Nonconventional and Integrative Treatments of Alcohol and Substance Abuse

James Lake, MD- ***Dr Lake is in private practice in Monterey, Calif, and is on clinical faculty in the department of psychiatry and behaviorial sciences at Stanford University Hospital. He co-chairs the American psychiatric Association Caucus on Complementary, Alternative, and Integrative Care (www.APACAM.org) and is author of the Textbook of Integrative Mental Health Care (Thieme).***

In the first part of this column (Psychiatric Times, February 2007), I reviewed treatments whose beneficial effects are probably achieved through a discrete biological or pharmacological mechanism of action. These included dietary modifications; supplementation with specific vitamins, minerals, and amino acids; and medicinal herbs. In this part, I will review the evidence for approaches that reduce the risk of relapse, diminish craving, or mitigate withdrawal symptoms but for which there is no evidence for direct biological or pharmacological effect. These include exercise, mindfulness training, virtual reality graded exposure therapy (VRGET), cranio- electrotherapy stimulation (CES), dim light exposure,electroencephalogram (EEG) and electromyogram biofeedback, acupuncture, and qigong. Persons receiving conventional pharmacological treatments that seek to reduce the risk of relapse, diminish craving, and mitigate withdrawal symptoms may safely use these and other nonbiological therapies.

Exercise

Persons who chronically abuse alcohol frequently experience depressed mood, which may trigger increased drinking. Those who exercised daily while hospitalized for medical monitoring during acute detoxification of alcohol reported significant improvements in general emotional well-being.1 Persons abstaining from alcohol use who were enrolled in outpatient recovery programs reported improved mood with regular strength training or aerobic exercise.2,3 Because of its demonstrated mental health benefits, regular exercise should be encouraged in all patients who abuse alcohol and drugs (assuming that there are no medical problems that would be aggravated by physical activity).

Mindfulness training

Mindfulness training is offered widely in drug and alcohol relapse prevention programs and may reduce the risk of relapse in persons with substance use disorders.4 Two studies suggest that transcendental meditation may be espe- cially effective in reducing the relapse rate in persons who abstain from alcohol.5,6 One study found that 12-step programs that emphasize a particular religious or spiritual philosophy may be more effective than "spiritually neutral" programs.7

Virtual reality graded exposure

VRGET is a rapidly emerging technological intervention with a wide range of promising clinical applications for psychiatric disorders, including posttraumatic stress disorder, phobias, eating disorders, cognitive rehabilitation following stroke, and substance abuse and dependence. Most virtual reality tools are in the early stages

of development and are not commercially available. VRGET protocols have been created with the goal of stimulating drug or alcohol craving in patients followed by response prevention and desensitization.

Regular VRGET sessions result in diminished nicotine or illicit drug cravings in real-life situations that would be expected to trigger craving. In a small controlled trial, 20 nicotine-dependent adults who were not taking conventional anticraving medications were enrolled in a VRGET protocol.8 The patients were exposed to virtual smoking cues that resulted in increased nicotine craving and physiological indicators of craving, including elevated pulse and respiration rates. Subjects exposed to neutral virtual reality stimuli in the sham arm did not report symptoms of increased nicotine craving.

Other virtual reality environments are being developed to stimulate alcohol or marijuana craving, and future virtual reality tools will be combined with cognitive therapy strategies aimed at response prevention and desensitization to real-life situations that would be expected to stimulate craving or drug-seeking behavior. Future VRGET tools will couple cognitive therapy with increasingly realistic virtual cues to achieve the goal of desensitizing persons who abuse alcohol or drugs to environments that would be expected to stimulate craving or drug-using behavior. A significant emerging virtual reality tool is the "virtual crack house," which is currently under development at the University of Georgia.

Cranio-electrotherapy

CES involves the application of weak electrical current to specific points on the scalp or ears. In a 7-year prospective study of CES in the treatment of alcohol, drug, and nicotine addiction, acute and chronic withdrawal symptoms were diminished, normal sleep patterns were restored more rapidly, and more patients remained addiction-free following regular CES treatments compared with conventional medication management. Patients addicted to alcohol, drugs, or nicotine who were treated using CES reported significantly fewer anxiety symptoms and higher quality-of-life measures than patients who underwent conventional drug treatments.9

Protocols that use daily CES treatments compare favorably with combined psychotherapy, relaxation training, and biofeedback for reducing anxiety in patients abusing any substance.10 Preliminary findings suggest that daily 30-minute CES treatments significantly improve cognitive functioning and reduce measures of stress and anxiety in inpatient alcohol abusers or polysubstance abusers.11

