Prognostic significance of remaining severe left ventricular diastolic dysfunction after cardiac resynchronization therapy

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Background: CRT (cardiac resynchronization therapy) improves systolic dysfunction and causes left ventricular (LV) reverse remodeling in patients with drug refractory heart failure. Several studies have demonstrated that reverse remodeling predicts better prognosis. However, prognostic impact of LV diastolic dysfunction is unknown. This study sought to clarify the impact of CRT on diastolic function and prognosis.

Methods: In 68 patients who underwent CRT, LV diastolic function was determined by Doppler trasmitral and mean pulmonary arterial pressure (from 2057 to 60 [mm Hg]) compared to those of pre-administration of sildenafil. Although it is difficult to predict the unfavorable response of pulmonary vasodilators in patients with PVOD, sildenafil would be an effective and feasible drug if you carefully determine the dosage.

Results: CRT had acute effect on sifting from RFP to non-RFP in 6 patients. In responders, E/A was decreased from 1.7 to 1.3, however, in non-responders, E/A was increased from 1.8 to 2.2 (P < 0.05, vs. responders). RFP immediately after CRT was significantly related to worse prognosis than non-RFP (Log-rank, p = 0.04, HR 3.8, 95% CI 1.56–9.12), whereas responders did not represent better prognosis than non-responders.

Conclusions: CRT improves diastolic function in responders. Remaining severe LV diastolic dysfunction after CRT is the strong prognostic predictor.


Elevated blood pressure in resting daytime-phase in A170/p62-knockout mice, a newly established obese model

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A170, also called p62/ZIP/sequestosome1, is an oxidative stress-inducible protein, which is partly regulated by the transcription factor Nrf2. To examine the role of A170 in vivo, we have created A170-knockout mice (A170-KO). A170-KO exhibited mature-onset obesity (by 1.8-fold body weight [BW] increase at 50-week old) and impaired glucose tolerance. As the gain of BW in A170-KO, the amount of food intake was increased. The restriction of feeding inhibited BW increase and other phenotypes. Although the intraventricular injection of leptin reduced the amount of food intake in wild type (WT), it did not change in A170-KO. It suggests that A170-KO is a hyperphagia-induced obese model with leptin resistance. Next, we measured daily blood pressure (BP) by a telemetry system. During light resting phase, BP was significantly higher in KO than in WT (systolic BP, 124 ± 1 [mean ± SE] vs 113 ± 2 mm Hg, n = 5, P < 0.001), however, BP did not differ between both groups during the dark active phase. It suggests that A170-KO exhibited a non-dipper type of BP elevation. Heart rate during light resting phase was significantly higher in A170-KO than in WT (562 ± 4 vs 521 ± 3 bpm, P < 0.001). Furthermore, total amount of urinary excretion of both adrenalin and noradrenalin was significantly higher in A170-KO than in WT, suggesting that sympathetic nerve activity is augmented in A170-KO.

Relationship between plasma Klotho concentration and physical activity level in middle-aged and elderly women

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Background: Regular exercise is an efficacious therapy for preventing cardiovascular disease and aging. Klotho, an anti-aging protein, has been known to decrease with advancing age. However, its effect of physical activity on plasma Klotho concentration has not been clarified. The purpose of this study was to investigate the relationship between plasma Klotho concentration and physical activity level in middle-aged and older adults. Methods: Thirty postmenopausal women (48–67 years) participated in this study. We measured plasma Klotho concentration and physical activity (PA) level. Subjects were divided into inactive lifestyle (inactive) and active lifestyle (active) groups, with the dividing line set at the median value of PA level per day. Result: PA levels were 225 ± 20 kcal/day in the inactive group and 482 ± 21 kcal/day in the active group (P < 0.05). Plasma Klotho concentration in the active group was significantly higher than in the inactive group (P < 0.05). Plasma Klotho concentration was positively correlated with PA level (P < 0.05). After adjusted with age and BMI, there was a significant association between plasma Klotho concentration and physical activity level (P < 0.05). Conclusion: We showed a significant and positive correlation between plasma Klotho concentration and physical activity level in middle-aged and elderly women. These results suggest that regular exercise may increase Klotho production.