

# Seasonal Affective Disorder in Women

## *How to identify and treat*

CARYL E. BOEHNERT, PhD, and ROBERT A. ALBERTS, MD

Seasonal affective disorder (SAD) is a form of depression frequently seen in female family practice patients in the northern latitudes of the United States. SAD is four times more common in women than it is in men,<sup>1</sup> and often it is not recognized by patients or their clinicians as being a form of major affective illness. In our experience, the majority of SAD patients are women balancing the demands of home, family, and work. The disorder often manifests in the workplace with poor concentration, difficulty in organizing and computing, and memory problems.

This article will review the diagnosis and treatment of SAD. It will also discuss the results of our study of women with SAD (please see "The Alaska Study" on page 33).

### DIAGNOSIS

SAD is a form of recurrent major depression characterized by mood disturbance, hypersomnia, weight gain, carbohydrate craving, and cognitive impairment.<sup>2-4</sup> Symptoms begin in the fall, worsen throughout winter, and dissipate as summer approaches (Table 1). SAD

*Dr. Boehnert is an Assistant Professor of Family Practice at the University of Minnesota in Minneapolis. Dr. Alberts has recently retired from his position as a psychiatrist at the Providence Behavioral Medicine Group in Anchorage, Alaska.*

**ABSTRACT:** Seasonal affective disorder (SAD) is a form of recurrent major depression characterized by hypersomnia, weight gain, mood disturbance, carbohydrate craving, and cognitive impairment. Symptoms begin in the fall, worsen throughout winter, and dissipate as summer approaches. SAD is more common among women than men. Primary care clinicians are in an ideal position to recognize and effectively treat SAD. Prompt diagnosis and management are imperative to address the accompanying symptoms of depression and hyperphagia as well as changes in lipid levels and glycemic control, particularly for patients with health concerns such as diabetes or coronary artery disease. Mild SAD can be improved by increased light exposure and behavioral adjustments. Treatment options for moderate or severe cases of SAD include use of a phototherapy unit and/or antidepressants. (*Women Health Primary Care* 2003;6(1):32-36)

can occur in children as young as 6, although the onset is usually at puberty; again, far more females than males are affected.<sup>5,6</sup> In the United States, the northern latitudes have a higher prevalence of SAD<sup>7</sup> than do other parts of the country (Table 2). Symptoms of SAD may be especially severe in patients who have relocated from southern latitudes, such as college students, seasonal

workers, and certain immigrant populations.<sup>8</sup>

Some clinicians are skeptical about the existence of SAD,<sup>9</sup> despite 20 years of studies from the National Institute of Mental Health and conclusions of large controlled blinded trials in both the United States and abroad.<sup>10-14</sup> SAD is a distinct subtype of recurrent major depression.<sup>3</sup> Findings also suggest that atypical vegetative symptoms (eg, lethargy, hypersomnia, and overeating) that present in the early winter may signal the presence of SAD.<sup>14</sup> There is evidence that a genetic predisposition to SAD may exist.<sup>15</sup>

Patients with SAD tend to crave carbohydrates and chocolate, and they often overeat, causing weight gain of up to 35 lb. Research indicates that glycemic and insulin responses are affected in SAD patients.<sup>16,17</sup> Seasonal patterns have also been noted in cardiovascular morbidity and mortality as well as in the blood lipid levels of the general population.<sup>18</sup>

Helpful classification and treatment findings have

been identified from a nine-year follow-up of the first 59 patients<sup>19</sup> examined in the original SAD study from the National Institute of Mental Health.<sup>2</sup> Patients with depressive episodes that remained entirely seasonal (ie, were present during

the winter but not the summer) were categorized as having “pure” SAD. Patients with SAD who also had varying degrees of nonseasonal depression and indications of a more serious illness (including psychiatric hospitalization) were cate-

gorized as having “complicated” SAD. Treatment recommendations and results differed between groups and are discussed below.<sup>19,20</sup>

When taking the patient history, it is helpful to attempt to longitudinally track symptoms, both ret-

## The Alaska Study

As clinicians in an active behavioral medicine practice in Anchorage, Alaska, we had the opportunity to recognize and treat widespread seasonal affective disorder (SAD) during the fall and winter months in a variety of home and work settings. Our practice provided free education about SAD to diverse organizations across the state, including utility companies, municipalities, the state court system, resource agencies, and the Federal Bureau of Investigation. Schools and workplaces had many different reasons for requesting education about SAD for their members, including concerns regarding worker safety, concomitant medical conditions, and productivity and absenteeism. Alaska was a natural proving ground to develop a system applicable across latitudes for assessing SAD patients promptly, initiating treatment, and maintaining aggressive therapy in a multidisciplinary team approach.

