitations of this study, small sample size and retrospective review, clinical trials are needed to fully evaluate the efficacy and tolerability of psychostimulants in the treatment of BN.

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