REVIEW

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Recognizing and treating social anxiety disorder

ABSTRACT

Social anxiety disorder is the third most common psychiatric disorder in the United States. Patients strive to avoid stress-inducing situations, or they may endure them with marked psychological distress and physical reactions, including sweating and tachycardia. Social anxiety disorder can be diagnosed by a careful history and can be treated successfully with medications or psychosocial interventions.

KEY POINTS

Basic screening questions for this condition can be asked in a few minutes and can identify patients who need further evaluation.

Patients with social anxiety disorder frequently have psychological comorbidities, including major depressive disorder or substance abuse.

Genetic, familial, and neurobiological factors are thought to play interrelated causative roles.

Comprehensive treatment includes pharmacologic and psychotherapeutic interventions, which can greatly alleviate the symptoms and negative consequences.

MORE PATIENTS are asking their physicians about social anxiety disorder, their interest piqued by popular reports of treatment breakthroughs and by direct-to-consumer advertising about medications. However, the nature of social anxiety disorder often prevents people from seeking help.

Identifying social anxiety disorder is important because pharmacologic, psychosocial, and even surgical treatments are successful in reducing the personal and social burden of this common condition. Unfortunately, like many other psychiatric disorders, social anxiety disorder remains under-recognized by clinicians.[1–3]

The National Comorbidity Survey reported the lifetime prevalence of social anxiety disorder to be 13.3%, making it the most common anxiety disorder and the third most common psychiatric disorder in the United States, after major depression and alcohol dependence (FIGURE 1).[4–6]

SYMPTOMS AND SUBTYPES OF SOCIAL ANXIETY DISORDER

It is normal to experience occasional mild discomfort and anxiety in a new social situation or public engagement. However, when this emotion becomes a marked and persistent fear causing distress or leading to avoidance of certain situations, the physician should consider a diagnosis of social anxiety disorder, a condition previously termed social phobia.[7]

Excessive and unreasonable fear of being scrutinized by others or doing something embarrassing in front of strangers is the hallmark of social anxiety disorder.[7] Patients with the disorder may go to great lengths to avoid a

Social anxiety disorder usually develops before age 20

situation that requires them to interact or perform in a social setting, or they may endure such situations with anxiety and dismay.[8,9] TABLE 1 lists the diagnostic criteria from the fourth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual for Mental Disorders* (*DSM-IV*).

Two subtypes of social anxiety disorder are recognized. When the fear is confined to a particular type of social or performance situation—the most common is speaking in front of an audience—the disorder is called specific (or discrete) social anxiety disorder or performance anxiety. The second and more disabling type is generalized social anxiety disorder, in which the patient experiences pervasive fears in most social interactions and situations.[10,11]

Typically, social anxiety disorder develops before age 20, with a mean age of onset between 14 and 16 years,[1,12] though some individuals report an onset in early childhood. The onset may be insidious or may follow a stressful or humiliating experience.[7]

Patients with social anxiety disorder experience cognitive distortions, including unrealistic false beliefs about social situations and negative perceptions of others' reactions to their performance. They may fear that a social situation will induce "thought blocking," causing them to become speechless or incoherent. Patients may also have an overwhelming fear that they will appear unwell by trembling, blushing, or sweating, or they may worry that they will do or say something stupid or "crazy."[7,13] Activities feared by many patients with social anxiety disorder include being in public while eating, ordering food, or writing; asking questions or introducing themselves in a group; meeting strangers or people in authority; or using public facilities such as restrooms or telephones (TABLE 2).[11,14,15]

In addition, patients with social anxiety disorder experience many physical symptoms (TABLE 3).[5] These include sweating, trembling, palpitations, shortness of breath, nausea, diarrhea, and blushing.[11,16] The last is very common, reported in approximately 50% of patients. As Charles Darwin noted, blushing occurs in response to "thinking of what others think of us,"[17] a problem central to social anxiety disorder. FIGURE 2 schematically demonstrates the feedback loop between the physical and psychological symptoms.

