

# Prescription Diuretic Abuse in Patients With Bulimia Nervosa

Claire Pomeroy, MD, James E. Mitchell, MD, Harold C. Seim, MD, MPH, and Marvin Seppala, MD  
Minneapolis, Minnesota

*Bulimia nervosa, a common eating disorder usually characterized by binge eating and self-induced vomiting, may also involve abuse of prescription diuretics. This article describes four patients who abused prescription diuretics in large quantities (up to 2 g/d of furosemide) for extended periods of time. Physical examination and laboratory values provided few clues to the diagnosis of bulimia nervosa. Other eating-related behaviors previously linked to bulimia nervosa—including abuse of diet pills, illicit amphetamines, and laxatives, as well as withholding of insulin in one diabetic patient—were present in these cases. Usually the patients' primary physicians were not aware of these problems. Physicians should be aware that patients requesting prescription diuretics may have bulimia nervosa.*

**B**ulimia nervosa is a syndrome characterized by secretive binge-eating episodes, which are usually followed by self-induced vomiting and an intense preoccupation with food.<sup>1-4</sup> It is less commonly recognized, however, that the abuse of various types of drugs, including diuretics, laxatives, diet pills, and ipecac, is also linked to this eating disorder.<sup>2,5,6</sup> The Health and Public Policy Committee of the American College of Physicians recently published a position paper stating that "many physicians are unfamiliar with both the increased prevalence and the appropriate approaches to diagnosis and treatment" of eating disorders.<sup>7</sup> Concerns about the need for physicians to be able to diagnose bulimia nervosa are well founded. The secretive nature of these patients and, frequently, the lack of overt clues on physical examination make bulimia nervosa difficult to detect.<sup>6</sup> One study of women engaged in self-induced vomiting found that fewer than one in 40 received help for their problems.<sup>8</sup>

Physicians should be aware that patients who request diuretics or who present with symptoms or laboratory values suggesting surreptitious diuretic abuse may have bulimia nervosa. Requests for diuretics should alert the physician to the need for direct, compassionate questioning about the extent and reasons for diuretic use. Prompt evaluation for an eating disorder should be undertaken if

there are historical or physical signs that the patient may be at risk for bulimia nervosa.

Diuretics are available in a wide variety of over-the-counter formulations as well as by prescription, and the exact frequency of diuretic use in the general population remains unknown. In a survey of 355 college students, 4.2 percent reported that they had used diuretics.<sup>9</sup> Studies of adolescents, a group that one would expect to contain few individuals with a medical reason for diuretic usage, have found that 3.6 to 4 percent admit using diuretics.<sup>10-12</sup>

The prevalence of diuretic usage is even higher for bulimic individuals, however, and bulimia nervosa is a common disorder. Studies have shown that 8 to 19 percent of college-age women,<sup>6,9,11-16</sup> 11 percent of a predominantly female family practice population,<sup>17</sup> and 10 percent of adult women in a survey of shoppers<sup>18</sup> meet the *Diagnostic and Statistical Manual of Mental Disorders*, ed 3 (DSM III) criteria for bulimia nervosa. In Russell's initial report<sup>19</sup> of bulimia nervosa in 1979, he noted that one of his patients "misappropriated diuretics." Others have confirmed this association. In an early report in 1981, ten of 34 bulimic patients reported having used diuretics as a means to control their weight.<sup>5</sup> This high rate has subsequently been verified in larger series. For example, 90 (33.9 percent) of 275 bulimic women in one study reported diuretic use for weight control purposes, and 27 (10.2 percent) of these reported using diuretics on at least a daily basis.<sup>19</sup> Thus, diuretic abuse is common among bulimic women.

Both prescription and over-the-counter diuretics are abused by bulimic patients. Furosemide and thiazide are

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From the Department of Medicine, Department of Psychiatry, and Department of Family Practice, University of Minnesota, Minneapolis, Minnesota. Requests for reprints should be addressed to Dr. Claire Pomeroy, Department of Medicine, Box 352 Mayo Memorial Building, 420 Delaware St SE, Minneapolis, MN 55455.



the prescription diuretics most commonly used. Occasionally, very high doses of furosemide (up to 1 to 2 g/d) may be taken by these patients. The following case reports describe four patients who abused large doses of furosemide over long periods.

