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Short Communication

The Antiarrhythmic Properties of Ranolazine- Is There a Role in the Prevention of Post-CABG AF?

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Atrial Fibrillation (AF) occurs in 20%- 30% of patients after coronary artery bypass (CABG) [1,2] and in 40%-50% of patients after valve surgery and in 60% of patients after combined CABG and valve surgery [3]. AF after cardiac surgery (POAF) is associated with prolonged hospital stay and increased morbidity and mortality [4,5]. Therefore preventing POAF might improve the outcomes of patients undergoing CABG and reduce their hospital-stay. Beta-blockers are indicated for all patients undergoing CABG and they do reduce the incidence of POAF [6]. Amiodarone and sotalol will provide additional benefit on top of beta-blockers and help prevent POAF [6,7]. However, their use is not devoid of problems. For instance, amiodarone has to be stopped in 6% of patients in the post-operative setting because of bradycardia requiring temporary pacing [6]. Also, sotalol use carry an increased risk of proarrhythmia and bradycardia in this setting [6,8]. Therefore, the guidelines recommend the use of amiodarone for the prevention of POAF only in patients at high-risk of developing POAF [8]. The recommendation also states that amiodarone need to be started prior to surgery. The PAPABEAR trial (Prophylactic Oral Amiodarone for the Prevention of Arrhythmias that begins Early After Revascularization, Valve Replacement, or Repair) compared oral Amiodarone to placebo starting 1- 6 days prior to surgery [7].

Ranolazine, an antianginal drug has antiarrhythmic properties. Ranolazine is an inhibitor of late sodium current (Ina) which is thought to mediate its antianginal effect. In addition, in wedge cell preparation Ranolazine was found to inhibit Ikr, Iks, late Ica and Ina-ca [9]. More importantly, it has been shown to have no effect on transmural dispersion of repolarization (TDR) or to shorten it. An effect that is associated with lower incidence of proarrhythmia. Furthermore, in this study no spontaneous torsades de pointe episodes were seen and stimulation-induced TDP could not be induced. Also, Ranolazine suppressed early afterdepolarization (EADs) and suppressed the increase in TDR seen with d-sotalol. The safety and antiarrhythmic property of Ranolazine was also confirmed in clinical trials.

Data from the MERLIN-TIMI 36 suggested that patients with non-ST segment elevation MI treated with Ranolazine had lower incidence of ventricular and atrial arrhythmia as compared to patients treated with Placebo [10]. A Small study has also suggested that Ranolazine used as a "pill-in-the pocket" approach converted 72% of all patients with new-onset atrial fibrillation to sinus rhythm. An efficacy that is comparable to Class IC antiarrhythmic drugs. A new retrospective study also showed that Ranolazine as compared to Amiodarone was associated with lower incidence of post-CABG AF [11]. The safety and antiarrhythmic properties of ranolazine makes it a perfect drug to use prior to cardiac surgery especially CABG for the prevention of POAF. Prospective randomized trials are needed to answer this important question.

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