### STUDY SUBJECTS

We reviewed data from the first 51 female patients to visit our clinic. Some of the patients had a strong preference for phototherapy over antidepressants. Reasons for this preference included being pregnant or attempting to become pregnant, distrusting psychotropic medication, preferring a “natural” therapy, or enjoying the phototherapy treatment. Other patients preferred medication because of insurance coverage, time constraints, ease of administration, or severity of symptoms. Thirty-four patients (67%) used antidepressants for at least one winter; nine (18%) used both light and medication.

### HEIGHTENING COMPLIANCE AND TREATMENT EFFECTS

Use of a multidisciplinary team, tight follow-up, aggressive treatment, and regularly scheduled telephone check-ins gave us a low patient dropout rate: Only one of the 51 patients stopped treatment and was lost to follow-up.

Patients first visited an in-office behavioral scientist—a psychologist, clinical social worker, or

nurse practitioner—who conducted the bulk of the interview, which included questions about current symptoms, mental health history, and family history of affective disorder and substance use. This information was then provided to the physician on the team, who discussed treatment options and usually prescribed phototherapy or antidepressants. Patients had follow-up appointments with the behavioral scientist after two weeks and with the physician six weeks from the original visit. Patients were instructed to call at any time if they experienced adverse effects from treatment.

About half of the patients called within four days with questions about medication or side effects, and it appeared important to them to get the questions answered before they continued with treatment. We view this early telephone consultation as instrumental in assisting with patient compliance and education. Dosage adjustments and/or advice about the medication or use of the phototherapy unit were given over the telephone. After the third week of treatment, patients could continue scheduling appointments with the behavioral scientist until their symptoms stabilized.

Patients were treated to achieve “full remission of depressive symptoms” rather than for “some improvement”; medication adjustments may be necessary a few times during the first six weeks to reach this goal. The majority of patients indicated that their symptoms had been fully treated, “like winter never happened.” Those who still reported breakthrough symptoms of anxiety or depression were all patients who had major depression unrelated to season (complicated SAD). These findings are consistent with the follow-up data from the National Institute of Mental Health study.<sup>19</sup>

This model can be easily extrapolated to a family practice clinic, with a nurse or behavioral scientist involved in telephone contact and some follow-up visits to reduce the burden on the primary care clinician.

respectively and prospectively, in order to both establish the diagnosis of SAD and monitor its response to treatment. Patients can keep mood charts and record daily light exposure on a calendar.

#### **SYMPTOMS IN THE WORKPLACE**

Not all patients with SAD present in the clinical setting with depressed mood. Instead, adults with SAD often present with complaints of “not being able to function” at work. Falling asleep on the job, not being able to wake up in the morning, inability to concentrate or to remember details essential to job performance, and irritability with coworkers are frequent concerns. As the interview progresses, patients may also mention increased substance or caffeine use, depression, hypersomnia, hyperphagia, and family or marital discord, but the disruption in job performance is often the catalyst for seeking help. Impairment in concentration and work performance has been noted across studies in patients with SAD.<sup>1-6</sup> In a review of charts from a medical center in the far north of Alaska, errors by nurses, including giving patients the wrong medication or drug dose, appeared to follow a pattern closely associated with the annual cycle of daylight and darkness.<sup>21</sup>

#### **SYMPTOMS IN THE FAMILY**

Families can be affected by SAD in a number of ways. One or more members across the age spectrum may be susceptible to mild to severe SAD. In northern latitudes, during the winter months, a slight increase in sleep time and weight gain of up to 10 lb is the norm among the general population<sup>18</sup>; people who have SAD experience symptoms beyond this norm, such as excessive sleeping and weight gain, extreme fatigue, frequent somatic difficulties, and irritability. As in nonseasonal major depression, a minority of patients experience

**Table 1. Symptoms of seasonal affective disorder**

<b>Physical changes</b>
Sleep disturbance
Eating disorder
Weight gain/loss
Fatigue
Physical complaints
Sexual disinterest/dysfunction
<b>Emotional changes</b>
Depression
Anxiety/extreme dread/fearfulness
Irritability/anger
Loss of emotional attachment
Hopelessness, helplessness
Low self-worth, irrational guilt
<b>Behavioral changes</b>
Performance decline at work or school
Crying spells
Social withdrawal
Loss of motivation
Psychomotor retardation/agitation
<b>Cognitive changes</b>
Impaired concentration
Memory loss
Problems in reading, computing, organizing, and completing tasks
Indecisiveness

early morning awakening rather than excessive sleep.

