Hartcentrum Hasselt

jessa ZIEKENHUIS

CARDIOPULMONARY EXERCISE CAPACITY IN PATIENTS EARLY AFTER ENDOSCOPIC ATRAUMATRIC CABG (ENDO-ACAB) SURGERY: IMPLICATIONS FOR REHABILITATION AND TREATMENT

AUTHORS: DOMINIQUE HANSEN, PHD, FESC[1,2], LORE JACKMAERT, MSC[1], BORIS ROBIC, MD[3], MARC HENDRIKX, MD, PHD, FETCS[3], ALLAADIN YILMAZ, MD[3], INES FREDERIX,MD[1,2], MICHAEL ROSSEEL, MD[4], PAUL DENDALE, MD, PHD[1,2]

1 REVAL - REHABILITATION RESEARCH CENTRE, BIOMED- BIOMEDICAL RESEARCH CENTRE, FACULTY OF MEDICINE AND LIFE SCIENCES, HASSELT UNIVERSITY, DIEPENBEEK, BELGIUM, 2 HEART CENTRE HASSELT, JESSA HOSPITAL, STADSOMVAART 11, 3500 HASSELT, BELGIUM, 3 DEPARTMENT OF CARDIOTHORACIC SURGERY, JESSA HOSPITAL, STADSOMVAART 11, 3500 HASSELT, BELGIUM, 4 DEPARTMENT OF CARDIOLOGY, ALGEMEEN STEDELIJK ZIEKENHUIS, AALST, BELGIUM
CONTACT: DOMINIQUE.HANSEN@HASSELT.BE, CONFLICTS OF INTEREST: NONE TO BE DECLARED, THIS MANUSCRIPT HAS BEEN PUBLISHED IN AM J PHYS MED REHABIL ON MAY 12 2016.

CONCLUSION:

▷ **Exercise tolerance** and **cardiopulmonary function during exercise** is, in contrast to expectation, **equally compromised early after endo-ACAB surgery as opposed to after CABG surgery.**
These data signify the **need for exercise-based rehabilitation intervention early after endo-ACAB surgery**.

INTRODUCTION

- Endo-ACAB surgery is associated with **many clinical advantages**, as opposed to CABG surgery with median sternotomy.

- Cardiopulmonary function during peak exercise in patients early after endo-ACAB surgery has however not been studied yet.

- This may lead to **suboptimal exercise prescription** or **treatment after endo-ACAB surgery**.

AIM

- To test the hypothesis that the cardiopulmonary exercise tolerance is better preserved early after endo-ACAB surgery vs. CABG surgery.

METHODS

- 20 endo-ACAB surgery patients, 20 CABG surgery patients, and 15 healthy subjects **executed a maximal cardiopulmonary exercise test**.
- Assessment and comparison of peak cycling power output (W), oxygen uptake (VO2), carbon dioxide output (VCO2), respiratory gas exchange ratio (RER), end-tidal O2 (PETO2) and CO2 (PETCO2) pressure, equivalents for VO2 (VE/VO2) and VCO2 (VE/VCO2), heart rate (HR), oxygen pulse (VO2/HR), expiratory volume (VE), tidal volume (Vt), respiratory rate.

RESULTS

- Subject characteristics are shown below. **VO2, VCO2, VE, Vt, VE/VO2, VE/VCO2, PETO2, PETCO2 at peak exercise** (matched RER_{peak} between groups) were significantly **worse** in patients vs. healthy controls (p<0.05, observed α>0.80). All these parameters were however not better in endo-ACAB surgery vs. CABG patients (p>0.10).

	CABG (N=20)		endo-ACAB (N=20)		healthy subjects (N=15)		p-value	
	mean ±SD	95% CI	mean ±SD	95% CI	mean ±SD	95% CI	surgery vs healthy controls	CABG vs endo-ACAB
GENERAL CHARACTERISTICS								
Age	67 ± 6	64-70	64 ± 9	60-69	64 ± 10	58-69	0.16	0.30
Gender (n male)	1		2		2		0.50	0.55
Body height (cm)	172 ± 7	168-175	175 ± 7	172-178	174 ± 8	169-178	0.96	0.10
Body weight (kg)	79 ± 10	74-83	79 ± 13	73-85	81 ± 15	73-89	0.44	0.84
BMI (kg/m²)	26.7 ± 2.5	25.5 - 27.8	266 ± 2.9	24.4 - 27.1	26.7 ± 3.9	24.5-28.9	0.70	0.34
Hospitalization duration (days)	10.0 ± 1.5	9.3-10.7	6.7 ± 2.2	5.7-7.8	-	-	-	<0.001
Interval surgery-exercise test (days)	24 ± 8	20-27	27 ± 6	24-30	-	-	-	0.11
Referred with AMI (n)	3		3		-	-	-	0.29
PEAK EXERCISE EFFORT								
VO_2 (ml/min)	1447 ± 271	1320-1574	1467 ± 359	1299-1635	2444 ± 846	1976-2913	<0.001	0.97
VCO_2 (ml/min)	1659 ± 307	1516-1803	1741 ± 515	1500-1982	2792 ± 954	2263-3320	<0.001	0.60
% predicted VO_{2peak}	74 ± 17	66-82	72 ± 15	65-78	116 ± 29	100-132	<0.001	0.99
RER	1.15 ± 0.10	1.10-1.20	1.18 ± 0.14	1.11-1.24	1.14 ± 0.08	1.11-1.19	0.74	0.62
VE (l/min)	67 ± 14	61 - 74	68 ± 19	59 - 77	95 ± 33	77 - 114	<0.01	0.64
V_t (1)	1.9 ± 0.4	1.7-2.1	2.0 ± 0.5	1.7-2.2	2.6 ± 0.8	2.1-3.0	<0.01	0.72
RR (breaths/min)	36 ± 5	33-38	35 ± 7	32-38	37 ± 9	32-42	0.68	0.60
VE/VCO_2	40.6 ± 4.3	38.6-42.6	39.6 ± 5.0	37.3-42.3	33.6 ± 3.7	36.9-39.8	<0.001	0.53
VE/VO_2	46.7 ± 5.9	43.9-49.4	46.6 ± 8.0	42.8-50.4	38.3 ± 5.7	35.1-41.5	<0.001	0.84
cycling poer output (W)	101 ± 43	81-121	109 ± 52	84-133	178 ± 69	140-217	<0.01	0.56
HR (bearts/min)	108 ± 13	101-114	110 ± 16	102-117	149 ± 22	136-160	<0.001	0.49
VO_2/HR	13.5 ± 2.4	12.4-14.7	13.4 ± 2.7	12.2-14.7	16.6 ± 5.2	13.8-19.5	0.06	0.90

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