USE OF SCREENING QUESTIONS FOR SOCIAL ANXIETY DISORDER

Often, the topic of social anxiety disorder arises during an appointment with a physician when a patient refers to having problems from being "too shy."

The physician can use several screening questions to identify patients requiring further investigation (TABLE 4). Patients who respond affirmatively to several of these questions and who are experiencing distress, negative consequences, or both may have significant social anxieties and may benefit from treatment or psychiatric consultation.

Standardized scales such as the Social Phobia and Anxiety Inventory (SPAI)[18] or the Liebowitz Social Anxiety Scale[19] are also available and may allow patients the comfort of rating their own symptoms privately without feeling intimidated by direct questioning from their physician.

The diagnosis is confirmed when the patient's history meets the DSM-IV criteria (TABLE 1).

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of social anxiety disorder includes a wide array of psychiatric and medical disorders that can cause the patient to develop a pattern of avoiding social situations. The most common conditions to be excluded are major depressive disorder, panic disorder with agoraphobia, avoidant personality disorder, medical conditions with physical manifestations that cause social withdrawal, and general shyness (TABLE 5).

Depression

In some patients, major depressive disorder may be characterized by severe anxiety and social isolation. However, depression is also associated with neurovegetative signs and symptoms that are not typical of social anxiety disorder: sleep and appetite changes, anhedonia or lack of ability to feel pleasure, and suicidal thinking. Fortunately, antidepressant medications are helpful for both depression and social anxiety disorder, whether they occur independently or as comorbidities.

Panic disorder

The panic attacks associated with panic disorder may be triggered by social situations. However, in contrast to patients with social anxiety, those with panic disorder do not fear the social exposure but rather are concerned by the panic attack itself. In fact, patients with severe panic disorder complicated by agoraphobia often dread being alone and prefer being around people in case they need help during a panic attack.

Avoidant personality

Personality can confound the diagnosis of social anxiety. Avoidant personality disorder may cause significant social anxiety and inhibition. Patients with this condition experience feelings of inadequacy and have a marked hypersensitivity to negative evaluation. Like patients with social anxiety, they avoid activities that involve significant social or interpersonal contact. However, unlike most social anxiety disorder patients, they often view themselves as inferior to others or personally unappealing.

Medical disorders

Medical conditions such as Parkinson disease that produce obvious physical symptoms such as stuttering can lead to socially avoidant behavior. For example, stutterers may avoid speaking in new social settings for fear that they will embarrass themselves. However, these individuals have fears that are rationally grounded in their symptoms. In contrast, patients with social anxiety disorder have ungrounded social fears.

A patient with such a medical condition should be diagnosed with social anxiety only if the social fear is unrelated to the physical symptoms. For example, social anxiety may be identified in a Parkinson patient who avoids social interactions, not for fear of being seen trembling, but rather because of a fear of acting in a way that is humiliating.

Common fears include eating in public or meeting strangers

Shyness

General, nonpathologic shyness may be similar to social anxiety, and the two can be difficult to distinguish in some cases. A guiding principle should be that shyness does not usu-

TABLE 2

Some common fears in social anxiety disorder

- Speaking in public
- Writing or eating in front of others
- Making small talk
- Asking questions or giving reports in groups
- Being introduced
- Meeting or talking to strangers
- Attending social gatherings
- Meeting or talking to people in authority
- Entering a party group
- Being assertive or expressing disagreement
- Being watched ordering food
- Being tested
- Acting or playing a musical instrument in public
- Initiating conversation with a member of the opposite sex
- Dating
- Seeking medical help
- Walking into a room when people are already seated
- Returning items to the store
- Speaking in class

TABLE 3

Physical signs and symptoms of social anxiety disorder

- Tachycardia
- Increased blood pressure
- Trembling
- Shaking voice
- Shortness of breath
- Blushing
- Nausea
- Diarrhea
- Cold clammy hands
- Muscle tension
- Gastrointestinal discomfort
- Sweating
- Poor eye contact

Experience attenuates common shyness but not social anxiety disorder

ally invoke considerable socially disabling distress. Also, shyness can be attenuated by experience. In contrast, social anxiety causes profound distress and functional limitations, and social experiences may actually reinforce the fears. Psychiatric consultation can help clarify these distinctions.

