Social anxiety disorder is associated with significant impairment in social and occupational functioning. Gender differences in social anxiety disorder are apparent for treatment seeking and symptom clusters, and hormonal influences may affect the natural course of illness. The lifetime prevalence rate is 13.3%, with rates of 15.5% in women and 11.1% in men. Although most studies indicate that more women suffer from social anxiety disorder, it appears that men are more likely to seek treatment. Gender differences in the presentation and management of social anxiety disorder may be influenced by fluctuations in levels of endogenous or exogenous reproductive hormones. Neurotransmitter systems implicated in the etiology of mood and anxiety disorders may be affected by both estrogen and progesterone. There are also issues with regard to pregnancy in women who have social anxiety disorder. It is not known if untreated social anxiety disorder represents a significant risk to the fetus. However, social anxiety disorder often is complicated by comorbid depression, panic disorder, or substance abuse, all of which may pose risks to the fetus if left untreated. Treatment strategies for patients with social anxiety disorder should consider gender differences in response to pharmacotherapy, psychiatric comorbidity, oral contraceptive use, pregnancy status, and the specific nature of symptoms in the individual patient.

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order clinics there is an equal or slightly higher preponderance of males. This difference may be in part due to differences in levels of distress experienced by men and women with social anxiety disorder. Pollard and Henderson found that, although the ratio of women to men who fit criteria for social anxiety was 3:2, when diagnostic criteria included “significant distress,” the ratio was 2:3. However, only 2% of subjects were classified as “distressed”; therefore, this result may not be clinically significant.

Differences in gender roles and social expectations may explain why men with social anxiety disorder tend to seek treatment more often than women. In most Western cultures, males have been expected to be more assertive and outgoing in social interactions. In contrast, women traditionally have been encouraged to take a more passive role. Thus, when symptoms of social anxiety disorder interfere with the ability to interact with others and perform in work, school, or social settings, these symptoms may affect men more severely than women. Data from studies of shyness are consistent with this theory. In one study of life-course patterns of shy children, shy boys and girls were followed into adulthood. Males who were judged to be shy in childhood appeared to suffer more social and occupational dysfunction as adults than their female counterparts. Shy males married and had their first child 3 or more years later than nonshy males (p < .01) (Figure 2), but this was not the case for shy females. Shy males also entered a steady career 3 years later than nonshy males (p < .05). In contrast, shy females were less likely to ever work outside the home or reenter the workforce after marriage or childbirth than their nonshy female counterparts (p < .05).

Other studies of childhood shyness validate a gender effect. Bacon and Ashmore reported that shyness in boys is associated with more negative feedback from parents and peers than shyness in girls. Mills and Rubin reported that sons are more likely to be admonished by parents for shy, inhibited behavior than are daughters. Although childhood shyness differs from social anxiety disorder, the 2 conditions share some characteristics, including difficulty with social interactions. Thus, the differential effect on social and occupational functioning seen between shy men and women in adulthood may explain the increased treatment-seeking seen in men with social anxiety disorder when compared with women with the disorder.

CHARACTERISTICS OF SOCIAL ANXIETY DISORDER

There appear to be gender differences in the situational and performance fears associated with social anxiety disorder as well. Pollard and Henderson evaluated point-prevalence rates and demographic differences for 4 common performance fears associated with social anxiety disorder: public speaking or performing, writing in front of others, eating in restaurants, and use of public restrooms. The overall rate of social anxiety disorder was higher in women, but concerns about eating in restaurants and writing in public were more common in men. However, problems with using public restrooms and speaking or performing in public were more common in women (Figure 3).

Response to Psychotherapy

The issue of gender differences in response to psychotherapy, specifically cognitive-behavioral therapy (CBT), is a newly emerging field of study, with major depression among the first psychiatric disorders to be studied. However, few data exist regarding gender differences in response to CBT or other psychotherapeutic interventions in patients with social anxiety disorder. This is an area that requires further study.
Exogenous Hormones

Exogenous hormones can also affect pharmacotherapeutic response in women with social anxiety disorder. Depression and irritability have been associated with oral contraceptive use in women without underlying psychiatric disorders. Both the estrogen and progestin components of these contraceptives have been implicated as the causal factor in mood disturbance, although most researchers feel that the mood disturbances are secondary to the synthetic progestin component.

Oral contraceptives can interfere with both pharmacokinetic and pharmacodynamic responses to psychotropic medications. They are hepatically metabolized and can increase clearance of compounds metabolized by conjugation and glucuronidation and decrease clearance of compounds metabolized through oxidation. In addition, drugs that increase hepatic enzyme induction may increase metabolism of oral contraceptives, leading to subtherapeutic levels and contraceptive failure.

Few data exist regarding potential interactions between oral contraceptives and selective serotonin reuptake inhibitors (SSRIs), β-blockers, or monoamine oxidase inhibitors (MAOIs). Theoretically, estrogen-dominant oral contraceptives can decrease serum levels of benzodiazepines that undergo glucuronidation, such as lorazepam, oxazepam, and temazepam. In addition, they can increase serum levels of benzodiazepines that undergo oxidation, such as alprazolam, triazolam, diazepam, and chlordiazepoxide. The response to diazepam may fluctuate across the menstrual cycle in women taking oral contraceptives. The estrogen component of the oral contraceptives may affect absorption of diazepam, leading to differences in serum levels during the 3 weeks of contraceptive use versus the hormone-free week. In patients with social anxiety disorder, attention should be paid to concomitant use of oral contraceptives and benzodiazepines. In some cases, an adjustment in the dosage of the benzodiazepine may be necessary.