## CASE REPORTS

*Patient 1.* A 32-year-old woman was admitted to the University of Minnesota Medical Center for evaluation of depression and furosemide abuse. The patient reported a preoccupation with her weight since she was 12 years old and dieting since the age of 16 years following her first pregnancy. She had been binge eating and vomiting for more than nine years, and at the time of admission admitted to binge eating followed by "starving" and vomiting about twice a week. She had also used diet pills intermittently between the age of 18 and 24 years and currently used laxatives for weight control. Her weight as an adult had fluctuated widely between 50 and 80 kg.

Since the age of 23 years she used furosemide in an attempt to control her weight, often taking 12 to 15 40-mg tablets per day. She obtained the diuretics from six different physicians, each of whom was unaware that the others were also prescribing diuretics.

Her hospitalization was prompted by her depression over fears that she "might gain up to 40 pounds in fluid" if she discontinued the furosemide. At admission, she weighed 64.1 kg and had a normal physical examination without evidence of edema. Laboratory values were significant for a potassium of 3.1 mmol/L (3.1 mEq/L) and a chloride of 97 mmol/L (97 mEq/L). In the hospital, her diuretics were discontinued without problems, and no edema developed. She was resistant to psychiatric therapy, however, and signed out against medical advice after a week of treatment.

*Patient 2.* A 20-year-old woman was admitted to the University of Minnesota Medical Center for treatment of bulimia nervosa. At the age of 17 years she had begun to spit out chewed food. By the time of admission she was binge eating three times a day and vomiting about once a week. She also admitted to using laxatives (up to 60 tablets of an over-the-counter preparation of phenolphthalein and docusate sodium per day), over-the-counter diet pills, illicit amphetamines, and enemas (up to three times each day) for fluid and weight control.

The patient reported that she had been using her mother's prescription for furosemide to obtain diuretics since she was 13 years old. Initially she had used one 40-mg tablet per day but eventually began using up to three per day for weight control. In addition, she obtained an

over-the-counter diuretic (an amonium chloride-caffeine combination) and took six to eight per day to augment the weight loss.

Physical examination at admission was significant only for enlargement of the right parotid gland. Laboratory values were normal. In the hospital she was initially responsive to treatment but later stole a syringe and used it to give herself enemas. When confronted, she refused further treatment and insisted on being discharged from the hospital.

*Patient 3.* A 32-year-old woman was evaluated at the University of Minnesota Medical Center Eating Disorder Clinic for bulimia nervosa. She had begun binge eating at the age of 12 years and vomiting at 26 years. At 18 years, she began to use furosemide for control of premenstrual fluid gain, usually taking 40 to 80 mg per day. She obtained the diuretics by means of her grandmother's prescription. Later, she was able to obtain furosemide in her profession as a licensed practical nurse. By this time she was taking the diuretics because she felt "fat." She also had a long history of multiple somatic complaints and at the age of 30 years was recognized as having a conversion disorder manifested by speech difficulties and right upper extremity weakness. A diagnosis of mixed personality disorder was also made. She had been hospitalized on several occasions for alcohol and drug abuse. Laboratory values were normal. The patient was enrolled in an intensive outpatient bulimia nervosa treatment program and responded satisfactorily. At her three-month follow-up, she was not using diuretics and was no longer binge eating and vomiting.

*Patient 4.* A 25-year-old woman was admitted to the University of Minnesota Medical Center for evaluation of "eating problems." Insulin-dependent diabetes mellitus had been diagnosed at the age of 9 years. Since the age of 16 years, she had purposely adjusted her insulin to maintain hyperglycemia (and glucosuria), with serum glucose values in the range of 50.0 to 66.6 mmol/L (900 to 1,200 mg/mL) as a deliberate weight loss measure. She had a history of bulimic behavior. At the time of presentation she also used laxatives as a weight-control technique. Although she denied current binge eating and vomiting, she did admit to spitting out chewed food before swallowing. An atypical eating disorder was diagnosed. She also had a history of prescription analgesic abuse and had been diagnosed previously as having a major depressive disorder, dysthymia, and borderline personality disorder.

