The relationship between body mass index and prognosis of cardiac resynchronization therapy in heart failure patients with atrial fibrillation

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Introduction: To analyze the relationship between body mass index (BMI) and prognosis of cardiac resynchronization therapy (CRT) in heart failure patients with atrial fibrillation.

Methods: In 83 patients of CRT with a pacemaker or a defibrillator from January 2008 to December 2013 in the Second Xiangya Hospital of Central South University. The LV lead location was classified along the short axis into anterior (n = 11), anterolateral (n = 13), lateral (n = 31), posterolateral (n = 28), or posterior position (n = 0) and along the long axis into a basal (n = 29), midventricular (n = 54), or apical region (n = 0). All patients were evaluated at baseline, 7 days, 3 months, 6 months, 12 months, 18 months, and 24 months after the implementation by such indices as LV ejection fraction (LVEF), LV end-diastolic dimension (LVEDD), New York Heart Association (NYHA) class, 6 min walking distance, quality of life (QOL), CRT parameters and the incidence rate of adverse events.

Result: (1) The incidence of nonresponse to CRT was 18.1% (15/83). Improvement in LVEF, LVEDD, NYHA class, 6 min walking distance and QOL was found in all groups (P < 0.05). (2) Improvement in LVEF, NYHA class, 6 min walking distance and QOL was significantly greater in non-anterior location than anterior location during 3 months follow-up (P < 0.05). The extent of CRT benefit was similar for leads in the anterolateral, lateral and posterolateral position (P < 0.05). (3) The extent of CRT benefit was similar for leads in the basal and midventricular position (P < 0.05). (4) There were no presentation of abnormal CRT parameters, readmission of heart failure, lead dislocation, phrenic nerve stimulation, CRT associated infection and other events.

Conclusion: (1) CRT recipients are profiting by 2 years follow-up. (2) LV leads placed in anterolateral, lateral or posterolateral position is more preferential for achieving optimal CRT benefit than ones placed in the anterior position. And the benefit from CRT was similar for LV leads positioned along the anterolateral, lateral or posterolateral wall and for lead position along the basal and midventricular wall.