PERSONAL AND SOCIAL EFFECTS OF SOCIAL ANXIETY DISORDER

Because social anxiety disorder usually starts at an early age, it can interfere meaningfully with normal development and create harmful coping mechanisms.[1,20] Having the disorder is associated with lower educational achievement, unstable employment history, and a higher frequency of being absent or late for work. It is also sometimes associated with avoiding work duties such as making presentations.[20] In addition, persons with social anxiety disorder are less likely to marry, more likely to divorce, and more likely to be unemployed.

Consequently, at least one third of these patients have reduced productivity, leading to dependence on the family and the state. In one sample of patients with social anxiety disorder, more than 20% were on welfare.[20]

An interesting finding is that patients appear to have a higher rate of concomitant physical illnesses and to use medical outpatient services more often than subjects without a psychiatric disorder.[1,20]

PSYCHIATRIC COMORBIDITIES

Social anxiety disorder is complicated by the presence of coexisting psychiatric conditions in 70% to 80% of cases.[20] In the primary care setting, patients with social anxiety disorder have a 40% to 50% lifetime prevalence of comorbid major depressive disorder, which usually develops after the onset of the social anxiety. Comorbidity increases the probability of disability and suicide. The suicide attempt rate in uncomplicated social anxiety disorder is 1%, rising to 16% when the disorder is complicated by a comorbid psychiatric condition.[1,21]

Alcohol and drug abuse are common, though inappropriate, coping mechanisms. Alcohol may be used by many patients in an attempt to "self-medicate" or reduce anxiety in social situations. Alcohol abuse is reported in 17% of social anxiety disorder patients, and other drug abuse in 13%.[21] Alcohol abuse usually evolves over many years after the onset of social anxiety disorder. In theory, detecting social anxiety disorder early may assist in the prevention of alcohol or drug dependence in these susceptible patients.[20]

CAUSES OF SOCIAL ANXIETY DISORDER

Although the pathophysiology of social anxiety disorder is not fully understood, it likely involves interplay between genetics, family modeling, neurobiology, and cognitive behavioral factors.

Genetic and familial factors

Evidence for a genetic contribution comes from twin studies, which report concordance rates of 24% in monozygotic twins and 15% in dizygotic twins. First-degree relatives of patients are more than three times as likely to develop social anxiety disorder than are unrelated individuals.[22] Children of parents with social anxiety disorder are more likely to develop the condition than children of parents without it.[23]

Also, parental overprotection or rejection is associated with increased rates of the disorder.[23] Children may learn fears from observing fear reactions from their parents, consequently modeling or developing avoidance behavior. Overprotection may prevent children from being exposed to challenging or stressful situations, which are normal factors in human development, thereby teaching children abnormal social fears and behaviors.[16]

The cognitive behavioral model

Patients with social anxiety disorder tend to view the world as a negative, defeating place, a mindset that is known as having negative cognitions. They frequently judge themselves harshly and perceive others' reactions to their performance to be negative. They learn to avoid the stress-inducing situations; if they must experience the situation, they feel high levels of anxiety. A vicious cycle develops, in which the heightened anxiety reinforces their belief that the world is a bad place or that others are judging them.

