

CMR for Evaluation of Arrhythmia: Atrial Fibrillation

Reza Nezafat, Ph.D.

Department of Medicine (Cardiovascular Division), Beth Israel Deaconess Medical Center,
Harvard Medical School, Boston, MA 02215

Atrial Fibrillation (AF) is a highly prevalent disorder, affecting more than 2 million Americans. It is the most common sustained cardiac arrhythmia with increased incidence at older ages. AF accounts for approximately one-third of hospitalizations for cardiac rhythm disturbances and is the attributed cause for approximately 15% of all strokes. PV isolation using radiofrequency (RF) ablation is increasingly employed for the prevention of recurrent AF. In this procedure, thin, flexible catheters are positioned in the left atrium (LA) and a burst of RF energy is delivered to destroy tissue around the ostium of PV so as to block abnormal electrical pathways. PV imaging is typically performed prior to ablation for treatment planning and post ablation to screen for PV stenosis, a rare but serious complication of the procedure. In today's clinical practice, PV imaging is performed during the first pass injection of iodinated contrast in multi-detector computed tomography (MDCT) or gadolinium (Gd) contrast with MR. MDCT images are acquired at the cost of repeated radiation for pre-, post- and repeat PV isolation. Furthermore, allergic and nephrotoxic effects of iodinated agents in MDCT are well known. In addition to anatomical assessment, late Gadolinium enhancement (LGE) has been recently used to visualize the resulting scar/fibrosis from ablation procedure or to evaluate the presence of pre-existence scar. These measures could potentially have clinical implication in terms of improving the success rate or selection of appropriate patient selection for AF ablation. In this presentation, we will review current role of cardiac MR for evaluation of patients for AF ablation and its role in improving and guiding current AF therapy.