In a 4-week, double-blind study, 20 patients who were depressed and abused alcohol were randomized to daily CES treatments (70 to 80 Hz, 4 to 7 mA), versus sham treatment. The patients treated with daily CES reported significantly reduced anxiety by the end of the study. These preliminary data suggest that CES may be a reasonable alternative treatment for anxiety in persons withdrawing from alcohol or other substances while avoiding the risk of cross-tolerance and dependence that is associated with the use of benzodiazepines in this population.12

EEG and electromyogram biofeedback

Limited data suggest that electromyogram and thermal biofeedback13 as well as EEG biofeedback training may reduce relapse risk in abstinent alcoholics.14.15 In EEG biofeedback training, the patient learns how to self-induce brain states that correspond

with deep relaxation. Limited findings from case studies suggest that EEG biofeedback using an alpha-theta entrainment protocol reduces relapse risk in persons abstaining from alcohol,16 but not in persons abstaining from cocaine.17

Dim morning light

Findings from a small controlled trial suggest that early morning exposure to dim light (ie, narrow-spectrum light with an intensity of 250 lux in contrast to full-spectrum white light with an intensity of 10,000 lux) improves depressed mood in persons abstaining from alcohol who have seasonal affective disorder.18 Since depressed mood is an established risk factor for alcohol addiction relapse, the postulated mood enhancing effects of early morning dim light may provide a beneficial approach to relapse prevention in persons abstaining from alcohol who experience seasonal mood changes. More research is needed to confirm these preliminary findings.

Acupuncture

The effectiveness of acupuncture as a treatment for enhancing abstinence from alcohol, cocaine, and other drugs cannot be ascribed solely to a placebo effect.19 Numerous early studies showed that regular acupuncture treatment increased brain levels of endogenous opioid peptides.20-22 Stimulating specific acupuncture points on the ears, hands, and back of the neck may reduce alcohol craving and decrease withdrawal symptoms in persons who abuse alcohol; however, acupuncture probably does not reduce craving and relapse after treatment is discontinued. 23,24

There are inconsistent findings for acupuncture in relapse prevention in persons abstaining from alcohol. Ambiguous findings may reflect the criteria used to select acupuncture points, the different treatment protocols (ie, conventional vs electroacupuncture), as well as differences in frequency or total duration of treatments, and the skill level or specialized training of individual practitioners. In 1 sham-controlled study, persons who abuse alcohol reported significant reductions in withdrawal symptoms within hours of initial treatment and no withdrawal symptoms within 72 hours of the second acupuncture treatment.25 There is emerging evidence for correlations between specific acupuncture protocols and a significant reduction in alcohol craving and relapse rates in persons recovering from an alcohol addiction.26,27 However, other findings do not support the hypothesis that acupuncture reduces craving and relapse risk among persons who abuse alcohol.28

In spite of the fact that findings of most controlled trials on smoking have been negative or equivocal, acupuncture is widely used in the United States and in Western Europe to facilitate smoking cessation and to lessen symptoms of nicotine withdrawal. Initial open trials of acupuncture for smoking cessation were very promising29; however, more recent sham-controlled trials have yielded equivocal results. Significant differences in the severity of withdrawal symptoms were not found in nicotine-dependent patients who were randomized to an accepted protocol of electroacupuncture versus a sham procedure.30 Two hundred thirty-eight high school students who smoked cigarettes were randomized to weekly auricular acupuncture treatment based on a well-defined protocol for smoking reduction versus a nonspecific protocol. By the end of the 4-week study, only 1 student had stopped smoking and there were no significant differences between the 2 groups in terms of

nicotine craving; however, students who completed the smoking cessation protocol smoked fewer cigarettes per day than students in the sham group.31

A Cochrane systematic review and meta-analysis of 22 sham-controlled studies and more than 2000 patients on the efficacy of acupuncture for smoking cessation found no evidence of therapeutic efficacy. Sham-controlled studies on conventional acupuncture, acupressure, electroacupuncture, and laser acupuncture were included in the meta-analysis.32 Because most studies to date are relatively short and do not specify the acupuncture protocol used, longer sham-controlled studies are needed to determine whether optimizing the frequency, duration, and type of acupuncture treatment may be beneficial for smoking cessation.

