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MEDICINE

Acupuncture gains respect

For researchers, the question is not only whether the ancient technique works, but also how.

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Health Sense

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The ancient Chinese technique of sticking needles into the skin to relieve pain, nausea and many other ills can indeed make people feel better — more mellow and more energized.

Many researchers used to think this lovely state was mostly due to the placebo effect. But a growing body of evidence — brain scans, ultrasound and other techniques — shows that acupuncture triggers direct, measurable effects on the body, including perhaps, activation of precisely the regions of the brain that would be predicted by ancient Chinese theory.

"The quality and amount of research being conducted now on acupuncture is improving greatly," said Peter Wayne, director of research at the New England School of Acupuncture. The school has received \$3.2 million in federal grants to study acupuncture on women undergoing chemotherapy for ovarian cancer, on teenagers with endometriosis, and on the accuracy of acupuncturists in diagnosing disease.

At UC Irvine, researchers have shown that when a needle is placed in a point on the side of the foot that Chinese theorists associate with vision, sure enough, the visual cortex in the brain "lights up" on fMRI, or functional magnetic resonance imaging scans, though the cause and effect are not totally clear.

Neuroscientist Seung-Schik Yoo at Brigham and Women's Hospital has shown that when a needle is placed in a point called pericardium 6 on the wrist, known in Chinese medicine as a sensitive point for nausea, the part of the brain that controls the vestibular system (which affects balance and nausea) lights up on scans.

Acupuncture has been used so far by 8.2 million Americans, according to the National Center for Complementary and Alternative Medicine, a government agency. Some insurers now pay for acupuncture, which is considered extremely safe.

More than 40 clinical trials have shown that acupuncture reduces nausea following chemotherapy or surgery, said Ted Kaptchuk, an assistant professor of medicine at Harvard Medical School who is also a doctor of Chinese medicine.

In one of the best studies, Dr. Tong J. Gan, director of clinical research in anesthesiology at Duke University Medical Center, showed last year that acupuncture on the wrist point was "as good as giving ondansetron," an anti-nausea drug, for postoperative nausea and vomiting.

And a recent randomized, controlled study of 570 people with osteoarthritis of the knee showed that real

acupuncture, as opposed to a fake form used as a control, reduced pain and increased function by about 30%.

"This is roughly the same effect size" as with ibuprofen-type drugs, said Dr. Brian Berman, the study leader and director of the Center for Integrative Medicine at the University of Maryland School of Medicine. At the moment, Berman recommends that patients use acupuncture with, not instead of, pain medications, though it may help reduce the amount of medication needed.

Perhaps the most intriguing scientific question is not whether acupuncture works, but how. In acupuncture theory, there are 360 major points in the skin that lie along the 12 major channels, or meridians, in the body, through which the *qi* flows. (Pronounced "chee," *qi* is the Chinese term for vital energy.)

In Western terms, the acupuncture points correspond to areas of decreased electrical resistance on the skin. Since the 1970s, Western researchers have known that one of the ways acupuncture works is by releasing endorphins, the body's natural painkillers.

In a series of classic experiments, researchers hooked together the circulatory systems of two animals, but performed acupuncture on only one. Both animals showed evidence of less pain.

Acupuncture seems to calm precisely the part of the brain that controls the emotional response to pain, said Dr. Kathleen K. S. Hui, a neuroscientist at the Martinos Center for Biomedical Imaging at Massachusetts General Hospital, which has a federal grant to study acupuncture's effects on the brain. Her brain scan studies show decreased activation in deeper brain structures in the limbic system, which governs emotions and other physiological functions.

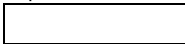
Researchers have also shown that acupuncture boosts levels of serotonin, which is often deficient in people with depression, and lowers levels of norepinephrine and dopamine, which are often elevated in sufferers of stress and pain.

Precisely how signals travel from acupuncture points to the brain is still a matter of some debate. Most researchers, Hui among them, believe that electrical signals travel along nerve tracts that branch off from the brain stem to the limbic system. Others, like Dr. Helene Langevin, a neurologist at the University of Vermont College of Medicine, thinks signals may also pass along the 12 major acupuncture meridians that run through the body.

For years, Western scientists doubted the existence of these meridians. But in a series of studies using ultrasound, Langevin has found evidence that the meridians lie along the sheets of connective tissue that surround organs. By analyzing meridians in the arm of a cadaver, Langevin said she discovered "that 80% of the acupuncture points coincided to where the major connective tissue plane was. We also did a statistical analysis — this was not due to chance."

The bottom line? At long last, Western scientists are beginning to show, by their own standards, just what Chinese acupuncturists have been saying for millenniums: That the effects of acupuncture are real. And that, at least for certain problems and to some degree, acupuncture can help relieve pain and suffering.

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