The Role of Cardiac Rehabilitation in Patients Undergoing Pacemaker Implantation: A Preliminary Data from Single Center Randomized Controlled Trial

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Introduction: Previous studies demonstrated that exercise-based cardiac rehabilitation (CR) improves clinical outcomes in patients with heart failure. Patients undergoing pacemaker (PM) implantation because of significant bradycardia often have limited exercise capacity, however the role of CR in these populations is not known.

Methods: This study is a single-center, randomized clinical trial and still recruiting eligible patients since April in 2018. A total of 16 patients with 6-minute walking distance less than 85% of predicted value on the next day of PM implantation were enrolled and randomly assigned to CR group (n=5, 31.2%) or non-CR group (n=11, 68.8%). The CR group trained a total of 10 times of individualized exercise-based CR for 1 month. SF-36, 6-minute walking test (6MWT), muscle power, and cardiopulmonary exercise test (CPET) at baseline and 1 month follow-up period were compared inter- and intra-groups.

Result: Patients in CR group were older and had higher ventricular pacing burden, but there were no differences in PM indication, SF-36 score, 6MWT, muscle power, or CPET parameters on baseline between groups. After a mean follow-up period of 39.6 days, both groups showed significantly improved 6MW distance but the difference was similar. In CPET, VO₂ max was improved in CR group (13.0 to 15.9 mL/(kg x minute), p=0.034), but not in non-CR group. In addition, only CR group showed improved quality of life (mental health score 14.3 to 21.0, p=0.009), unlike the non-CR group. Lead dislodgement or change in PM parameter was not shown in any patient.

Conclusion: Exercise-based CR seemed to improved quality of life in some part and exercise capacity in patients with PM implantation.