Social anxiety disorder: A positive feedback loop

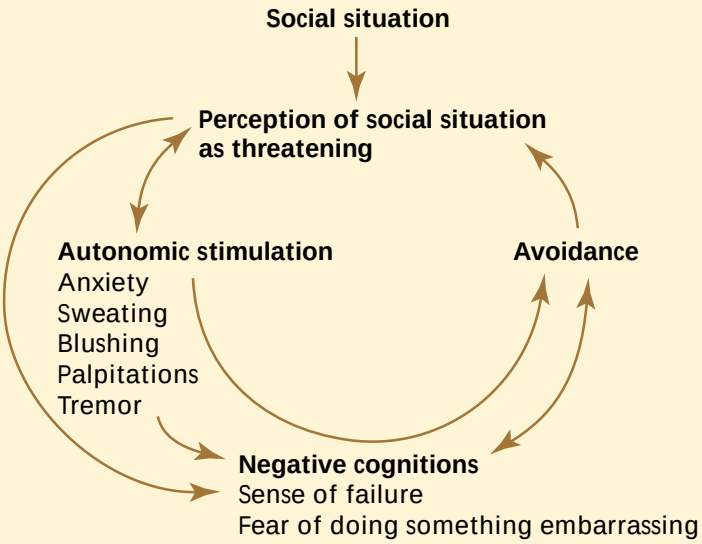

FIGURE 2. A model illustrating the basic concept of social anxiety disorder. In this model, the patient perceives interactions with strangers as threatening as a result of negative cognitions. This leads to activation of the autonomic system and avoidance of the situation, which in turn reinforces the negative perception and sense of failure, again leading to avoidance.

Neurobiological factors

Serotonergic function. A role for serotonin is suggested by the clinical efficacy of psychotropic medications such as monoamine oxidase inhibitors (MAOIs), reversible monoamine oxidase inhibitors (RIMAs), and selective serotonin reuptake inhibitors (SSRIs). Increased serum cortisol levels and anxiety in response to fenfluramine challenge provide limited evidence to support postsynaptic hypersensitivity in at least a subgroup of serotonin receptors. However, another study that measured peripheral serotonergic

TABLE 4

Screening questions for social anxiety disorder*

Are you uncomfortable or embarrassed when you are the center of attention, or when you are asked to do things in public like speaking, eating, or signing a check?

Do you find it hard to interact with people?

Is being embarrassed or looking "stupid" among your worst fears?

Does fear of doing something embarrassing or humiliating cause you to avoid doing things or speaking to people?

Do you avoid activities that put you at the center of attention?

*An affirmative answer to two or more of these questions should cause one to suspect the diagnosis and warrants further investigation

TABLE 5

Differential diagnosis of social anxiety disorder

All of the following lead to avoidance of social situations:

Social anxiety disorder
Problem performing
Dread being with people

Medical condition with physical manifestation
Parkinson disease
Stuttering
Bell's palsy

Panic with agoraphobia
Worried about having a panic attack
Fear that escape or help is not available
Dread being alone and prefer being around people

Depression
Differentiated by clear anhedonia (lack of all pleasure)
Suicidal ideation
Sleep and appetite changes

Shyness
Unpleasant feeling in social situation
Not very distressing or disabling

Avoidant personality disorder
Pervasive feelings of inadequacy
More anxiety and problems relating
May be a more severe form of social anxiety disorder

function did not show any difference between patients and controls.[5,16,24]

Dopaminergic function. Dopamine involvement has been suggested by two lines of evidence. First, social anxiety disorder develops in some patients treated with antidopaminergic agents such as haloperidol (Haldol) and in some patients with Parkinson disease, which is associated with dopaminergic changes. Second, social anxiety symptoms respond to MAOIs and bupropion (Wellbutrin), both of which enhance dopaminergic function.

The clinical studies are, however, contradictory. One study showed no difference between social anxiety patients and controls in levodopa levels, prolactin levels, and eye blink response.[24] However, another small study found that patients had markedly lower striatal dopamine reuptake site densities than did controls.[25,26]

Adrenergic function. Patients with specific performance social anxiety disorder experience larger increases in heart rate than do patients with the generalized disorder. The difference may explain why beta-blockers are effective in specific social anxiety but not in generalized social anxiety disorder. No consistent abnormalities have been found in plasma norepinephrine levels.[5,24]

Central chemoreceptor sensitivity can be assessed by having patients inhale 35% carbon dioxide, an anxiogenic or panic-inducer. When subjected to this test, patients with social anxiety disorder have central chemoreceptor sensitivity levels somewhere between those of normal controls and those of panic disorder patients.[24]

Growth hormone deficiency may be associated with increased risk of developing an anxiety disorder, but further studies are needed.[24]

