TITLE OF SESSION: *Cardiovascular MR Imaging: Pushing the Limits - Part 1: CMR in Cardiac Arrhythmias*
TITLE OF TALK: *ICD Implantation: Refining Risk with MRI*
SPEAKER NAME: Katherine Wu, MD; kwu@jhmi.edu
HIGHLIGHTS

Current approaches to risk stratification of patients for sudden cardiac death (SCD) rely exclusively on reduced LVEF and suffer from reduced sensitivity and specificity.

Cardiac MRI has the potential to improve risk stratification, primarily through its unique tissue characterization ability.

There are an increasing number of clinical studies demonstrating the value of cardiac MRI in improving risk stratification approaches.
TARGET AUDIENCE: Cardiologists and radiologists
OUTCOME/Objectives:

To identify limitations with current approaches to risk stratification of patients for SCD.

To describe how cardiac MRI tissue characterization may directly relate to arrhythmic susceptibility by detecting and quantifying myocardial scar in ischemic and nonischemic cardiomyopathy.

To describe the association between CMR indices of scar and arrhythmic outcome.
PURPOSE: SCD risk can be significantly minimized by insertion of implantable cardioverter-defibrillators (ICDs). However, our ability to identify which individuals are at greatest risk for SCD and thus are mostly likely to benefit from these expensive, invasive devices, remains inadequate. Current clinical guidelines for identifying patients who meet criteria for primary prevention ICDs target those with reduced global left ventricular (LV) function (LV ejection fraction [LVEF] <30–35% with or without heart failure). However, using such an LVEF threshold results in only a 5% per year rate of appropriate ICD firings, translating into 20 patients in need of treatment to prevent SCD in one individual. Better risk stratification approaches are needed.
METHODS and RESULTS: There are currently a number of single center retrospective and prospective observational studies that have examined the predictive value of CMR indices of scar on various ventricular arrhythmic outcomes. These studies support the value of CMR in identifying arrhythmic propensity in both ischemic and nonischemic cardiomyopathy patients.
DISCUSSION and CONCLUSIONS: The growing literature on CMR and arrhythmic risk support the hypothesis that myocardial scar may be a potential predictor of SCD over and above that of LVEF because it directly defines the abnormal substrate associated with increased SCD risk. Additional studies are needed to determine whether CMR scar alone or in combination with other risk factors can be used clinically to better define risk in an individual patient than LVEF.

REFERENCES:

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