POSTOPERATIVE MYOCARDIAL INFARCTION AFTER VASCULAR SURGERY:
INCIDENCE, PREDICTORS AND OUTCOMES – A PROSPECTIVE STUDY

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BACKGROUND AND GOAL OF THE STUDY

Patients proposed to vascular surgery (VS) have several comorbidities associated with cardiac events. Additionally, VS procedures lead to an intermediate to high-risk of postoperative myocardial infarction (PMI). The aim of this study was to evaluate the incidence, predictors and outcomes of PMI after VS.

MATERIALS AND METHODS

- Observational prospective study, approved by the institutional ethics committee.
- Inclusion criteria: Patients submitted to elective VS between January and April 2015.
- Exclusion criteria: age <18 years
- Patient’s demographics and perioperative data were collected.

PMI troponin >0.034 ng/ml in the first postoperative 72 hours

Statistical Analysis

- Student’s-T, Mann-Whitney, Fischer's exact or Chi-square tests. Univariate and multivariate logistic regression with calculation of an Odds Ratio (OR).
- Hosmer-Lemeshow test for Goodness of fit
- Area under the receiver operating curve (AUROC) to test model predictive capacity.
- Statistical significance was set for p values <0.05.

RESULTS AND DISCUSSION

306 patients included Incidence of PMI: 6.2%

Table 1 – Univariate analysis of PMI predictors

VARIABLES		No PMI (n=287)	PMI (n=19)	p
Age 1		64.8 (12.4)	68.3 (9.6)	0.235 a
Gender 2	Male	202 (70.4)	13 (68.4)	0.856 c
	Female	85 (29.6)	6 (31.5)	
ASA	II / III	268 (93.4)	14 (73.7)	0.001 c
Classification2	IV / V	17 (5.9)	5 (26.3)	
MET<4 2		20 (7.0)	7 (36.8)	<0.001 c
Arterial Hypertension 2		205 (71.7)	16 (84.2)	0.341 c
Chronic Obstructive Pulmonary Disease2		44 (15.4)	0 (0.0)	0.087 c
Smoking 2		122 (42.7)	11 (57.9)	0.195 c
Ischemic heart disease 2		57 (19.9)	8 (42.1)	0.022 c
Congestive heart failure 2		34 (11.9)	6 (31.6)	0.014 c
Diabetes Mellitus (DM) 2		147 (51.4)	16 (84.2)	0.007 c
DM with end organ damage 2		77 (26.9)	11 (57.9)	0.004 c
Chronic kidney disease 2		89 (31.1)	11 (57.9)	0.016 c
Antiaggregation 2		176 (61.5)	17 (89.5)	0.014 c
Insulinotherapy 2		66 (23.1)	13 (68.4)	<0.001 c
Statins 2		175 (61.2)	14 (73.7)	0.277 c
Revised Cardiac Risk Index 3		1 [1-2]	2 [2-3]	<0.001 c
Postoperative Creatinine elevation >50% 2		39 (13.6)	8 (42.1)	0.001 c
Minimal Postoperative Haemoglobin (g/dl) 1		9.5 (2.0)	7.9 (1.5)	0.030 a
Postoperative Red blood cells transfusion3		0 [0]	0 [0-3]	0.009 b
Type of anaesthesia 2	General Anaesthesia	82 (28.8)	7 (36.8)	0.385 c
	Regional Anaesthesia	151 (52.9)	7 (36.8)	
Surgery 4	Intermediate risk	124 (96.1)	5 (3.9)	0.149 c
	High risk	163 (92.1)	14 (7.9)	
Duration of surgery (hours) 3		2.0 [1.0-3.0]	1.1 [0.9-2.5]	0.305 b
Hospital lenght of stay (days) 3		17 [6-37]	54 [27-68]	<0.001 b
Mortality 2		15 (5.3)	4 (21.1)	0.023 c

1 – mean ± standard deviation; 2 – number (%); 3 – median (percentil 25 and 75); 4 - number (incidence); a – Student-T test; b – Mann-Whitney test; c- Chi-Square or Fischer test

Table 2 – Multivariate regression analysis for independent predictors of PMI

VARIABLES	Simple OR	p	Adjusted OR (CI 95%)	p
MET<4	7.8 (2.8-21.9)	<0.001	7.8 (2.4-25.4)	0.001
Antiaggregation	5.3 (1.2-23.4)	0.027	6.3 (1.3-31.0)	0.025
Insulinotherapy	7.2 (2.6-19.7)	<0.001	8.2 (2.6-25.8)	<0.001
IHD	2.9 (1.1-7.6)	0.028	3.9 (1.3-12.4)	0.018
ASA IV/V	5.6 (1.8-17.5)	0.003	4.3 (1.2-15.8)	0.029
CHF	3.4 (1.2-9.6)	0.019	-	-
DM	5.0 (1.4-17.7)	0.011	-	-
DM with EOD	3.7 (1.4-9.6)	0.006	-	-
CKD	3.0 (1.2-7.8)	0.021	-	-
RCRI	2.4 (1.5-3.8)	<0.001	-	-

IHD – Ischemic heart disease; CHF – Congestive heart failure; DM – Diabetes mellitus; EOD - end organ damage; CKD – Chronic kidney disease; RCRI – Revised Cardiac Risk Index

CONCLUSIONS

Incidence of PMI after VS was 6.2%. Patients with PMI had longer hospital length of stay and higher mortality rate. History of ischemic heart disease, reduced functional capacity, ASA physical status IV/V and preoperative insulin and antiaggregation therapies were identified as independent predictors for PMI.