Trial Shows Significant Delay in Atrial Fibrillation Disease Progression with Medtronic-Exclusive Pacing Features

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MINERVA Trial at AHA Meeting Shows Medtronic Pacemakers Reduce the Progression of Permanent AF by 61 Percent

New research shows that Medtronic Inc. pacemakers with enhanced pacing features have the ability to slow the progression of atrial fibrillation (AF) in patients with bradycardia, or a slow heartbeat.

Presented as a late breaking clinical trial at the American Heart Association's Scientific Sessions 2013, the MINERVA (MINimizE Right Ventricular pacing to prevent Atrial fibrillation and heart failure) study found that Medtronic pacemakers with atrial antitachycardia pacing (Reactive ATP(TM)), managed ventricular pacing (MVP®) and atrial intervention features were able to significantly decrease the incidence of mortality, cardiovascular hospitalizations or permanent AF at two years compared to pacemakers without these features. The effects of these features were most evident by a significant delay in the progression of atrial tachyarrhythmias to permanent AF, with a 61 percent relative risk reduction at two years.

"By addressing atrial fibrillation, which is the most common cardiac arrhythmia encountered in clinical practice, our study is the first to demonstrate that pacemakers with enhanced pacing features can significantly reduce the progression of this dangerous condition," said Luigi Padeletti, professor of cardiology at the University of Florence, Florence, Italy, and principal investigator of the MINERVA study. "We know that AF has been associated with a higher risk of heart failure, stroke and death, so slowing down the progression of this disease may help reduce a patient's risk of suffering these life-threatening conditions."

The randomized and prospective MINERVA study evaluated the effects of three pacing modalities in 1,166 patients across 63 centers in Europe, the Middle East and Asia:

- MVP, which promotes physiologic heart rhythms, thereby reducing the risks associated with unnecessary pacing in the right ventricle.
- Atrial Intervention Pacing, atrial overdrive pacing designed to counteract potential atrial tachyarrhythmia initiating events.
- Reactive ATP, which paces during atrial tachyarrhythmia intending to restore sinus rhythm.

The study's primary objective was to evaluate whether the combination of these features reduces the composite incidence of mortality, cardiovascular

hospitalizations or permanent AF at two years compared to standard pacing. Enrolled patients had standard indications for dual-chamber pacing and prior atrial tachyarrhythmias and were without complete heart block or permanent AF. The study found that DDDRP (dual chamber pacing with rate response and antitachycardia pacing) +MVP patients experienced a 26 percent reduced incidence (p=0.04) of the composite endpoint compared to standard paced patients. The effects of DDDRP+MVP were primarily driven by the 61 percent relative risk reduction in the progression to permanent AF (p=0.004).

Delays in AF progression were noted by significant reductions with DDDRP+MVP in the risk of AF episodes lasting longer than one day and persistent AF episodes. Impact to expensive health care utilizations was also observed by a 52 percent relative reduction in AF-related hospitalizations and emergency room visits (p<0.0001).

"This is the first study to show that using these enhanced pacing features in combination not only delays the AF disease progression, but also has an impact on health care utilization," said Giuseppe Boriani, M.D., Institute of Cardiology at the University of Bologna, Bologna, Italy, lead author and presenter of the MINERVA study at the meeting. "Based on this compelling evidence, an update of society guidelines should be considered."

The MVP and Reactive ATP algorithms evaluated in the MINERVA study are exclusively available on the Medtronic Advisa and Revo MRI(TM) SureScan(TM) pacing systems.

In collaboration with leading clinicians, researchers and scientists worldwide, Medtronic offers the broadest range of innovative medical technology for the interventional and surgical treatment of cardiovascular disease and cardiac arrhythmias. The company strives to offer products and services that deliver clinical and economic value to healthcare consumers and providers around the world.

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