Additional history revealed that she abused furosemide. Her physician prescribed 240 mg of furosemide a day for control of hypertension and fluid management, but she regularly took 1,480 mg/d and would take additional amounts when she felt "heavy." At admission, her weight



was 56 kg. Physical examination was significant for mild diabetic retinopathy, a systolic murmur at the left sternal border, and decreased reflexes in the lower extremities. Laboratory examination was remarkable for serum sodium of 117 mmol/L (117 mEq/L), potassium of 4.1 mmol/L (4.1 mEq/L), chloride of 75 mmol/L (75 mEq/L), bicarbonate of 32 mmol/L (32 mEq/L), blood urea nitrogen of 15.7 mmol/L (44 mg/dL), with a creatinine of 160  $\mu$ mol/L (2.1 mg/dL) and a serum glucose of 70.1 mmol/L (1,208 mg/dL). Her response to ongoing psychiatric treatment has been limited, and diuretic abuse remains a problem.

## DISCUSSION

Three of these patients meet the DMS III criteria for bulimia nervosa; the fourth had a history of bulimia nervosa but her condition was diagnosed at evaluation as an atypical eating disorder. All four demonstrated several other eating-related behaviors previously linked to bulimia nervosa. Laxatives were abused on a regular basis in two of these patients and occasionally by a third patient. Surveys have shown that 18 to 75 percent of bulimic women use laxatives for weight-control purposes.<sup>20-22</sup> One patient also used enemas as a means to lose weight. Another patient used diet pills, a behavior also commonly practiced by those with bulimia.<sup>20</sup> This patient also used illicit amphetamines to reduce her weight—a phenomenon reported much less frequently.

One patient adjusted her insulin to induce weight loss. Previous studies have suggested that bulimia nervosa is a common problem among young women with diabetes.<sup>23-27</sup> In a survey of young women with insulin-dependent diabetes mellitus, 35 percent of the responders reported a history of bulimia nervosa.<sup>28</sup> Bulimic patients with diabetes may have substantial difficulty maintaining blood glucose control when they are consuming large numbers of calories during eating binges. Physicians should be alert to the possibility of bulimia nervosa in their patients with unexplained poor glucose control.

All four patients had a second major psychiatric diagnosis. This finding is consistent with previous reports that bulimic patients have a high rate of co-morbidity for affective disorders and personality disorders.<sup>29</sup> Two patients also had a history of drug abuse, which has also been associated with bulimia nervosa.<sup>29</sup> Finally, these patients were remarkable for the large amounts of prescription diuretics (furosemide) used for weight control. While 33.9 percent of bulimic women in one study reported using diuretics,<sup>20</sup> indicating a high prevalence of diuretic usage in this population, the large doses taken by the four patients discussed here are noteworthy.

These cases indicate the four major methods by which bulimic patients obtain prescription diuretics:

1. Prescriptions obtained from more than one physician, each of whom is unaware of the others' prescriptions
2. Diuretics prescribed for another person
3. Misappropriation from the workplace
4. Diuretics prescribed to the patient for the appropriate medical conditions (but then used in dosages exceeding recommendations)

The incidence of abnormal physical findings in bulimic patients who abuse diuretics may be low, as illustrated by these cases. Indeed, the fact that bulimic patients often look quite healthy is another reason physicians may fail to make the diagnosis. Parotid enlargement occurred in one patient and is a good clue to the presence of bulimia nervosa. Laboratory values were also unremarkable in these patients except for mild hypokalemia and metabolic alkalosis. In other patients, the hypokalemic metabolic alkalosis may be more severe and may serve to alert the physician to the possibility of diuretic abuse associated with bulimia nervosa.

The incidence of obvious side effects from such large amounts of diuretics taken over long periods of time was surprisingly low. One patient had mild hypokalemia, but no other medical abnormalities could be specifically linked to the diuretic use. Other authors have identified diuretic abuse as a causal agent in symptomatic hypokalemia,<sup>30-33</sup> pseudo-Bartter's syndrome,<sup>34-36</sup> and possibly idiopathic edema.<sup>37</sup> Less well-documented adverse effects of diuretic abuse include the possibility of hypokalemic nephropathy, cardiac arrhythmias, magnesium depletion, hypocalcemia, hyponatremia, hyperuricemia, ototoxicity, and cross-reactions in patients allergic to sulfa.

The importance of the physician making the difficult diagnosis of bulimia nervosa has recently been emphasized.<sup>7</sup> Since prescription diuretic abuse may represent bulimic behavior, requests for diuretics should prompt the physician to look for other signs or symptoms of this disorder—eg, abnormal eating behaviors, abuse of laxatives, diet pills, or ipecac, and other accompanying psychiatric diagnoses. Physicians should avoid perpetuating diuretic abuse by carefully evaluating patients who request prescription diuretics.

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