PREGNANCY

Women with psychiatric disorders who wish to become pregnant are faced with difficult decisions regarding the use of psychotropic medications. A number of different issues must be addressed. Risks of fetal exposure to medications, including congenital anomalies, neurodevelopmental sequelae, and perinatal syndromes, must be weighed against the risks of untreated maternal disorder.

There is no evidence to suggest that untreated social anxiety disorder represents a significant risk to the fetus. However, social anxiety disorder often is complicated by comorbid depression, panic disorder, or substance abuse, all of which may pose risks to the fetus if left untreated. In addition, women with untreated severe social anxiety disorder may be hesitant to visit a physician because of anx-
Monoamine Oxidase Inhibitors

Although β-blockers do not have a role in the treatment of generalized social anxiety disorder, they may be used on an as-needed basis for patients with a fear of public speaking. Most of the data regarding safety of β-blockers during pregnancy have addressed use of β-blockers in the treatment of hypertension, not anxiety disorders. Theoretically, β-blockers could cause increased uterine contractions, although this has not been reported as a problem when they have been used during pregnancy. One study reported altered fetal lung development in rats exposed to β-blockers in utero. However, 2 studies conducted in women reported conflicting results. In one study of very low birth weight infants, 7 of 19 infants born to mothers treated with β-blockers during pregnancy died within 1 year of birth, compared with no deaths in 16 infants whose mothers were treated with other antihypertensives. In contrast, in a study of β-blocker use in 121 patients who had 125 high-risk pregnancies, there was no evidence of low Apgar scores or bradycardia in the infants.

Benzodiazepines

Some early reports of benzodiazepine use during pregnancy suggested that first-trimester exposure may be associated with an increased risk of oral clefts. However, other studies failed to exhibit such an association. Unfortunately, there are a limited number of studies addressing this relationship, and the existing studies utilized a number of different designs. A recent meta-analysis of studies assessing risk of prenatal benzodiazepine exposure suggested that if there is an increased risk of development of oral clefts associated with benzodiazepine use during pregnancy, absolute risk is considered to be low at less than 1%. Further large-scale studies are needed to address this issue. There have been reports of perinatal sequelae associated with in utero exposure to benzodiazepines, including low Apgar scores, failure to feed, neonatal apnea, muscular hypotonicity, and impaired temperature regulation. Limited data exist regarding effects of in utero exposure to benzodiazepines on neurodevelopment. Some studies suggest developmental delays, whereas others do not.

Monoamine Oxidase Inhibitors

Monoamine oxidase inhibitors are effective in the treatment of social anxiety disorder. However, in utero exposure to MAOIs has been associated with an increased risk of congenital anomalies in humans and neurologic abnormalities in animals. In addition, use of MAOIs is contraindicated with terbutaline, a medication often used to manage premature labor.

Selective Serotonin Reuptake Inhibitors

The SSRIs have been well studied in pregnancy. A number of studies have suggested that in utero exposure to fluoxetine is not associated with an increased risk of major malformations. A registry containing more than 1500 cases of prenatal exposure to fluoxetine failed to show increased rates of congenital anomalies. A preliminary study of neurobehavioral functioning in children exposed to fluoxetine in utero also failed to show adverse effects associated with prenatal exposure to the drug.

Data regarding safety of the other SSRIs are similar, but less extensive. Kulin and colleagues matched 267 women who took paroxetine, sertraline, or fluvoxamine during pregnancy with an equal number of controls. There was a total of 222 live births, including 9 major malformations, in women who had taken SSRIs, and 235 births and 9 major malformations in controls (p = .91). The rates of miscarriage and stillbirth were similar in both groups, and mean birth weight and gestational age were also similar. Based on these data, paroxetine, sertraline, or fluvoxamine did not appear to increase the risk of congenital anomalies when used during pregnancy. However, given the low overall number of patients followed in this study, more data are necessary to confirm that these drugs do not harm the developing fetus. An additional small study of 63 infants exposed to paroxetine during the first trimester failed to show evidence of congenital anomalies.

The shorter half-lives of paroxetine, sertraline, and fluvoxamine make these SSRIs a better choice for treating a patient who does not wish to continue medication during pregnancy. The SSRIs have been well studied in pregnancy. A number of studies have suggested that in utero exposure to fluoxetine is not associated with an increased risk of major malformations. The rates of miscarriage and stillbirth were similar in both groups, and mean birth weight and gestational age were also similar. Based on these data, paroxetine, sertraline, or fluvoxamine did not appear to increase the risk of congenital anomalies when used during pregnancy. However, given the low overall number of patients followed in this study, more data are necessary to confirm that these drugs do not harm the developing fetus. An additional small study of 63 infants exposed to paroxetine during the first trimester failed to show evidence of congenital anomalies.

CONCLUSION

In conclusion, gender differences in the presentation and management of social anxiety disorder can be influenced by both psychosocial and biological factors. Treatment strategies for patients with social anxiety disorder should consider gender differences in response to pharmacotherapy, comorbidity, oral contraceptive use, pregnancy status, and the specific nature of symptoms in the individual patient.
Drug names: alprazolam (Xanax), chlordiazepoxide (Librium and others), diazepam (Valium and others), fluoxetine (Prozac), fluvoxamine (Luvox), lorazepam (Ativan and others), oxazepam (Serax and others), paroxetine (Paxil), sertraline (Zoloft), temazepam (Restoril and others), terbutaline (Brethine), triazolam (Halcion).

REFERENCES