Negative findings from a Cochrane systematic review and a separate independent review support the conclusion that both conventional acupuncture and electroacupuncture are ineffective in reducing symptoms of nicotine withdrawal and in controlling cocaine addiction.33,34 Nevertheless, persons who use cocaine frequently report subjective calming and diminished craving after only 1 or 2 acupuncture treatments, and this effect is apparently sustained with repeated treatment.

A study comparing 3 auricular acupuncture protocols for relapse prevention in persons abusing cocaine and other narcotics concluded that auricular acupuncture reduced drug craving regardless of the protocol used.35 In an 8-week controlled study comparing acupuncture with conventional drug therapies and placebo in persons using cocaine who were being treated with methadone (Dolophine, Methadose) maintenance therapy, half of the enrolled subjects dropped out, but almost 90% of those who completed the study achieved abstinence after 8 weeks of treatment.36 Patients who successfully achieved abstinence reported diminished narcotics craving and improved mood.

Qigong

Findings of sham-controlled trials suggest that external qigong treatment—which must be provided by a qigong healer/master—reduces the severity of withdrawal symptoms in persons who are addicted to heroin.37 Animal studies suggest that external qigong applied to morphine-dependent mice lessens the behavioral symptoms of withdrawal following pharmacological blockade of morphine at the level of brain receptors.38 Regular qigong treatments may provide a useful adjunct to conventional pharmacological and behavioral management of detoxification and withdrawal from heroin and other opiates. The unskillful practice of qigong can potentially result in agitation or psychosis in patients. Persons with an addiction disorder who are interested in qigong should work with a skilled qigong instructor or medical qigong therapist.

References

1. Palmer J, Vacc N, Epstein J. Adult inpatient alcoholics: physical exercise as a treatment intervention. J Stud Alcohol. 1988;49:418-421.
2. Palmer JA, Palmer LK, Michiels K, Thigpen B. Effects of type of exercise on depression in recovering substance abusers. Percept Mot Skills. 1995;80:523-530.
3. Skrede A, Munkvold H, Watne O, Martinsen EW. Exercise contacts in the treatment of substance dependence and mental disorders [in Norwegian]. Tidsskr Nor

Laegeforen. 2006;126:1925-1927.
4. Breslin FC, Zack M, McMain S. An information-processing analysis of mindfulness: implications for relapse prevention in the treatment of substance abuse. Clinical Psychology: Science and Practice. 2002;9:275-299.
5. Alexander CP, Robinson P, Rainforth M. Treating and preventing alcohol, nicotine, and drug abuse through transcendental meditation: a review and statistical meta-analysis. Alcohol Treat Q. 1994;11:13-87.
6. Taub E, Steiner SS, Weingarten E, Walton KG. Effectiveness of broad spectrum approaches to relapse prevention in severe alcoholism: a long-term, randomized controlled trial of transcendental meditation, EMG biofeedback and electronic neurotherapy. Alcohol Treat Q. 1994;11:187-220.
7. Muffler J, Langrod J, Larson D. There is a balm in Gilead: religion and substance abuse treatment. In: Lowinson JH, Ruiz P, Millman RB, eds. Substance Abuse: A Comprehensive Textbook. 2nd ed. Baltimore: Williams & Wilkins; 1992.
8. Bordnick PS, Graap KM, Copp H, et al. Utilizing virtual reality to standardize nicotine craving research: a pilot study. Addict Behav. 2004;29:1889-1894.
9. Patterson MA, Firth J, Gardiner R. Treatment of drug, alcohol and nicotine addiction by neuroelectric therapy: analysis of results over 7 years. Journal of Bioelectricity. 1984;3:193-221.
10. Overcash S, Siebenthall A. The effects of cranial electrotherapy stimulation and multisensory cognitive therapy on the personality and anxiety levels of substance abuse patients. Am J Electromed. 1989;6:105-111.
11. Schmitt R, Capo T, Boyd E. Cranial electrotherapy stimulation as a treatment for anxiety in chemically dependent persons. Alcohol Clin Exp Res. 1986;10: 158-160.
12. Krupitsky EM, Burakov AM, Karandashova GF, et al. The administration of transcranial electric treatment for affective disturbances therapy in alcoholic patients. Drug Alcohol Depend. 1991;27:1-6.
13. Sharp C, Hurford DP, Allison J, et al. Facilitation of internal locus of control in adolescent alcoholics through a brief biofeedback-assisted autogenic relaxation training procedure. J Subst Abuse Treat. 1997;14:55-60.
14. Peniston EG, Kulkosky PJ. Alpha-theta brainwave training and beta-endorphin levels in alcoholics. Alcohol Clin Exp Res. 1989;13:271-279.
15. Peniston EG, Kulkosky PJ. Alcoholic personality and alpha-theta brainwave training. Med Psychother. 1990;3: 37-55.
16. Schneider F, Elbert T, Heimann H, et al. Self-regulation of slow cortical potentials in psychiatric patients: alcohol dependency. Biofeedback Self Regul. 1993;18: 23-32.
17. Richard AJ, Montoya ID, Nelson R, Spence RT. J Subst Abuse Treat. 1995;12:401-413.
18. Avery DH, Bolte MA, Ries R. Dawn simulation treatment of abstinent alcoholics with winter depression. J Clin Psychiatry. 1998;59:36-42.
19. Brewington V, Smith M, Lipton D. Acupuncture as a detoxification treatment: an analysis of controlled research. J Subst Abuse Treat. 1994;11:289-307.
20. Cheng RS, Pomeranz B, Yu G. Electroacupuncture treatment of morphine-dependent mice reduces signs of withdrawal, without showing cross-tolerance. Eur J Pharmacol. 1980;68:477-481.
21. Clement-Jones V, McLoughlin L, Lowry PJ, et al. Acupuncture in heroin addicts; changes in Metenkephalin and beta-endorphin in blood and cerebrospinal fluid. Lancet. 1979;2:380-383.
22. Ng LK, Douthitt TC, Thoa NB, Albert CA. Modification of morphine-withdrawal syndrome in rats following transauricular electrostimulation: an experimental

