Integrative Management of Anxiety

by James Lake, MD

In part 1 of this column (*Psychiatric Times,* November 2007, page 13), I reviewed research findings of the most substantiated nonpharmacological and integrative treatments for anxiety, such as kava-kava, L-theanine, applied relaxation, yoga, meditation and mindfulness training, virtual reality graded exposure therapy, and biofeedback training. In this part, I discuss less substantiated but promising nonconventional approaches, including dietary changes, supplementation with L-tryptophan or 5-hydroxytryptophan (5-HTP), regular exercise, massage, acupuncture and electroacupuncture, healing touch, and Reiki.

Part 2

Dietary changes

Symptoms of generalized anxiety are frequently associated with a common condition known as reactive hypoglycemia, in which blood glucose drops to abnormally low levels following a glucose challenge. Persons who experience anxiety related to this condition benefit from dietary changes such as low carbohydrate and high protein intake, consumption of foods with different glycemic indices, and avoidance of caffeine.[1]

Caffeine use is associated with an increased risk of anxiety. Caffeine consumption increases serum epinephrine, norepinephrine, and cortisol levels, and can result in feelings of "nervousness" in healthy adults or, in persons who are predisposed, increased feelings of generalized anxiety or panic episodes.[2,3] Patients who have chronic anxiety report that symptoms diminish when they abstain from caffeine.[4]

A dietary deficiency of the amino acid tryptophan leads to reductions in brain serotonin levels. Persons who experience generalized anxiety or panic episodes reported more severe symptoms when they were being treated with an amino acid formula that excludes tryptophan.[5]

Ayurvedic herbs

Ayurvedic herbal preparations such as *Bacopa monnieri* and *Centella asiatica* have been used for thousands of years to treat symptom patterns that resemble generalized anxiety. Double-blind controlled trials suggest that both herbs effectively reduce general anxiety symptoms.[6,7] Emerging evidence suggests that an Ayurvedic herbal compound formula called "Geriforte" may also alleviate symptoms of generalized anxiety.[8] No serious adverse effects have been reported when the above preparations are used at recommended dosages.

Ayurveda is an advanced, highly integrated system of medicine that employs diverse herbal, mind-body, and energetic treatment modalities. Patients who use Ayurvedic herbal preparations should be supervised by a trained Ayurvedic physician.

Amino acids and amino acid precursors

L-tryptophan and 5-HTP are widely used nonconventional treatments for generalized anxiety; however, to date, few double-blind studies have examined their efficacy. Both amino acids are essential precursors for synthesis of serotonin, a neurotransmitter that plays a central role in the regulation of mood and anxiety. More extensive research literature is available for the treatment of anxiety with 5-HTP than with L-tryptophan.

In a double-blind study, 58% of patients with general anxiety (n = 79) who were randomized to L-tryptophan 3 g/d reported significantly greater reductions in baseline anxiety symptoms compared with placebo.[9] Animal studies and human clinical trials show that 5-HTP has consistent antianxiety effects.[10,11] 5-HTP may inhibit panic episodes that are induced by carbon dioxide.[12] Patients who were randomized to receive a combination of 5-HTP and carbidopa (a drug inhibiting the enzyme that breaks down 5-HTP in the peripheral blood supply, thus increasing the amount of 5-HTP that crosses the blood-brain barrier) reported significant reductions in anxiety that were comparable to those seen with clomipramine (Anafranil), a conventional antianxiety medication. Patients taking placebo did not improve.[11]

5-HTP may be safely combined with conventional antianxiety drugs when patients are monitored for adverse effects related to excessive brain serotonin, including insomnia, agitation, and nervousness. The risk of adverse effects is minimized when 5-HTP is started at dosages of 25 mg/d and gradually is increased over several weeks, to a daily regimen that is well tolerated and produces therapeutic antianxiety effects.

In my clinical experience, 5-HTP 50 to 100 mg 3 times daily is well tolerated without excessive daytime sedation, and it is an effective approach for many patients with chronic anxiety when used alone or in combination with SSRIs or other conventional antianxiety drugs. Gradually increasing a bedtime dose of 5-HTP from 200 to 400 mg often reduces daytime anxiety and improves quality of sleep in patients with chronic anxiety who complain of insomnia.

I encourage patients with anxiety to listen to soothing music as often as possible without distractions, especially at the start of their day.

