# Insertable heart monitor finds elusive atrial fibrillation after unexplained stroke

17 February 2014

A small cardiac monitor implanted under the skin proved six to seven times more likely than standard monitoring methods to find an irregular heart rhythm that may have caused a patient's stroke, according to a late-breaking science report presented at the American Stroke Association's International Stroke Conference 2014.

As many as 30 percent of ischemic strokes – those caused by a clot in a blood vessel supplying the brain – have no identifiable cause. But one possible explanation is a type of irregular heart rhythm called atrial fibrillation, or AF. With atrial fibrillation, the heart's upper chambers (atria) beat erratically and rapidly, slowing blood flow in the atria and promoting clot formations there. Stroke risk is about five times higher in people with atrial fibrillation.

"Atrial fibrillation can be difficult to detect due to its sometimes intermittent nature, and the fact that it isn't always accompanied by symptoms," said Richard A. Bernstein, M.D., Ph.D., an author of the new study and professor of neurology at Northwestern University's Feinberg School of Medicine in Chicago. "For a patient who has had an unexplained stroke, it's really important to determine if they have AF, because left untreated, it could result in a second and even more devastating stroke."

The new study, called CRYSTAL-AF (CRYptogenic STroke And UnderLying Atrial Fibrillation), included 441 patients who had an unexplained stroke. All had at least 24 hours of standard cardiac monitoring within 90 days of the stroke, and half were tracked with an insertable monitor (the Reveal® XT by Medtronic) which can provide data continuously for up to three years.

Six months later, atrial fibrillation had been found in 8.9 percent of patients with an insertable monitor, versus 1.4 percent of those who had standard testing. A year later, the condition had been detected in 12.4 percent of patients with the insertable monitor, compared with 2 percent of the others. After three years, that gap was 30 percent with the insertable monitor, versus 3 percent for standard testing.

The study was conducted in 55 centers in the United States, Canada and Europe. Limitations of the research include variation in methods of standard cardiac monitoring in the control arm, due to different local practices, he said.

Most people who have a stroke caused by a blood clot are given aspirin or similar drugs, such as clopidogrel, to prevent another stroke, said Bernstein, who is also director of the Stroke Program at Northwestern Memorial Hospital. But in patients with atrial fibrillation, anticoagulants, such as warfarin, or the newer anticoagulants, have been found much more effective at preventing stroke. Anticoagulants aren't routinely given in the absence of atrial fibrillation because they can be riskier and more inconvenient for patients.

"Finding AF after a stroke changes therapy from the aspirin class of drugs, which are not very effective in AF, to anticoagulants," he said. Among patients in the study found to have AF, oral anticoagulants were prescribed for 97 percent of cases, the researchers reported.

An insertable cardiac monitor resembles a USB flash drive and has two electrodes to monitor heart rhythm. It can detect various kinds of heart irregularities and stores a log of events that indicates when and for how long each event occurred, and what was the heart rate.

The device is slipped under the skin of the chest via a small incision, using local anesthetic in a brief outpatient procedure. The monitor does not touch the heart.

The benefits of the insertable device far outweigh

risks, Bernstein said, noting just 2.4 percent of the devices had to be removed in the study because of complications, and the patients had no long-term problems. "On the other hand, if a stroke patient has AF that hasn't been caught; they could be at very high risk of another potentially disabling stroke because they aren't on the right medication."

However, the study did not have enough participants to see whether there was a difference between the two groups in rates of subsequent stroke. Stroke guidelines currently call for only 24-hour monitoring. The new study suggests long-term continuous monitoring may uncover more AF in patients with unexplained stroke, and can be useful if traditional monitoring fails.

Provided by American Heart Association