Abnormal patterns of brain activation. Neuroimaging studies in social anxiety disorder patients have shown that the right dorsolateral prefrontal cortex and the left parietal cortex are uniquely activated while the patient experiences anxiety. Interestingly, these areas may be related to planning effective behavioral responses and awareness of body position, which is a central concept in the psychopathology of social anxiety disorder.[24] (As mentioned previously, patients with social anxiety disorder are concerned by potential

TABLE 6

Medication dosing strategies for generalized social anxiety disorder

THERAPY	STARTING DOSE	TARGET DOSE
SSRIs (first-line therapies for generalized social anxiety disorder)		
Citalopram (Celexa)	10–20 mg daily	20–40 mg daily
Fluoxetine (Prozac)	5–10 mg every morning	20–80 mg every morning
Fluvoxamine (Luvox)	25–50 mg at bedtime	100–300 mg at bedtime
Paroxetine (Paxil)	5–10 mg at bedtime	20–50 mg daily
Sertraline (Zoloft)	12.5–25 mg every morning	50–200 mg daily
Alternative therapies		
Gabapentin (Neurontin)	100 mg three times daily	300–1200 mg three times daily
Nefazodone (Serzone)	25 mg twice a day	300–600 mg daily
Phenelzine (Nardil)	15 mg twice a day	30–90 mg daily
Venlafaxine (Effexor)	37.5–75 mg each morning	75–375 mg daily
Therapies for specific performance anxieties		
Propranolol (Inderal, others)	10–80 mg 1 hour before a stress-inducing performance	
Atenolol (Tenormin, others)	25–100 mg 1 hour before a stress-inducing performance	
Clonazepam (Klonopin)	0.5–2.0 mg before performance	
Alprazolam (Xanax)	0.25–1.0 mg before performance	

scrutiny. Their topographical relationship to others and their own responses behaviorally are key factors in understanding this illness.) In one study, functional magnetic resonance imaging showed that the amygdala and hippocampus were activated more intensely in patients with social anxiety disorder than in controls presented with similar stimuli.[27]

PHARMACOLOGIC TREATMENT

Several pharmacologic therapies have proven effective for reducing the symptoms and functional limitations experienced by patients with social anxiety disorder (TABLE 6). The preferred medication class is the selective serotonin reuptake inhibitors, but several other drugs also have a role in the treatment of this disorder.

Selective serotonin reuptake inhibitors (SSRIs)

This group of medications is considered the first line of pharmacologic treatment for social anxiety disorder.

The first multicenter, randomized, double-blind study of an SSRI found that paroxetine (Paxil) was effective and well-tolerated in reducing the symptoms and avoidance that are characteristic of social anxiety disorder. The trial lasted 12 weeks; the dosage of paroxetine ranged from 20 to 50 mg/day.[5,28]

Other small studies demonstrated the efficacy of fluvoxamine (Luvox) at 100 to 300 mg daily and of sertraline (Zoloft) at 50 to 200 mg daily. Citalopram (Celexa) and fluoxetine (Prozac) have also been shown to be effective in open-label trials.[4,29]

Generally well tolerated, SSRIs have produced acute improvement in 50% to 75% of patients.[14]

Starting dosages for social anxiety disorder should be lower than those used for depressive disorders to reduce chances of an acute activating or energizing effect (TABLE 6). Starting the dose too high or increasing the dosage too quickly may actually worsen anxiety in these already anxious patients.

SSRIs are the preferred treatment for social anxiety disorder

Monoamine oxidase inhibitors (MAOIs)

Before the advent of SSRIs, MAOIs were considered the first-line drug treatment for social anxiety disorder. However, problems with tolerability, including drug interactions, limit

their use. A tyramine-restricted diet is required to reduce the chances of hypertensive crises.[4]

The most extensively studied MAOI for treating social anxiety disorder is phenelzine (Nardil), which is effective in doses between 30 to 90 mg per day. However, psychiatric and nutritional consultation are recommended before initiating therapy with MAOIs.

