

Adrenomedullin plasma levels as predictors of left ventricular reverse remodelling in patients treated with cardiac resynchronization therapy

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Purpose: Adrenomedullin (ADM), a potent natriuretic and vasorelaxing peptide, has been isolated from human pheochromocytoma cells and from cardiovascular tissue. Increase in ADM plasma levels in congestive heart failure (CHF) patients (pts) is due to many cardiac and systemic factors and in particular to the greater plasma volume and to the activation of sympathetic nervous system. Aim of this study was to assess the role of plasma ADM levels in CHF pts treated by cardiac resynchronization therapy (CRT).

Methods: 42 pts, mean age 70 years, 27 males, NYHA Class III-IV CHF underwent CRT. Cause of CHF were idiopathic dilated cardiomyopathy in 27 pts, post ischemic in 15; all pts were in sinus rhythm and with complete left bundle branch block (QRS duration 138 ± 8 msec). A complete echoDoppler exam, blood samples for brain natriuretic peptide (BNP) and ADM were obtained within 2 days before implantation.

Results: At 18 ± 6 months follow-up, >1 NYHA Class improvement was observed in 31/42 pts. However, a $>10\%$ reduction in end-systolic dimensions (ESD): $-18.2 \pm 2.3\%$ was reported in 16 pts (Group I); in the remaining 26 pts ESD change was almost negligible: $-1.5 \pm 3.2\%$ (Group II). The two groups were comparable for age, sex, cause of LV dysfunction, ongoing therapy, QRS duration at baseline, pre implantation ESD (60.6 ± 1.8 vs 59.9 ± 1.9 mm - Group I vs II), LVEF% (24.3 ± 1.2 vs $25.4 \pm 1.3\%$) and BNP (545 ± 80 vs 494 ± 89 pg/ml). Significantly higher pre implantation ADM levels were present in Group I than in Group II (25.8 ± 2.4 pmol/l vs. 17.1 ± 1.6 , $p = 0.005$).

Conclusions: Significantly higher ADM levels indicate a subgroup of pts in whom significant reverse remodelling can be observed after CRT. Since AM is also produced in cardiac myocytes, lower ADM values before CRT could suggest the presence of more severe myocardial damage which may impair LV reverse remodelling even in the setting of clinically successful resynchronization.