## G-C-3

### Benefits of Cardiac Rehabilitation in Patients with Left Ventricular Systolic Heart Failure

Yu CM, Li LSW, Siu DCW, Lam KB, Ho YY, Ho E, Chan W, SY Chiu, Lau CP.
Cardiac Rehabilitation and Prevention Centre, Tung Wah Hospital and Division of Cardiology, Department of Medicine, Queen Mary Hospital The University of Hong Kong, Hong Kong, PRC.

**Background:** Cardiac rehabilitation and prevention program (CRP) for congestive heart failure (CHF) is a newly evolved concept. This study investigated the clinical benefits of CRP in CHF patients.

**Patient and Methods:** 62 patients (65 ± 11 yrs, 76% male) with CHF whose ejection fraction < 45% were randomized to a 8-week CRP (n = 41) or medical therapy alone (controls) (n = 21). Assessment included echocardiography, 6-minute hall walk, treadmill exercise tolerance test and holter analysis performed at baseline and at the end of phases 2 and 3.

**Results:** There was no difference in age between the two groups (64.5 ± 11.6 vs 67.2 ± 8.0 yrs, p = NS). For patients underwent CRP, there were significant improvement in the maximal metabolic equivalents (METs) achieved (CRP: 5.0 ± 3.0 to 6.5 ± 3.1, $p < 0.001$; controls: 4.0 ± 3.3 to 4.6 ± 2.7, p = NS), exercise time (8.9 ± 4.1 to 11.4 ± 3.3 min, $p < 0.001$; controls: 7.6 ± 4.2 to 9.1 ± 4.1 min, p = NS), 6-minute walk distance (CRP: 366 ± to 449 ± 66m, $p < 0.05$; controls: 358 ± 142 to 402 ± 102 m, p = NS) at the end of phase 3, but not in the controls. The ejection fraction was improved in patients with CRP after phase 2 (CRP: 38.3 ± 6.2 to 47.0 ± 13.0%, p = 0.001; controls: 37.7 ± 6.4 to 47.0 ± 13.0%, p = NS), but was improved in both groups after phase 3 when compared to baseline (CRP: 38.3 ± 6.2 to 48.7 ± 15.3%, $p < 0.001$; controls: 37.7± 6.4 to 54.4 ± 14.5%, $p < 0.01$). There was no change in left ventricular size, diastolic function; and the event rate was not different between the two groups. There was no major adverse events occurred during exercise training.

**Conclusions:** Exercise training in heart failure patients is safe and useful to improve exercise time, duration and maximal exercise capacity.

## G-C-4

### A Cephalic Vein Cutdown and Venography Technique to Facilitate Pacemaker and Defibrillator Lead Implantation

HF Tse, CP Lau, SK Leung.*
Division of Cardiology, Dept of Medicine, Queen Mary Hosp & The Institute of Cardiovascular Science and Medicine, University of Hong Kong, & *Dept of Medicine & Geriatrics, Kwong Wah Hosp, Hong Kong. China

**Background:** The study aimed to assess the feasibility of a cephalic vein cutdown and venography technique for implantation of pacemaker or implantable cardioverter defibrillator (ICD), and to determine the causes of failure of cephalic vein cutdown. **Methods:** In consecutive patients who underwent pacemaker or ICD implants, a modified cephalic vein guidewire technique is performed. After dissection of the cephalic vein, a 16-gauge angiocath is inserted into the vein to facilitate the insertion of the guidewire, followed by an appropriately size tear away sheath-dilator unit. If resistance is encountered during the insertion of the guidewire, a venogram is performed through the angiocath to guide the passage of the guidewire and to evaluate the causes of failure. **Results:** This technique was attempted in 289 pacemaker implants and 26 ICD implants (155 males, 160 females; mean age 74 ± 10 years). The success rate for implantation of a single chamber and a dual chamber device by using this technique alone was 84% (54/64) and 74% (185/251), respectively (p = 0.10). In an additional of 7% of patients with dual chamber implant, the cephalic vein can be used for passage of the ventricular lead. Cephalic venogram was required in 82 patients and facilitated the passage of guidewire in 62 (79%) of them. No complication related to vascular access was observed with this technique. This technique failed in 54/315 (17%) patients, due to (1) failure of cephalic vein isolation (48%), (2) venous stenosis (24%) or (3) venous torturosity or anomalies (28%). There were no significant differences in the patient's age, gender, the type of device and the fluoroscopic time for lead placement between patients with or without success lead placement using this technique (all $p > 0.05$). **Conclusions:** A simple modification of the cephalic vein guidewire technique together with venography has facilitated the placement of leads during pacemaker and ICD implant. This technique is safe and applicable in the majority of patients and avoids the risk of subclavian puncture.