Benzodiazepines

Limited data support the efficacy of high-potency benzodiazepines, specifically clonazepam (Klonopin) and alprazolam (Xanax). The rapid anxiolytic effect of these medications may be advantageous for some patients with a specific performance anxiety, such as fear of giving a speech, who could take the medication just before the performance. Unfortunately, some patients experience unwanted side effects such as sedation and dulled thinking.

Caution is warranted in prescribing benzodiazepines because long-term use may lead to physical dependence, including withdrawal symptoms when the drug is discontinued. In addition, benzodiazepines interact strongly with alcohol, and comorbid alcohol dependence is known to be common in patients with social anxiety.[4,30]

Beta-blockers may be useful for specific performance anxiety

Beta-blockers

Although beta-blockers may be used to treat specific performance-related anxiety, controlled studies have not supported their efficacy in generalized social anxiety disorder.[5,30] Their efficacy in performance anxiety may be attributable to their ability to decrease the peripheral physical symptoms of anxiety, such as tachycardia and tremor, thus minimizing the perception of anxiety. Beta-blockers are less likely to cause sedation and cognitive side effects than are benzodiazepines. Propranolol (Inderal, others; 10 to 80 mg) and atenolol (Tenormin, others; 25 to 100 mg) are equally effective and may be used as needed 1 hour before the triggering event in patients with specific performance-related anxiety.[5,30]

Other medications

Some medications showing early promise include venlafaxine (Effexor), nefazodone (Serzone), and gabapentin (Neurontin).[31–33]

TABLE 6 lists starting and target doses for medications for the treatment of generalized social anxiety disorder. However, SSRIs remain the first-line agents, and MAOIs or newer agents should generally be reserved for treatment-refractory patients or used in consultation with a psychiatrist.

PSYCHOLOGICAL TREATMENT

The cornerstone of psychosocial treatment for anxiety is exposure to the feared situation, either in real life or in role-play. Of the psychosocial interventions for social anxiety disorder, cognitive-behavioral therapy is supported by the most evidence.[34] In cognitive-behavioral therapy, the therapist uses exposure to help induce cognitive restructuring, that is, to change the patient's interpretation of the feared situation and the belief that the outcome is a failure. The patient also undergoes social skill training, including modeling appropriate behavior, receiving feedback, and practicing the skills as "homework." Cognitive-behavioral therapy appears to be particularly effective for treating social anxiety disorder in group settings.[34]

In other psychological disorders, combining medication with cognitive-behavioral therapy is more effective than either modality alone. For example, cognitive-behavioral therapy with nefazodone is an effective combination for treatment of chronic depression, and cognitive-behavioral therapy plus imipramine is effective for panic disorder.[32,35] Such combinations have not been studied in social anxiety disorder, but the effectiveness of each modality alone suggests that combinations may deserve study.[4]

Specific anxieties, such as the fear of public speaking, can be addressed in a group setting that educates and desensitizes the affected individual. For example, Toastmasters International is an organization that gives members the opportunity to speak to groups and work with others in a supportive environment. A typical Toastmasters club is made up of 20 to 30 people who meet once a week for about an hour. Local meetings can be found by contacting Toastmasters at 949-858-8255 or by accessing the organization's website at www.toastmasters.org.

SURGICAL INTERVENTIONS

One prospective study suggests that endoscopic thoracic sympathicotomy may be effective in patients who do not respond to medication or psychological therapy. Ablating the upper thoracic sympathetic nerve segments relieves physical signs and symptoms of sympathetic arousal (such as sweating) that precipitate or reinforce negative cognitions and avoidance.[36]

As expert neurosurgeons make advances in deep brain stimulation, it is also possible that this procedure may offer hope to patients with severe, treatment-resistant social anxiety disorder.

FOLLOWING UP WITH PATIENTS

Patients will probably benefit in the short term from medication management by their general practitioner. In addition, most should also be considered for referral to a psychiatrist for a complete medical, psychiatric, and psychological evaluation and formulation of a comprehensive treatment plan to optimize recovery.

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