

Study shows delayed-enhancement MRI may predict, prevent strokes

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Researchers at the University of Utah's Comprehensive Arrhythmia and Research Management (CARMA) Center have found that delayed-enhancement magnetic resonance imaging (DE-MRI) holds promise for predicting the risks of strokes, the third leading cause of death in the U.S. Their latest study on a novel application of this technology appears in the Feb. 15 issue of the *Journal of the American College of Cardiology*.

The study included 387 patients who were treated for atrial fibrillation (AF) at either the University of Utah (Salt Lake City) or Clinical Center Coburg (Coburg, Germany). AF is a little known heart rhythm disorder that affects more than 3.5 million Americans and causes more than 66,000 deaths a year. Individuals with AF are two to seven times more likely to suffer a [stroke](#) than the general population.

The purpose of the study was to determine if there was an association between an AF patient's [heart damage](#) (for example, left atrial [LA] fibrosis), which was detected using DE-MRI, and commonly used markers for the risk of stroke, specifically the CHADS2 index. Although further prospective studies are needed, the preliminary results indicate that DE-MRI-based detection of LA fibrosis is independently associated with prior history of strokes. The findings also provide preliminary evidence that the physiological features of the LA could be used, in addition to clinical features, when identifying stroke risk in patients.

"We believe this method can be a valuable tool for clinicians to use in

conjunction with the CHADS2 index for risk analysis and decisions about anticoagulation medications when treating AF patients," said Nassir Marrouche, M.D., associate professor of cardiology and executive director of the CARMA Center and Director, Cardiac Electrophysiology Laboratories, for the University of Utah's Division of Cardiology.

"Potentially, this will lead to improvement in current risk stratification schemes and enhance our understanding of the risks of thromboembolic (stroke) events in AF patients. We also hope this will lead to the development of effective strategies for stroke prevention."

Although the anticoagulant warfarin is highly effective in preventing strokes, the drug also is associated with life-threatening hemorrhaging and requires intensive dosage monitoring. Risk stratification schemes have been developed to tailor anticoagulation therapy to the patients' risk, and the CHADS2 index is the most accepted risk stratification model. Yet while this index is a valuable tool for predicting cerebrovascular events in high-risk patients, clinicians rely more heavily on clinical judgment when predicting thromboembolic risk in moderate-risk patients, a substantial portion of the AF population. The identification of novel, independent risk factors by DE-MRI may supplement existing tools to help guide clinician judgment in better allocating anticoagulation therapeutic strategies, especially with moderate risk AF patients.

The study concluded that LA fibrosis as determined through the use of DE-MRI is "associated with an increased risk of thromboembolism in AF patients. Clinician use of both a CHADS2 index and a quantified measure of atrial fibrosis has the potential to provide a more rigorous risk assessment and improve future risk stratification schemes."

More information:

<http://content.onlinejacc.org/cgi/content/abstract/57/7/831>

Provided by University of Utah

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