

ABSTRACT FORM

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The Effects of Atrial Fibrillation (AF) on Ventricular Arrhythmogenesis and Blood Pressure Regulation

Our research in the past 20 years have been focused on 1) the detrimental effects of AF beyond the atria, 2) the role of the baroreflex in determining hemodynamic response in patients with tachyarrhythmias, and more recently 3) the role of syncope units in the evaluation of patients with fainting spells. At this meeting, I will be discussing the first subject, namely the effects of AF on ventricular arrhythmogenesis and blood pressure regulation.

AF and Ventricular Arrhythmogenesis: AF is the most common arrhythmia encountered in clinical practice. It has been shown to be associated with increased mortality even after adjusting for preexisting cardiovascular conditions. Postulated mechanisms include increased ventricular arrhythmogenesis and worsening left ventricular function. We hypothesized that increased ventricular arrhythmogenesis is due to changes in sympathetic activity (milieu) and ventricular repolarization (substrate). I will be reviewing studies we conducted demonstrating that AF results in an increase in sympathetic activity, QT interval and dispersion of refractoriness, and that the main driver for these changes is the variability in RR interval. These studies highlight the importance of restoring a regular ventricular response in patients with AF.

AF and Blood Pressure Regulation: AF and hypertension (HTN) often co-exist. While the effects of HTN on the incidence of AF have been highlighted in several studies, the effects of AF on blood pressure regulation including baroreflex gain (BRG) remain unclear. We have previously shown that AF is associated with an increase in sympathetic activity. Furthermore, several investigators have shown that AF is associated with activation of the renin-angiotensin aldosterone system and endothelial dysfunction. These changes if persistent could lead to BP elevation thus raising the question of the effects of AF on the development and maintenance of HTN.

Because it is hard to predict AF onset and thus the long-term effects of AF on BP, we evaluated the effects of restoring normal sinus rhythm (NSR) on BP and BRG in patients with persistent AF. We hypothesized that restoring NSR results in *reduction* in BP and *improvement* in BRG in patients with persistent AF. I will be reviewing studies highlighting the possible mechanisms of AF induced BP changes and the implications of AF induced impairment in BRG.

Please identify members by underlining their name.

Mohamed H Hamdan, MD, MBA

Member's Signature

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