Meditation Eases Metabolic Syndrome Risks in Heart Patients

LOS ANGELES, June 19 — Transcendental meditation, a purported solution to Cold War stresses of life, may have benefit in times of post-9/11 terror for elevated blood pressure and insulin resistance in patients with coronary heart disease.

So reported Noel Merz, M.D., at Cedars-Sinai Medical Center here, with colleagues here and at Maharishi University of Management in Maharishi Vedic City, Iowa. They found that transcendental meditation modulated the response to stress in coronary heart disease patients and improved several metabolic-syndrome components.

In a 16-week trial, the relaxation technique reduced blood pressure and insulin resistance and improved cardiac autonomic-nervous- system tone compared with a control group given only health education, according to a study in the June 12 issue of the *Archives of Internal Medicine*.

In a randomized, single-blind, attention-controlled trial, 103 patients were recruited from a supervised cardiac exercise and rehab program at Cedars-Sinai and the surrounding community.

Patients had stable coronary heart disease, documented by prior MI, bypass surgery, coronary angiography, or angioplasty, said Dr. Merz and colleagues. Fifty-two patients, mean age 67.7 years, were taught transcendental meditation, while 51 controls (mean age, 67.1 years) were given health education for the same number of sessions as the controls.

The meditation technique, said to be adapted from the ancient Vedic tradition in India, has been taught worldwide since 1957 and is highly standardized and reproducible, the researchers asserted.

The format for daily home meditation included two introductory lectures (1.5 hours each); a personal interview (10 to 15 minutes); personal instruction (one to 1.5 hours), three group meetings (1.5 hours each), and follow-up and maintenance (1.5 hours twice a week for the first four weeks and weekly thereafter).

Patients in the health education group had the same number of meetings, which included lectures and discussions of risk factors, and the impact of stress, diet, and exercise on heart disease. Daily home

assignments were given to control for home meditation time.

After plasma glucose and insulin were measured, insulin resistance was estimated by a technique called homeostasis model assessment; endothelial function was measured by brachial artery reactivity testing, while cardiac autonomic nervous system activity was measured by heart-rate variability with Holter monitoring.

The participants were mainly male and older, with high rates of treated hypertension, dyslipidemia, and obesity; few had diabetes, while management of coronary heart disease was near optimal, the researchers said.

There were significant group differences in exit systolic blood pressure and mean arterial blood pressure in the meditation group compared with the controls, the researchers said. Adjusted for age, sex, baseline systolic blood pressure, history of myocardial infarction, baseline depression and anger, exit BMI, and physical activity level, the results for the meditation patients versus the education patients were as follows:

The adjusted systolic blood pressure was -3.4 mm Hg (SD ± 2.0) versus 2.8 mm Hg (± 2.1), (*P*=0.04).

Adjusted insulin resistance was -0.75 (± 2.04) versus 0.52 (± 2.84), (*P*=0.01).

Adjusted heart-rate variability, which assesses autonomic nervous system function, was 0.10 (± 0.17) versus -0.50 (± 17) high-frequency power (*P*= 0.07).

Meditation did not affect brachial-artery reactivity, and there were no differences in lipoprotein levels, high-sensitivity C-reactive protein, or BMI in either treatment group, the researchers reported.

The present study demonstrates that transcendental meditation, which is believed to reduce sympathoadrenal-system activation, beneficially alters the blood pressure and insulin-resistance components of the metabolic syndrome, Dr. Merz said.

It is possible, Dr. Merz's team wrote, that transcendental meditation may modulate the physiological response to stress via neurohumoral activation, suggesting a novel therapeutic target for the treatment of coronary heart disease. Additional lines of evidence, the researchers said, have indirectly suggested that neurohumoral activation may be a common mechanistic pathway for the metabolic syndrome.

The researchers noted that they found no effect on peripheral endothelial function, although the lowered blood-pressure and insulin resistance results should have contributed to improved endothelial function. Other factors may have been responsible for the negative result, the investigators suggested.

Among limitations of the study, the researchers mentioned the relatively small size and short duration of the trial. Also, the patient population may not have been typical because of the relatively low levels of low-density lipoprotein cholesterol and the participants' high levels of physical activity, they said. Self-reported stress levels may also have been insensitive to change.

The current results, the researchers wrote, expand the understanding of the role of stress in the rising epidemic of the metabolic syndrome. Although lifestyle factors, such as lack of physical activity and unhealthy eating habits, are triggers for this increase, the daily demands of modern society may also be responsible for higher levels of chronic stress.

The findings of this study, they said, which showed beneficial physiological effects even without altering psychosocial variables, suggest that meditation "may modulate response to stress rather than alter the stress itself, similar to the physiological impact of exercise conditioning."

Summing up, Dr. Merz said that the studies suggest that interventions that target neurohumoral pathways, especially via meditation or related techniques (progressive muscle relaxation, mindfulness meditation, relaxation response) may be beneficial for patients with coronary heart disease and should be tested in larger, more adequately powered clinical trials.

Action Points

Explain to coronary heart disease patients interested in life-style changes that the study found that venerable transcendental meditation may lower blood pressure and have other beneficial effects on risk factors.

By Judith Groch, MedPage Today Senior Writer
June 19, 2006

Primary source: Archives of Internal Medicine
Source reference:
Maura Paul-Labrador, et al, "Effects of a Randomized Controlled Trial of Transcendental Meditation on Components of the Metabolic Syndrome in Subjects With Coronary Heart Disease," *Archives of Internal Medicine* 2006;166:1218-1224.