Safety assessment of the 6-minute walking test-heart transplant recipients

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INTRODUTION

Heart transplantation is considered the gold standard treatment for selected patients with end-stage heart disease when medical therapy has been unable to halt progression of the underlying pathology. Scientific evidence suggests that cardiac rehabilitation (CR), with a focus on exercise, can be effective in reversing the consequences of previous physical deconditioning, pathophysiological changes associated with cardiac denervation and prevented adverse reactions induced by immunosuppression. Prescribing and evaluating interventions in the context of CR is a complex process, and the instruments to be used for measuring and prescribing exercise are not always consensual. The 6-minute gait test (6MWT) has been used as a way of assessing functional capacity, clinical staging, cardiovascular prognosis and monitoring of the rehabilitation program. Safety and metabolic impact are poorly described in the literature with regard to heart transplant recipients.

OBJECTIVES

To Evaluate the safety of the 6-minute Gait Test in cardiac transplant recipients, in phase III of Cardiac Rehabilitation.

METHODS

31 heart transplanted patients, 25 men and 6 women, with a mean age of 58.19 (9.57) years and an average transplant time of 5.47 (4.40) years. They were submitted to evaluation using the 6MWT, with electrocardiographic monitoring by telemetry and with initial and final recording of heart rate, systolic and diastolic blood pressure. The Modified Borg Scale was also applied before and after the 6MWT. Anthropometric parameters were also recorded: height, weight and the body mass index was inferred. The 6MWT was performed according to the guidelines of the American Thoracic Society. To calculate the expected 6MWT distance (D6MWT) the equations define by Enright & Sherrill to the health population was used:

♂: D6MWT = (7,57 x $stature_{cm}$) – (5,02 x age_{years}) – (1,76 x $weight_{kg}$) – 309; r2 = 0,42

♀: D6MWT = (2,11 x $stature_{cm}$) – (2,29 x $weight_{kg}$) – (5,78 x age_{years}) + 667; r2 = 0,38

Inclusion criteria: freely and voluntarily participate in the study, transplanted for more than 3 months and without any clinical contraindication for participation in the evaluations.

	Weight (Kg)	Height (cm)	BMI (kg/cm²)
N	31	31	31
Mean	78,46	169,00	27,37
SD	12,96	8,22	3,15
Minimum	56	149	21,7
Maximum	116	187	33,5

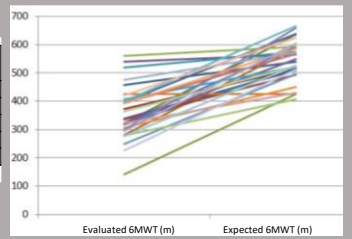
	Age (years)	Tx age (years)
N	31	31
Mean	58,19	5,47
SD	9,57	4,40
Minimum	37	0,25
Maximum	79	13

	Initial Borg	Final Borg	Initial Heart Rate (beats/min)	Final Heart Rate (beats/min)	Initial syst. BP (mm/Hg)	Final syst. BP (mm/Hg)	Initial diast. BP (mm/Hg)	Final diast. BP (mm/Hg)	Ejection fraction (%)
N	31	31	31	31	31	31	31	31	31
Mean	0,39	1,77	83,03	86,32	130,19	133,90	77,48	79,23	69,32
SD	0,96	2,11	12,18	14,03	19,65	21,50	11,29	9,28	6,64
Minimum	0	0	58	56	98	100	58	60	48
Maximum	4	7	108	110	178	205	96	95	82
p	0,000		0,007		0,111		0,442		

	Evaluated 6MWT (m)	Expected 6MWT (m)	Difference of both 6MWT (m)
N	31	31	31
Mean	356,39	543,38	187,06
SD	92,57	69,49	94,10
Minimum	140	407	0
Maximum	560	666	360
p	0,000		

RESULTS

There are statistically significant changes when comparing the assessments before and after performing 6MWT, regarding Modificed Borg scale (p=0,000) and Heart Rate (p=0,007). It should also be noted that the results of the evaluated 6MWT are statistically inferior (p=0,000) than the expected ones. Of the 31 evaluated patients, only one gave up halfway through, having completed 3.5 minutes of the test. There were no adverse events. None of the evaluated had a 6MWT result higher than the expected.



CONCLUSIONS

Heart transplant patients have more intolerance to activity than healthy people. Clinical and electrocardiographic behavior suggests that this method of assessment is safe, but it can be considered of high intensity for some transplant recipients. Variables related to 6MWT performance can facilitate exercise prescription and outcome monitoring in Rehabilitation Nursing intervention programs, as well as measure post-transplant functional capacity.

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