These symptoms may be accompanied by behavioral changes, such as decreased performance at school or work, absenteeism, a reduction in sexual drive, and increased visits to clinicians.<sup>12</sup> Intake of alcohol or drugs may also rise, possibly provoking even more medical or social difficulties. The combination of irritability, social withdrawal, substance use, and low sexual desire may easily affect the quality of important interpersonal relationships.<sup>4</sup>

The partner of the SAD patient often reacts with frustration and worry about the relationship or the patient's health. Aggressive treatment of SAD and family education can be more appropriate than referral for marital or family therapy, although such referral may be necessary at a later time.

#### **SYMPTOMS IN YOUNG PATIENTS**

SAD symptoms in children and adolescents may differ from those in adults (Table 3). Young people with SAD may exhibit excessive fatigue and chronic somatic problems, inability to do schoolwork that used to “make sense,” unwillingness to socialize with other children or to go to school, and hostility toward parents and siblings. Rarely do children identify these symptoms as “depression.” Frequent visits to the family clinician may offer no concrete findings.<sup>5,6</sup> Teachers may complain of the child's change in attitude, which may lead to suspicions of attention-deficit/hyperactivity disorder or illicit drug or alcohol use. In such cases, the family clinician must be aware of SAD as an important differential diagnosis, especially if there is a family history of affective disorder or alcoholism.

#### **RECOGNIZING SYMPTOMS**

At this point, quick recognition of the patient's symptoms is highly beneficial, as the various social and employment problems appear to “cluster” around the very real presence of an affective disorder (ie, according to the criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*).<sup>22-24</sup> Prompt diagnosis and management are imperative to address symptoms of depression and hyperphagia as well as changes in lipid levels and glycemic control, particularly for patients with health concerns such as diabetes or coronary artery disease. Indeed, SAD can have a broad impact on the patient's overall health. For example, the 15- to 35-lb weight gain that is not uncommon in SAD patients can markedly exacerbate ongoing chronic medical problems or create new ones. The risk of joint and back injuries from outdoor activities is increased by excess weight. Moreover, cardiac status is adversely affected by the presence of

any major depressive disorder.<sup>25-27</sup> Other effects of depression on medical illness are listed in Table 4.

## TREATMENT

Primary care clinicians are in an ideal position to recognize and treat SAD with proven, effective therapy. Patients with mild SAD can ameliorate symptoms by increasing the amount of light at home and work, being outside during the brightest part of the day, exercising, participating in social activities outside of the home, and reducing intake of alcohol, drugs, and caffeine. The prototype of an activity to avoid would be watching television alone in a dark room while eating large amounts of carbohydrates and drinking alcoholic beverages. Many patients with mild SAD who had been physically active and regularly exposed to high levels of daylight in the winter (such as ski patrol members or day-shift utility workers) are not even aware of having SAD until their natural coping mechanisms are disrupted (by an injury, a change in job, a significant personal loss, etc). They then become aware of symptoms and may visit their clinician.

The first option for treatment of moderate SAD is light therapy, with a phototherapy unit capable of emitting 10,000 lux. Phototherapy units of high quality are now available starting at about \$235, and the expense is partially covered by some insurance companies. The phototherapy unit should be used from 30 minutes to two hours daily, according to the number of hours of darkness in the day. Patients sit in front or slightly to the side of most phototherapy units, their retinas 14 to 16 inches away (depending on the size of the light box). For many patients, especially those with pure SAD, phototherapy is an effective, complete treatment for symptoms during the entire winter.<sup>10,11</sup> Studies have shown morning use of light to be superior to

**Table 2. Prevalence of SAD and SSAD at various latitudes**

Latitude	Location	SAD	SSAD
45 – 50	Canada, Seattle, Minneapolis	10.2%	20.2%
40 – 45	Boston, Cleveland, New York City	8.0%	17.1%
35 – 40	Baltimore, Raleigh (North Carolina), St. Louis	5.8%	13.9%
30 – 35	Phoenix, Atlanta	3.6%	10.6%
25 – 30	Houston, Tampa (Florida), Baja California (Mexico)	1.4%	7.5%

