3 SAFETY AND OUTCOMES OF A HIGH INTENSITY EXERCISE PROGRAMME IN YOUNG PATIENTS WITH HYPERVENTRICULAR CARDIOMYOPATHY: THE SAFE-HCM STUDY

Joyee Basu, Shrutik Jayakumar, Christopher Miles, Gemma Pany-Williams, Hamish MacLachlan, Nabeel Sheikh, Paulo Bulleros, Zephrin Fanton, Elijah Behr, Jamie O’Driscoll, Sanjay Sharma, Maria Therese Tome Esteban, Dimitra Nikoleto, Michael Papadakis, St George’s University of London, London, UK; Guy’s and St Thomas’ NHS Foundation Trust, Canterbury Christ Church University

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. PurposeTo assess the feasibility, safety and outcomes of an individually tailored, HIT programme in young patients with HCM and to assess whether observed benefits 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. Reasons for refusal included travel, work and family commitments. Resource requirements were similar to other programmes. All individuals felt supported, more confident to exercise, and found educational materials clear and informative. At T12 there was no significant difference between groups in the composite arrhythmia safety outcome (p=0.99). There was no significant difference between groups in episodes of non-sustained ventricular tachycardia (NSVT) (p=0.573) or ectopic burden (p=0.729). 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 of 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. Further research is still required to assess the long-term safety of high intensity exercise in the HCM population. 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.

Conflict of Interest None