

Ultrasound Waves May Assist Drugs In Stroke Patients

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The same type of sound waves that pulsate from sonar fish-finders and ultrasound fetal monitors can boost the power of anticlotting medicine, helping to dissolve brain blockages in stroke patients, a small study suggests.

A stroke occurs when a clot lodges in a brain blood vessel and cuts off circulation. The anticlotting drug tPA is sometimes given to break up the clot before brain tissue starves for lack of blood.

Ultrasound has long been used to diagnose strokes. In recent years, research has intensified on whether it can also supercharge the clot-breaking medication.

In research involving 126 stroke victims, conducted by the University of Texas Medical School at Houston with partners in Canada and Spain, ultrasound was used in conjunction with tPA. Within two hours, almost half of the ultrasound patients with blockage of the middle cerebral artery showed restored blood flow or marked recovery from symptoms. With tPA alone, only 30% of patients did.

The risk of bleeding in the brain appeared to be small and no greater than with tPA alone.

Longer-term results were also favorable—though not statistically significant in this study. After three months, 42% of ultrasound patients were symptom-free or living independently, compared with only 29% of those treated with tPA alone.

The study appears in today's *New England Journal of Medicine*.

About 700,000 people suffer strokes each year in the U.S., making it the leading cause of serious, long-term disability, according to the American Stroke Association. About 163,000 died from a stroke in 2001, third only to heart disease and cancer. The ultrasound technique may one day offer a safe accessory for helping up to 100,000 U.S. patients a year, or 15% of the nation's stroke victims, doctors said.

Exactly how the ultrasound may work isn't well understood. Researchers believe it may stir up blood near the clot, like a sonic spoon, and thus help mix in the drug. It may also help the drug bind directly to the clot.

Researchers said it is also possible that the sound waves shake up the clot and help break it up.

The technique, as it is being tested now, is used only in patients who are treated with tPA. And tPA cannot be given to patients suffering bleeding in the brain, and must be administered within three hours of the onset of a stroke.

Researchers in this study hope to take part soon in a more definitive test of the technique.

The ultrasound equipment, known as transcranial Doppler, is fairly common at major hospitals for diagnosing strokes but is rarely employed as a treatment. That is partly because it can take months to learn how to pinpoint clots with the lipstick-size wand. The study's lead researcher, Andrei Alexandrov at the University of Texas Medical School at Houston, is working on a simpler-to-operate device. Some scientists are also looking into whether ultrasound, at higher power, can safely blast away clots by itself, without medication.