SAD, seasonal affective disorder; SSAD, subsyndromal seasonal affective disorder.  
Data extracted from Rosen et al. *Psychiatry Res.* 1990<sup>7</sup>; and Rosenthal. *Winter Blues: Seasonal Affective Disorder: What It Is and How to Overcome It.* 1998.<sup>12</sup>

**Table 3. Symptoms of SAD in children and adolescents**

- ◆ Excessive sleeping
- ◆ Inability to get out of bed in the morning
- ◆ Problems with completing schoolwork
- ◆ Increase in errors in schoolwork
- ◆ Absenteeism/avoidance of going to school
- ◆ Avoidance of peers
- ◆ Frequent vague somatic complaints
- ◆ Hostility toward parents and siblings
- ◆ Change in attitude reported by others
- ◆ Falling asleep in school

SAD, seasonal affective disorder.

Data extracted from Glod and Baisden. *J Am Psychiatr Nurses Assoc.* 1999<sup>5</sup>; Swedo et al. *Am J Psychiatry.* 1995<sup>6</sup>; and Rosenthal. *Winter Blues: Seasonal Affective Disorder: What It Is and How to Overcome It.* 1998.<sup>12</sup>

**Table 4. Effects of depression on medical illness**

- ◆ Sleep disturbance
- ◆ Nutritional problems
- ◆ Self-care problems
- ◆ Noncompliance with treatment
- ◆ High medical care utilization
- ◆ Symptom amplification
- ◆ Suppressed immunity

Data extracted from Musselman et al. *Arch Gen Psychiatry.* 1998.<sup>27</sup>

that at other times, partially due to circadian rhythm activity in patients with SAD and partially due to compliance issues.

For patients with SAD and a history of depression at other times

of the year (including postpartum depression), light therapy alone may not be sufficient.<sup>19</sup> In a study from the National Institute of Mental Health that followed patients for an average of nine years, data indicated that 63% of patients using regular light therapy had to add low-dose antidepressants during at least one winter.<sup>19</sup> Antidepressant medication is another effective treatment for SAD, and it is more often covered by insurance or Medicare than are phototherapy units. In our program, we tended to use antidepressants that were somewhat activating and that did not have weight gain as a frequent side effect. For patients already receiving antidepressants for other disorders, an SAD diagnosis may necessitate a dosage increase during the winter. Light therapy or antidepressant medication may also be used in treating children or adolescents.<sup>5,6,12</sup>

Another promising therapy frequently used in combination with antidepressants or phototherapy units is a dawn simulator, which is a "light alarm clock" that begins to brighten a room 30 minutes before the desired waking time. Research on the use of combined forms of light is progressing.<sup>9</sup>

## REFERENCES

1. Rosenthal NE, Blehar M, eds. *Seasonal Affective Disorders and Phototherapy.* New York, NY: Guilford Press; 1989.
2. Rosenthal NE, Sack DA, Gillin JC, et al. Seasonal affective disorder: a description of the syndrome and preliminary findings with light therapy. *Arch Gen Psychiatry.* 1984;41:72-80.

3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition. Washington, DC: American Psychiatric Press; 1994:389-390.
4. Booker JM, Hellekson CJ. Prevalence of seasonal affective disorder in Alaska. *Am J Psychiatry*. 1992;149:1176-1182.
5. Glod CA, Baisden N. Seasonal affective disorder in children and adolescents. *J Am Psychiatr Nurses Assoc*. 1999;5:29-33.
6. Swedo SE, Pleeter JD, Richter DM, et al. Rates of seasonal affective disorder in children and adolescents. *Am J Psychiatry*. 1995;152:1016-1019.
7. Rosen LN, Targum SD, Terman M, et al. Prevalence of seasonal affective disorder at four latitudes. *Psychiatry Res*. 1990;31:131-144.
8. Low KG, Feissner JM. Seasonal affective disorder in college students: prevalence and latitude. *J Am Coll Health*. 1998;47:135-137.

