



POLYVASCULAR ATHEROSCLEROSIS INVOLVEMENT AND CARDIAC REHABILITATION: FUNCTIONAL IMPROVEMENT AND RISK RECLASSIFICATION

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INTRODUCTION

Polyvascular atherosclerotic involvement is one of the definitions of extreme CV risk. For this reason, the search for carotid and lower limb asymptomatic atherosclerotic pathology can be useful to guarantee more intensive treatments for individuals who have already had an acute myocardial infarction.

PURPOSE

The aim was to understand how much polyvascular patients can improve in functional terms after Cardiological Rehabilitation, comparing them with monovasculars. Besides, the study purpose was to evaluate how many patients are reclassified with an active research of asymptomatic atherosclerotic pathology with carotid ultrasound and Ankle Brachial Index (ABI)

METHODS

The study sample was composed by 87 patients who underwent a Cardiological Rehabilitation cycle at the Niguarda hospital in Milan from March 2021 to April 2022. Of these, personal, medical, clinical, laboratory and instrumental data were collected. Functional improvement was assessed as the difference in meters walked on the 6-minutes walking test (6MWT) on the start day (6MWT-1) and on the end day (6MWT-2) of rehabilitation. On all patients were performed an ABI (to evaluate asymptomatic PAD) and a carotid ultrasound (to evaluate asymptomatic cerebrovascular disease).

RESULTS

Pre-reclassification, polyvascular patients (13) compared to monovascular (74), in addition to being on average older (70 years vs 59 years, $p=0.01$), males (100% vs 73%, $p<0.001$) and having had more previous recurrent myocardial infarctions (46% vs 8%, $p=0.002$), are less performing in terms of 6MWT-1 (428m vs 514m, $p=0.002$) and 6MWT-2 (517m vs 597m, $p=0.008$). About absolute functional improvement from the beginning to the end of rehabilitation, there are no statistically significant differences (81m vs 82m, $p=0.919$).

	Patologia monosede	Patologia polivascolare	P value
Number of patients	67	20	
Age (years)	59.7±11.2	67.1±8.3	0.09
Female (%)	25	15	0.54
Smoking (%)	17	30	0.09
BMI (Kg/m ²)	27.9±3.9	26.5±3.8	0.14
Diabetes (%)	22	25	0.77
Dyslipidemia (%)	80	90	0.50
Arterial hypertension (%)	62	80	0.18
Recurring MI (%)	7	35	0.05
MI<45 years (%)	11	5	0.67
CKD (%)	13	31	0.089
LVEF	53.9±7.7	55.2±7.5	0.50
Ckmb	293.2±1032.1	40.5±83.3	0.55
TnT HS max	3261.0±5115.7	2190.9±4394.9	0.51
GFR	78.3±17.7	74.8±19.8	0.46
COL LDL	101.6±41.1	96.3±42.4	0.63
SBP 1	124.7±14.2	124.3±16.1	0.90
DBP 1	77.2±10.4	73.5±7.6	0.14
HR	65.7±11.0	66.7±8.6	0.72
6MW basal distance (meters)	514.7±96.6	459.0±80.1	0.02
6MW end rehabilitation distance (meters)	598.2±104.5	543.8±83.9	0.037
Relative functional improvement	17.1±10.5	17.2±9.8	0.99
Absolute functional improvement (meters)	83.8±46.5	76.8±39.4	0.54

Post-reclassification
Monovascular vs
polyvascular

	Patologia monosede	Patologia polivascolare	P value
Number of patients	74	13	
Age (years)	59.8±11.0	70.6±5.5	0.01
Female (%)	27	0	<0.001
Smoking (%)	20	23	0.5
BMI (Kg/m ²)	27.6±3.9	27.5±4.1	0.966
Diabetes (%)	23	23	1
Dyslipidemia (%)	81	92	0.45
Arterial hypertension (%)	38	92	0.052
Recurring MI (%)	8	46	0.002
MI<45 years (%)	12	0	-
CKD (%)	16	25	0.437
LVEF	54.0±7.5	55.5±8.3	0.538
Ckmb	273.0±983.4	4.0±6.9	0.643
TnT HS max	3445.3±5172.7	189.1±354.4	0.105
GFR	77.7±18.2	76.2±18.8	0.798
COL LDL	100.8±39.9	98.3±50.9	0.856
SBP 1	124.5±14.6	125.4±15.4	0.829
DBP 1	77.0±10.1	72.6±7.8	0.150
HR	65.7±10.8	67.0±8.3	0.681
6MW basal distance (meters)	514.8±94.0	428.6±69.9	0.002
6MW end rehabilitation distance (meters)	597.7±101.1	517.3±81.6	0.008
Relative functional improvement	16.9±10.5	18.4±9.7	0.624
Absolute functional improvement (meters)	82.3±45.9	81.0±40.2	0.919

ABI made it possible to identify 6 patients with asymptomatic PAD, while carotid ultrasound found 1 patient with significant carotid arterial disease. Reclassifying 7 subjects, that is the 8.6% of the total sample, the group of polyvascular patients increased from 13 to 20. Compared to the prereclassification data, the only change is that the difference in terms of age is no longer statistically significant, even if it still remains clinically significant. The rest of the data is basically superimposable. In particular, it is confirmed that, although the polyvascular subjects start from a lower number of meters walked both before and after Rehabilitation at 6-MWT, their relative and absolute improvement is completely stackable.

CONCLUSIONS

Our data showed that polyvascular patients can improve as much as monovasculars after Cardiological Rehabilitation. Furthermore, following ABI and carotid ultrasound, about 8% of patients can be reclassified. Polyvascular patients may receive more targeted and intensive therapies if properly diagnosed