

Improvement of ergometric outcomes after a personalized exercise and cardiac rehabilitation programme in postoperated Tetralogy of Fallot children.

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INTRODUCTION: postoperated Tetralogy of Fallot patients (PTF) frequently associate disorders that impair exercise capacity (ExC). We developed a personalized cardiac rehabilitation program (CRP) conceived to counteract the deconditioning in PTF. Our aim: to characterize the effect of CRP through conventional exercise test (ExT).

METHODS: 18 PTF patients were recruited. CRP started with clinical review, baseline echocardiography, submaximal ExT and post-exercise echocardiography. Documentation of nutrition, life-style and cardiac risk factors was obtained. CPR consisted in 1hr supervised exercise 2-3 times/week, 3 months, including respiratory training, column table, and aerobic exercise (at 75-85% of the maximal HR reached). After CRP, tests were repeated. Relevant cardiovascular outcomes pre/post CRP were:

- ergometric parameters: baseline and maximal HR and BP, HR reserve (HRR), endurance time (ET) and double product (DP).
- echocardiographic systo/diastolic functional parameters.
- quality of life outcomes (questionnaires).

RESULTS:

Submaximal ExTs (limited by symptoms, including fatigue) in treadmill were performed following Bruce protocol. The reason for termination was fatigue.

13/18 increased their ET with a mean of +1.56min, showing an improvement in ExC.

Prerehabilitation mean peak HR was 166bpm (minimal 124bpm, maximal 190bpm). Postrehabilitation mean peak HR was 171bpm (min 134, max 200). 10/18 improved their peak HR, with a mean of +16bpm (min 3, max 31) and increased +9.2% over their peak HR (min 1.6%, max 17.9%). This findings indicated an objective improvement in ExC, cardiac output (CO) and chronotropic response.

Baseline mean HRR was 72bpm (min 36, max 109), increasing after CRP to a mean of 79.4bpm (min 46, max 108). 13/18 increased HRR, with a mean of +10.5bpm (min 1, max 25).

Prerehabilitation mean DP was 19788.4 (min 9900, max 30400), increasing postrehabilitation to a mean of 21692.4 (min 15410, max 28500). This findings suggested a rise in CO and a better myocardial oxygen consumption.

No subject had abnormal response to exercise (ischemia, arrhythmias, or excessive hypo/hypertensive response).

CONCLUSIONS: it is demonstrated that a 3-month CRP can significantly improve ExC of PTF. ExT provide objective quantitative information of patient's ExC. Routine use of formal CRPs may reduce morbidity in CHD.