9. Wirz-Justice A. Beginning to see the light. *Arch Gen Psychiatry*. 1998;55:861-862.
10. Lewy AJ, Bauer VK, Cutler NL, et al. Morning vs evening light treatment of patients with winter depression. *Arch Gen Psychiatry*. 1998;55:890-896.
11. Terman M, Terman JS. Bright light therapy: side effects and benefits across the symptom spectrum. *J Clin Psychiatry*. 1999;60:799-808.
12. Rosenthal NE. *Winter Blues: Seasonal Affective Disorder: What It Is and How to Overcome It*. New York, NY: Guilford Press; 1998.
13. Thorell LH, Kjellman B, Arned M, et al. Light treatment of seasonal affective disorder in combination with citalo-

- pram or placebo with 1-year follow-up. *Int Clin Psychopharmacol*. 1999;14 (suppl 2):S7-S11.
14. Sakamoto K, Nakadaira S, Kamo K, et al. A longitudinal follow-up study of seasonal affective disorder. *Am J Psychiatry*. 1995;152:862-868.
15. Sher L, Goldman D, Ozaki N, Rosenthal NE. The role of genetic factors in the etiology of seasonal affective disorder and seasonality. *J Affect Disord*. 1999;53:203-210.
16. Krauchi K, Keller U, Leonhardt G, et al. Accelerated post-glucose glycaemia and altered alliesthesia-test in seasonal affective disorder. *J Affect Disord*. 1999;53:23-26.
17. Neuhaus IM, Schwartz PJ, Turner EH, et al. Gender differences in glycosylated hemoglobin levels in seasonal affective disorder patients and controls. *Compr Psychiatry*. 1999;40:234-237.
18. Merriam PA, Ockene IS, Hebert JR, et al. Seasonal variation of blood cholesterol levels: study methodology. *J Biol Rhythms*. 1999;14:330-339.
19. Schwartz PJ, Brown C, Wehr TA, Rosenthal NE. Winter seasonal affective disorder: a follow-up study of the first 59 patients of the National Institute of Mental Health Seasonal Studies Program. *Am J Psychiatry*. 1996;153:1028-1036.
20. Lingjaerde O, Regine Foreland A. Characteristics of patients with otherwise typical winter depression, but with incomplete summer remission. *J Affect Disord*. 1999;53:91-94.
21. Booker JM, Roseman C. A seasonal pattern of hospital medication errors in Alaska. *Psychiatry Res*. 1995;57:251-257.
22. Whooley MA, Simon GE. Managing depression in medical outpatients. *N Engl J Med*. 2000;343:1942-1950.
23. Schulberg HC, Katon W, Simon GE, Rush AJ. Treating major depression in primary care practice: an update of the Agency for Health Care Policy and Research Practice Guidelines. *Arch Gen Psychiatry*. 1998;55:1121-1127.
24. Brown C, Schulberg HC, Madonia MJ. Clinical presentations of major depression by African Americans and whites in primary medical care practice. *J Affect Disord*. 1996;41:181-191.
25. Penninx BW, Beekman AT, Honig A, et al. Depression and cardiac mortality: results from a community-based longitudinal study. *Arch Gen Psychiatry*. 2001;58:221-227.
26. Glassman AH, Shapiro PA. Depression and the course of coronary artery disease. *Am J Psychiatry*. 1998;155:4-11.
27. Musselman DL, Evans DL, Nemeroff CB. The relationship of depression to cardiovascular disease: epidemiology, biology, and treatment. *Arch Gen Psychiatry*. 1998;55:580-592.

## Seasonal Affective Disorder in Women

### PRIMARY POINTS

Adults with seasonal affective disorder (SAD) often present to the clinician's office with complaints of "not being able to function" at work. Falling asleep on the job, trouble waking up in the morning, inability to concentrate or remember details essential to job performance, and irritability with coworkers are frequent concerns.

Patients with SAD experience symptoms such as mood dysfunction (eg, depression, irritability), excessive sleeping and weight gain, extreme fatigue, and frequent somatic difficulties.

SAD symptoms in children and adolescents may differ from those in adults. Young people who have SAD may exhibit excessive fatigue and chronic somatic problems, inability to do schoolwork that used to "make sense," unwillingness to socialize with other children or to go to school, and hostility toward parents and siblings.

For many patients with SAD, phototherapy is an effective, complete treatment for symptoms during the entire winter.

For patients with SAD and a history of depression at other times of the year (including postpartum depression), light therapy alone may not be sufficient. Antidepressant medication is another effective treatment.