Six-month outcomes of a high intensity exercise programme in young patients with hypertrophic cardiomyopathy: The SAFE-HCM trial

Authors:
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Topic(s):
Exercise Programmes

Background

Moderate intensity exercise training in older patients with hypertrophic cardiomyopathy (HCM) can improve functional capacity, without significant harm. However, younger patients are attracted to high intensity training (HIT) regimes. The SAFE-HCM study demonstrated that an individually tailored, HIT programme in young patients with HCM was feasible, and provided both health and psychological benefits, without an increase in the burden of arrhythmia.

Purpose

To assess whether observed benefits of a HIT programme in young patients with HCM are sustained at 6 months.

Methods

Eighty patients with HCM (45.7y+/−8.6) underwent baseline clinical and psychological assessment. Individuals were randomised to a 12-week HIT programme (n=40) or usual care (n=40). Baseline evaluation was repeated at 12 weeks (T12). Feasibility, safety, health and psychological benefits were assessed. At 12-weeks individuals were encouraged to continue with the frequency and intensity of physical activity (PA) achieved at the end of the cardiac rehabilitation programme. Participants in the exercise arm were invited to follow-up at 6 months (T6m).

Results

The majority (83%) of participants completed the 12-week study. At T12 there was no significant difference between groups in the composite arrhythmia safety outcome (p=0.99). The indices of exercise capacity were significantly improved in the exercise compared to the control group; peak VO2 (+3.7ml/kg/min [CI 1.1,6.3], p=0.006), VO2/kg at anaerobic threshold (VO2/kgAT) (+2.44ml/kg/min [CI 0.6,4.2], p=0.009), time to AT (+115s [CI 54.3,175.9], p<0.001) and exercise time (max ET) (+108s [CI 33.7,182.2], p=0.005). The exercise group also demonstrated greater reduction in systolic BP (-7.3mmHg [CI -11.7,-2.8], p=0.002), BMI (-0.8kg/m2 [CI-1.1,-0.4], p<0.001), anxiety (-2.6 [CI-3.6,-1.6], p<0.001) and depression (-1.1 [CI -2.0,-0.2], p=0.015) scores. At T6m patient reported exercise adherence was comparable to baseline PA in 33/34 of the exercise group attending for follow up. Most exercise gains dissipated with the exception of time to AT (p=0.002), max ET (p=0.003), VO2/kgAT (p=0.04) and anxiety score (p<0.001) (Figure 1). There were no sustained episodes of atrial or ventricular arrhythmias. The incidence of NSVT did not differ between time points (p=0.09).

Conclusion

A 12-week HIT programme in young patients with HCM offers considerable gains in fitness and psychological outcomes, with no increase in arrhythmic burden. At T6m exercise levels as well as most physiological adaptations and health benefits returned to baseline, as seen in other studies when formal participation in an exercise programme comes to an end. This highlights the importance of the implementation of strategies to encourage ongoing engagement in PA. Potential solutions include identification of barriers to exercise, as well as adoption of novel tele-rehabilitation approaches.
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