

(42%) patients exhibiting biventricular involvement and 2 (5%) patients showing isolated left ventricular involvement. The most common RV abnormalities were regional wall motion abnormalities (RWMA) (n=34; 79%), RV dilatation fulfilling a major or minor volume TFC (n=18; 42%), impaired systolic function (RVEF \leq 45%: n=17; 40%) and myocardial fibrosis (n=13; 30%). The predominant LV abnormality was myocardial fibrosis (n=20; 47%), with a small proportion of patients exhibiting RWMA (n=6; 14%) and impaired systolic function (LVEF <50%: n=6; 14%).

Twenty-three (53%) patients fulfilled a major (n=14; 32%) or a minor (n=9; 21%) CMR TFC. Sixteen (16%) athletes exceeded the cut-off values for RV volumes used as a major (n=10; 10%) or a minor (n=6; 6%) TFC with an inverse relationship between age and RV volumes ($r=-0.41$, $p=0.001$). None of the athletes fulfilled the TFC for RV ejection fraction. Applying the CMR TFC to the ARVC patient population, showed a sensitivity of 33% for the major and 28% for the minor criteria. Applying the RV volume and systolic function TFC values in the entire study population, showed a sensitivity of 53%, a specificity between 83% and an accuracy of 0.68. Please see (Figure 1).

Conclusion The great majority (86%) of patients with ARVC demonstrate structural abnormalities suggestive of cardiomyopathy on CMR but only 53% fulfil any of the CMR TFC. A small proportion (16%) of older athletes demonstrate significant RV dilatation that overlaps with the volume criteria for ARVC. The emergence of ARVC as a biventricular disease provides an opportunity to re-evaluate the diagnostic criteria and include LV involvement in conjunction with RV involvement to improve diagnostic accuracy.

Conflict of Interest no

132

THE ADDITIONAL VALUE OF CARDIOPULMONARY EXERCISE TESTING OVER CONVENTIONAL TREADMILL TESTING IN PATIENTS WITH MODERATE TO SEVERE AORTIC STENOSIS

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Introduction Current guidelines recommend aortic valve replacement in patients with apparently asymptomatic severe aortic stenosis, who exhibit symptoms or a decrease in blood pressure on exercise testing. However, the additional information provided by cardiopulmonary exercise testing (CPET) is limited. This study sought to establish the additional information provided by CPET in this context.

Methods An analysis of patients with aortic stenosis undergoing CPET in an enhanced valve surveillance clinic was performed. Symptom limited cardiopulmonary exercise testing with respiratory gas exchange analysis was used, and the patients were encouraged to exercise until exhaustion.

Results 71 patients with moderate to severe aortic stenosis and good left ventricular function (AVVmax 4 0.5m/s MG 38 11mmHg, AVA 0.9 0.2cm², LVEF 60 8%) were included in the analysis. The mean age was 74.2 12.1 years and 51 patients (70.4%) were male. 33 (46.5%) patients had a background of hypertension, 12 (16.9%) had diabetes mellitus and 8 (11.3%) had coronary artery disease.

All patients denied cardiovascular symptoms at baseline. A total of 119 CPETs were performed. All patients exercised to respiratory exchange ratio (RER) >1.1 indicating good effort.

Abstract 132 Table 1

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| Baseline demographics | |
| Age (years) | 74.2 \pm 12.1 |
| Gender (male) | 51 (70.4%) |
| Hypertension | 33 (45.8%) |
| Diabetes mellitus | 12 (16.9%) |
| Coronary artery disease | 8 (11.3%) |
| Height (cm) | 169 \pm 9 |
| Weight (kg) | 77 \pm 14 |
| Echocardiographic data | |
| Peak aortic velocity (m/s) | 4 \pm 0.5 |
| Mean gradient (mmHg) | 38 \pm 11 |
| Aortic valve area (cm ²) | 0.9 \pm 0.2 |
| Left ventricular ejection fraction (%) | 60 \pm 8 |
| Cardiopulmonary exercise testing data | |
| Power (watts) | 91 \pm 49 |
| Resting heart rate (bpm) | 73 \pm 12 |
| Peak heart rate (bpm) | 123 \pm 18 |
| Resting systolic blood pressure (mmHg) | 149 \pm 22 |
| Peak systolic blood pressure (mmHg) | 176 \pm 25 |
| Peak VO ₂ (ml/min/kg) | 18 \pm 5.2 (88 \pm 16% predicted) |
| VE/CO ₂ slope | 30.9 \pm 6.5 |
| Oxygen uptake efficiency slope | 1787 \pm 599 (97 \pm 26% predicted) |
| Oxygen pulse | 11 \pm 3.1 (103 \pm 26% predicted) |