

Acupuncture gives knees a lift

For thousands of years, Chinese doctors have prescribed acupuncture for what they call "bi syndrome" — arthritis, a disease U.S. physicians normally treat with pain killers and anti-inflammatory drugs.

Now, some U.S. doctors are trying the Chinese approach for patients who fail to respond to standard therapy, and they are meeting with partial success, report Madalene K. Greene and her colleagues at the University of Maryland School of Medicine in Baltimore.

In the study, 12 patients age 55 and older who had moderate to severe osteoarthritis in their knees received acupuncture twice a week for 8 weeks. Greene reported the team's findings April 30 in Baltimore at the Clinical Research Meeting, sponsored by the Association of American Physicians, the American Society for Clinical Investigation, and the American Federation for Clinical Research.

After 4 weeks, 4 of the 12 volunteers reported on questionnaires that they felt moderate or marked relief from pain and improvement in mobility; by the end of treatment, 6 of the 10 subjects who remained in the study claimed to feel better. At the end of a 16-week follow-up period, six of the eight remaining volunteers reported feeling better than they did when therapy began.

The patients didn't perform as well as they felt, however. After 8 weeks, they walked a 50-foot stretch of hallway faster than when the study started, but that improvement disappeared by the end of the follow-up, says Marc C. Hochberg.

Greene examined the volunteers without knowing the outcome of the other tests or self-reports. She got still different results. At 8 weeks, 7 of the 10 patients had improved; but by the study's end, that number had dropped to two of eight.

The researchers plan to compare in a larger group the efficacy of acupuncture to that of traditional drug treatment.

Physicians blackball black balls

Many patients with debilitating diseases such as arthritis seek out alternative treatments, studies show. But one such option, the Chinese "black ball," contains much more than the 20 herbs its manufacturers advertise, according to researchers.

Black balls come loaded with a tranquilizer and a nonsteroidal anti-inflammatory drug.

These additional ingredients make some users quite ill, Peter S. Marshall of St. Paul-Ramsey Medical Center in Minnesota reported April 29 at the Clinical Research Meeting in Baltimore. He and coauthor Elie Gertner, also at St. Paul-Ramsey, examined five people in the last 3 months who fell ill after taking black balls. The patients suffered primarily from gastrointestinal problems and drowsiness.

The researchers analyzed the black balls that these patients used and found that the balls contained the sedative diazepam, Marshall says. Two black balls would make someone quite sleepy, yet some manufacturers recommend taking 6 to 12 per day, Marshall says. These so-called herbal drugs, which look like gumballs, also had a significant amount — about 100 milligrams — of mefenamic acid, an anti-inflammatory.

Black balls are available in stores across the United States and through mail-order catalogs. Their manufacturers tout them as safe, drugfree cures for arthritis, asthma, migraines, and more, Marshall says. As with many herbal medicines, it's difficult to track down who manufactures the balls or what goes into them, he contends.

"Many, many people take [black balls] without having problems," Marshall adds. Doctors need to be aware that their patients might be using these potentially risky remedies, he says. Other researchers have found drugs, including steroids, in herbal medicines.

Cancer cell's fountain of youth

Even with failed brakes, a car eventually comes to a halt, if only because it runs out of gas. Likewise, cancer cells, which replicate continuously because of failed "brakes" on the cell cycle, should eventually stop dividing. They don't, however, because they also begin making an enzyme that helps them keep going, says Calvin B. Harley, a biochemist at McMaster University in Hamilton, Ontario.

Recently, other researchers demonstrated that cells multiply out of control when proteins that prevent replication don't do their job (SN: 4/23/94, p.262).

That alone shouldn't lead to cancer, says Huber R. Warner, a biochemist at the National Institute on Aging in Bethesda, Md. Normally, every time a cell duplicates its genes, it loses bits of extra DNA from the tips of its chromosomes. Those tips, called telomeres, seem to stabilize the chromosome. After many generations, when the tip is almost used up, the cells lose the ability to make accurate copies of their genes, stop replicating, age, and die.

Cancer cells avoid losing their telomeres by making an enzyme called telomerase. That enzyme replaces lost bits of DNA, making the cell immortal, Harley and his colleagues reported in the April 12 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

"Telomerase allows [the cell] to escape whatever normal controls there are on replication," says Warner.

Researchers had thought telomerase existed only in normal reproductive tissues, such as the cells that generate sperm. But McMaster's Christopher M. Counter and his colleagues found telomerase in cells removed from ovarian tumors as well.

The telomeres were shorter in the cancer cells than in cells from noncancerous ovarian tissue. But the scientists found that before the telomeres got too short to support faithful replication, the cells began making telomerase. Consequently, the researchers suspect that the progressive destabilization of chromosomes may lead to mutations. These changes result in the activation of the gene for telomerase, turning on this molecular fountain of youth in most, if not all, types of tumors.

Harley, now temporarily at Geron Corp. in Menlo Park, Calif., hopes to develop drugs that block the action of telomerase, thereby causing cancer cells to "run out of gas."

Ticktock, mice have a gene called Clock

Even without alarm clocks, people tend to follow a schedule of activity by day and sleep by night, guided by an internal 25-hour clock. Mice, too, have a circadian rhythm, following a 23.7-hour clock that makes them scurry in the dark and snooze in the light.

By monitoring mutant mice for aberrant rhythms, researchers have created a strain of mice with no rhythm at all. They have used those mice to home in on what they call the Circadian Locomotor Output Cycles Kaput, or Clock, gene, reports Joseph S. Takahashi, a neurobiologist at Northwestern University in Evanston, Ill. This is the first circadian gene found in mammals, he and his colleagues report in the April 29 SCIENCE.

"We work from the [behavior] back to the genes," explains Northwestern's Lawrence H. Pinto. For this work, the researchers tested the offspring of mice subjected to gene-altering chemicals. First they exposed the young mice to 12 hours of darkness and 12 hours of light while using a computer to track when the animals rotated the exercise wheels in their cages.

Then the scientists turned off the lights. Over time, 1 of the 304 mice started following a 25-hour clock. Breeding experiments revealed that a single gene led to the longer cycle. Mice that inherit two of these mutant genes lack any circadian rhythm, Pinto says. They still exercise as much as normal mice, but they spread their activity out over an entire day.