Greater research evidence supporting the use of 5-HTP for anxiety treatment, together with smaller effective doses and increased CNS availability, generally makes 5-HTP the preferred choice over L-tryptophan.

Inositol

Inositol has been the focus of renewed research interest because of its role as a precursor of an important second messenger in the brain, phosphatidylinositol, which is an integral part of serotonin, norepinephrine, and other neurotransmitter receptors. Findings from several double-blind studies suggest that high doses of inositol reduce many anxiety symptoms that respond to SSRIs, including panic episodes, agoraphobia, obsessions, and compulsions.[13] Available conventional drugs are effective in only two thirds of patients who experience panic episodes.[14] Inositol in dosages up to 20 g/d reduces the severity and frequency of panic episodes by interfering with one of the physiological causes of panic (metachlorophenylpiperazine).[15]

A 4-week, double-blind crossover study concluded that inositol 12 g/d and imipramine (Tofranil), a conventional medication, are equally effective in reducing the frequency and severity of panic episodes and agoraphobia.[16] A 1-month, double-blind, placebo-controlled study of 20 patients concluded that inositol, up to 18 g/d, and fluvoxamine (Luvox, Faverin, Dumyrox), up to 150 mg/d, were similarly effective in reducing the frequency of panic episodes.[14] The average number of weekly panic episodes in the inositol group decreased by 4, compared with an average decrease of 2 in the fluvoxamine group. Patients taking therapeutic doses of inositol have not reported serious adverse effects.

Somatic and mind-body approaches

Patients who are anxious frequently engage in strenuous physical activity in efforts to alleviate symptoms. Open studies suggest that regular aerobic exercise or strength training reduces anxiety.[17] A daily exercise program of at least 20 to 30 minutes can significantly reduce symptoms of generalized anxiety.[18] Findings of a prospective, 10-week study of exercise in persons who experience panic episodes suggest that regular walking or jogging (4 miles, 3 times per week) reduces the severity and frequency of panic episodes.[19]

In my clinical practice, I have observed that patients with anxiety who follow a regular exercise program pay more attention to their health in general and tend to respond more rapidly to both conventional and integrative treatments compared with patients who are not physically active. Persons with heart disease, chronic pain, or

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other serious medical problems should consult their physician before starting an exercise program.

Massage

Massage is widely used to evoke feelings of deep relaxation and to reduce anxiety. The anxiety-reducing effects of massage are probably mediated by decreased cortisol and increased parasympathetic tone.[20,21] Few controlled trials on massage have been done; however, a critical review of published studies concluded that there is no strong medical evidence supporting most of its therapeutic claims.[22] Despite these criticisms, regular massage to treat chronic stress and anxiety is worthy of serious attention.

The subjective physical and psychological benefits of massage are difficult to quantify in controlled trials. Few massage therapists are trained in biomedical research methods or work in institutional settings where sham-controlled trials can be conducted. Consistent anecdotal evidence, a long-standing history of widespread use for stress reduction, and the findings of many open trials support the view that regular massage therapy reduces the severity of chronic, moderate anxiety in general, and specifically, in anxiety related to test-taking or problem-solving, work stress, or the anticipation of invasive medical procedures.[23-27] In my clinical experience, regular massage therapy effectively reduces anxiety, improves emotional resilience, and enhances feelings of general well-being in anxious patients.

Music and binaural sound

Music and sound are used in many cultures and healing traditions for anxiety-reducing benefits. In a randomized study, 40 adult patients with anxiety were assigned to cognitive therapy or music-assisted reframing. Patients in the music group experienced greater reductions in overall anxiety, based on standardized measures.[28]

A unique auditory experience occurs when headphones are used to route slightly different frequencies of sound binaurally to the right and left hemispheres of the brain. The brainstem "constructs" binaural beats based on the frequency difference between sounds processed in each hemisphere. Functional brain imaging studies suggest that interhemispheric synchronization of information is enhanced by this experience. Certain binaural beats consistently induce a calm, relaxed state, while others facilitate increased attention or arousal.[29] In this way, the therapeutic use of certain sound frequency patterns to achieve different therapeutic goals is analogous to the use of different electroencephalographic biofeedback protocols.

I encourage patients with anxiety to listen to soothing music as often as possible without distractions, especially at the start of their day. I have observed that patients with general anxiety frequently experience both reduced anxiety and improved mental clarity after listening to binaural sounds of appropriate frequencies. Patients often report significantly reduced anxiety, increased feelings of peace, and a more hopeful outlook after becoming absorbed in a relaxing musical experience.

