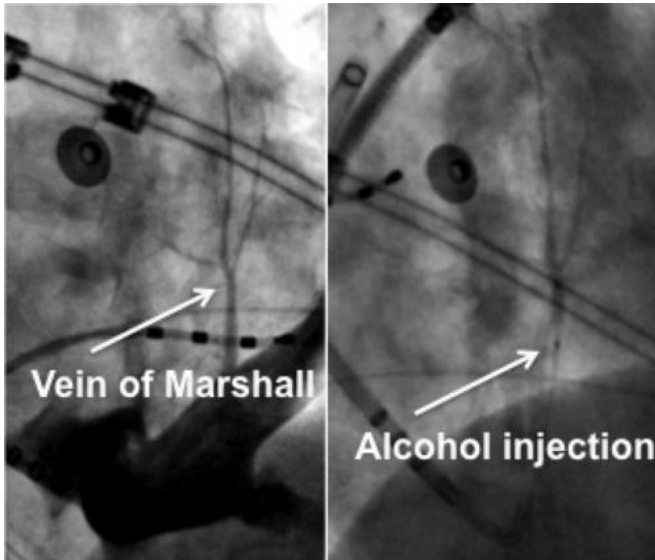


Alcohol may ease the nerves that cause atrial fibrillation

4 March 2014, by David Bricker



Doctors found a few small injections of ethanol appeared to damage the nerve clusters that cause atrial fibrillation.

(Medical Xpress)—Doctors in the U.S. and Japan have devised a way to treat atrial fibrillation by adding a little alcohol to minimally invasive therapies that target a cluster of misbehaving nerves known to trigger arrhythmia. In the most recent *Journal of the American College of Cardiology* (online before print), the researchers say the new therapy may dull or stop the transmission of electrical impulses that cause atrial fibrillation.

Principal investigator Miguel Valderrábano, M.D., chief of [cardiac electrophysiology](#) at Houston Methodist DeBakey Heart & Vascular Center, found that adding four or fewer injections of 98 percent ethanol to the catheter-aided radio wave ablation of nerve clusters near the vein of Marshall was enough to damage or kill the nerves. Doing so prevented the doctors from being able to artificially trigger atrial fibrillation using electricity. Electrical

stimulation is used during atrial fibrillation procedures to determine whether ablations were successful.

"This is a therapy that targets cardiac nerves previously shown to be involved in atrial fibrillation," Valderrábano said. "Radiofrequency ablation carries risks of collateral damage to other structures and there are also risks associated with surgical approaches. We show that chemical ablation with [alcohol](#) can achieve elimination of abnormal nerve activity, introducing a catheter through a neck vein and doing all the work through it."

The addition of alcohol appeared to be far more effective at disrupting the nerves than the standard surgical therapy alone—concentrated radio waves that cause tissues in a small area to burn and scar.

"The present study shows the addition of ethanol to the vein of Marshall could improve the effectiveness of standard therapies," Valderrábano said. "Next, we need to look at short and long term outcomes so we can know which therapy works better for patients."

Catheter ablation is an effective treatment for atrial fibrillation, or a-fib, but the fix is not always permanent. Many patients find their a-fib returns months or years after the first procedure, and many opt to undergo a second ablation operation. Valderrábano and others are investigating how procedures might be improved so they only need to be done once.

High frequency electrical stimulation was used to test the activity of nerve clusters and to verify that nerve activity could induce atrial fibrillation. Before treatment, stimulation induced a-fib in all patients. After alcohol injection in the vein of Marshall, [electrical stimulation](#) never induced atrial fibrillation.

The researchers examined blood alcohol

concentration for those patients who received alcohol treatment, and found they could detect no alcohol. The highest dose was 4 milliliters (four 1-milliliter injections of 98 percent ethanol), and the average body contains more than 1,000 times that volume in blood. By comparison, a can of American beer contains 10-15 milliliters of ethanol.

The researchers also said there appeared to be no complications related to alcohol infusion or access to the vein of Marshall nerve cluster.

Cardiac arrhythmia is a general condition in which the heart does not beat correctly, and [atrial fibrillation](#) is the most common type. In a-fib, one or both of the heart's upper two chambers quiver in between beats. This disrupts blood flow and weakens the power with which the heart pumps oxygenated blood to all parts of the body. A rapid heart rate is a typical symptom. Other possible symptoms are heart palpitations, an inability to do sustained physical activity, chest pains, and edema. A-fib is uncommon in younger adults, but its prevalence increases with age. One in twelve people over 80 have a-fib. The average age of study volunteers in the JACC report was about 64.

More information: José L. Báez-Escudero, Takehiko Keida, Amish S. Dave, Kaoru Okishige, Miguel Valderrábano, "Ethanol infusion in the vein of Marshall leads to parasympathetic denervation of the human left atrium: Implications for atrial fibrillation," *Journal of the American College of Cardiology*, Available online 19 February 2014, ISSN 0735-1097, [dx.doi.org/10.1016/j.jacc.2014.01.032](https://doi.org/10.1016/j.jacc.2014.01.032).

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