

Relationship Between Left Atrial Volume And Atrial Fibrillation Following Off Pump Coronary Artery Bypass Grafting

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Abstract:

Atrial fibrillation (AF) is a common complication of coronary artery bypass grafting (CABG). However, limited information is available about the role of preoperative echocardiographic left atrial evaluation to predict AF occurrence after CABG. Thus, we prospectively compared the ability of echocardiographic measurements of left atrial volume to predict AF in this setting.

From July 2014 to June 2016, 60 patients (83% males, 59.00 ± 7.03 years) met the inclusion criteria of our study (isolated and elective off pump CABG, no valve surgery, no permanent AF, or other chronic atrial arrhythmias). The day before CABG a complete echocardiographic evaluation was performed with left atrial volume measurements. The primary endpoint of the study was postoperative AF (POAF) lasting >30 seconds

From July 2014 to June 2016, we recruit a total number of 60 patients who fulfilled the study selection criteria and constituted the study cohort. The majority of patients were male (50 patients, 83.0%) with mean age of 59.00 ± 7.03 years. The mean Euroscore of the study population was 5.91 ± 0.83 ; the mean LVEF was $52.55 \pm 6.66\%$. Of note, 43 patients (71.66%) were on β -blocker and 59 were on statin (98.33%) therapy at the moment of CABG.

POAF was observed in 13 patients (21.66%). POAF patients showed increased left atrial M-mode anteroposterior dimension (42.3 ± 5.58 mm vs. 39.40 ± 4.1 mm; $p = 0.04$), LA 2D longitudinal dimension (52 ± 5.60 ml vs. 49.87 ± 4.76 ml; $p = 0.041$), LA 2-D anteroposterior dimension (40.92 ± 4.69 ml vs. 37.40 ± 4.08 ml; $p = 0.01$) and increased left atrial volume

(71.76 ± 16.9 ml vs. 49.0 ± 11.62 ml; $p = <0.0001$).

Left atrial volume was an independent risk factor for POAF (OR 10.34; 95% CI 10.01 to 10.65; $p = 0.01$).

Preoperative echocardiographic evaluation of patients with isolated off pump CABG demonstrated that left atrium volume measurements were independently correlated to the occurrence of POAF. Further investigations should be focused on the opportunity to target prophylactic antiarrhythmic treatments to patients with large left atrial volumes.

Key Words:

Atrial fibrillation, Left atrial volume, Off pump coronary bypass grafting

Introduction

Atrial fibrillation was recognized as a major cause of morbidity soon after the introduction of coronary artery bypass grafting (CABG) for the treatment of atherosclerotic coronary artery disease (Favaloro, et al 1969)).

Its rate of occurrence varies widely depending on the definition used, criteria for diagnosis, and mode of Post-operative monitoring (intermittent or continuous) and on the changing profile of patients undergoing coronary surgery (Andrews, et al). Age is consistently identified as a major independent predictor for the development of postoperative AF (Creswell, et al 1993).

The evolution of postoperative continuous ECG monitoring and the increasing age of the patient population are the major factors that have contributed to the consistently higher incidence of AF in recent years (Andrews, et al 1991).

The pathophysiological mechanisms responsible for

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