Biofeedback training using heart rate variability

In contrast to the documented efficacy of galvanic skin response and electromyographic and electroencephalographic biofeedback, few research studies have examined the efficacy of heart rate variability (HRV) biofeedback as a treatment for anxiety. Findings from case reports and controlled trials suggest that HRV biofeedback training significantly reduces stress and improves general feelings of emotional well-being in persons with acute job-related stress.[30] Beneficial changes in baseline anxiety following HRV biofeedback are associated with decreased serum cortisol levels and increased serum dehydroepiandrosterone levels.

Police officers are often subjected to unexpected severe stress. In a 4-month controlled trial, a majority of 29 police officers who were trained in biofeedback techniques based on HRV (HeartMath) reported significant improvements in baseline anxiety, while 36 officers who were assigned to a wait-list group did not report significant improvements.[31] Patients with chronic anxiety who underwent HRV biofeedback training reported improvements in general emotional well-being and reduced baseline anxiety.[32]

Acupuncture and electro-acupuncture

Acupuncture and acupressure are widely used to treat anxiety. Extensive case reports from Chinese medical literature suggest that different acupuncture protocols are beneficial in the management of anxiety symptom patterns that resemble generalized anxiety and panic episodes.[33] However, at present, only a few small, prospective controlled studies support the use of these traditional energy therapies; most studies on the anxiety-reducing effects of acupuncture have examined the general benefits of acupuncture on diverse cognitive, affective, and behavioral symptoms, including anxiety.

A narrative review of controlled studies, outcome studies, and published case reports on acupuncture as a treatment for anxiety and depressed mood was published in 2002 by the British Acupuncture Council.[34] Sham-controlled studies yielded consistent improvements in anxiety using both regular acupuncture and electro-acupuncture treatments. The reviewers noted that significant differences existed between the protocols used in regular acupuncture and electro-acupuncture, pointing to the unresolved issue of a general beneficial or possible placebo effect. Positive findings from most controlled studies were suggestive of a general anxiety-reducing effect of acupuncture but were regarded by the reviewers as inconclusive because of study design problems, including the absence of standardized symptom rating scales in most studies, limited follow-up, and poorly defined differences between protocols used in different studies.

In 1 double-blind study, 36 patients with mild depression or anxiety were randomized to an acupuncture protocol that was believed to reduce anxiety or a sham acupuncture protocol.[35] Patients participated in 3 sessions. HRV and mean heart rate were measured 5 and 15 minutes after treatment. Resting heart rate was significantly lower in the treatment group but not in the sham group, and changes in HRV indices suggested that acupuncture had modulated autonomic activity and reduced overall anxiety. The significance of these findings is limited by the absence of comments on baseline anxiety before and after treatment.

In another double-blind study, 55 adults (in whom an anxiety disorder had not been diagnosed) were randomized to a bilateral auricular acupuncture protocol called the "shenmen" point—a protocol believed to be effective against anxiety (the so-called relaxation point)—versus a sham acupuncture point.[36] Acupuncture needles remained in place for 48 hours. The "relaxation" group was significantly less anxious at 30 minutes and at 24 and 48 hours compared with the other 2 groups; however, there were no significant intergroup differences in blood pressure, heart rate, or electrodermal activity. A small, double-blind, sham-controlled trial involving patients who were anxious with mixed symptoms of moderate depressed mood obtained a response rate of 85% following 10 acupuncture treatment sessions that used specific acupuncture points (Du.20, Ex.6, He.7, PC.6, Bl.62).[37] Uncommon transient adverse effects associated with acupuncture include bruising, fatigue, and nausea. Very rare cases of pneumothorax have been reported.

Regular Reiki treatments

The findings from 2 studies suggest that regular Reiki treatments reduce the severity of anxiety symptoms in persons who are chronically stressed.[38,39] Patients with mixed anxious-depressed mood experienced significant relief following weekly treatments with contact or non-contact Reiki.[40] Reiki treatments may improve state anxiety in patients with chronic pain. A total of 120 patients with chronic illnesses were randomized to receive Reiki, sham Reiki, progressive muscle relaxation, or no treatment.[41] Improvements in state anxiety (and pain) in patients receiving Reiki were significantly greater than in the other 3 groups. Findings of this study are limited because possible differences in the use of anxiety-reducing medications between the active treatment groups and the control groups were not taken into account in the study design.

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