paradigm for auricular electroacupuncture. Biol Psychiatry. 1975;10:575-580.
23. Konefal J, Duncan R, Clemence C. The impact of the addition of an acupuncture treatment program to an existing metro-Dade County outpatient substance abuse treatment facility. J Addict Dis. 1994;13:71-99.
24. Richard AJ, Montoya ID, Nelson R, Spence RT. Effectiveness of adjunct therapies in crack cocaine treatment. J Subst Abuse Treat. 1995;12:401-413.
25. Yankovskis G, Beldava I, Livina B. Osteoreflectory treatment of alcohol abstinence syndrome and craving for alcohol in patients with alcoholism. Acupunct Electrother Res. 2000;25:9-16.
26. Bullock ML, Culliton PD, Olander RT. Controlled trial of acupuncture for severe recidivist alcoholism. Lancet. 1989;24:1435-1439.
27. Bullock ML, Umen AJ, Culliton PD, Olander RT. Acupuncture treatment of alcoholic recidivism: a pilot study. Alcohol Clin Exp Res. 1987;11:292-295.
28. Worner TM, Zeller B, Schwarz H, et al. Acupuncture fails to improve treatment outcome in alcoholics. Drug Alcohol Depend. 1992;30:169-173.
29. Fuller JA. Smoking withdrawal and acupuncture. Med J Aust. 1982;1:28-29.
30. White AR, Resch KL, Ernst E. Randomized trial of acupuncture for nicotine withdrawal symptoms. Arch Intern Med. 1998;158:2251-2255.
31. Kang HC, Shin KK, Kim KK, Youn BB. The effects of the acupuncture treatment for smoking cessation in high school student smokers. Yonsei Med J. 2005;46: 206-212.
32. White AR, Rampes H, Ernst E. Acupuncture for smoking cessation. Cochrane Database Syst Rev. 2002;2: CD000009.
33. D'Alberto A. Auricular acupuncture in the treatment of cocaine/crack abuse: a review of efficacy, the use of the National Acupuncture Detoxification Association protocol, and the selection of sham points. J Altern Complement Med. 2004;10:985-1000.
34. White AR, Resch KL, Ernst E. A meta-analysis of acupuncture techniques for smoking cessation. Tob Control. 1999;8:393-397.
35. Konefal J, Duncan R, Clemence C. Comparison of three levels of auricular acupuncture in an outpatient substance abuse treatment program. Altern Med J. 1995;2:8-17.
36. Margolin A, Avants SK, Chang P, Kosten TR. Acupuncture for the treatment of cocaine dependence in methadone-maintained patients. Am J Addict. 1993;2: 194-201.
37. Li M, Chen K, Mo Z. Use of qigong therapy in the detoxification of heroin addicts. Altern Ther Health Med. 2002;8:56-59.
38. Mo Z, Chen KW, Ou W, Li M. Benefits of external qigong therapy on morphine-abstinent mice and rats. J Altern Complement Med. 2003;9:827-835.