





Predictors And Case Fatality Rate Of Perioperative Major Cardiovascular Events In Cardiac Patients Undergoing Non-Cardiac Surgery

Z. Motovska, ¹J. Jarkovsky, M. Ondrakova, J. Knot, L. Havluj, R. Bartoska, L. Bittner, R. Gurlich, V. Dzupa, R. Grill, P.Haninec, P. Widimsky Thrird Faculty of Medicine, Charles University and Univ. Hospital Kralovske Vinohrady, Prague,¹Instit. of Biostatistics and Analyses Masaryk Univ., Brno, Czech Rep.

BACKGROUND

- Preoperative risk-stratification to identify high-risk patients is used to improve perioperative management.
- The most-often used preoperative risk-stratification model was derived from a heterogeneous non-cardiac population, and prediction of cardiac events is notably less accurate for non-cardiac surgery patients.

OBJECTIVES

 To identify predictors and case fatality rate of perioperative major adverse cardiovascular events (MACVE) (myocardial infarction, stroke, acute heart failure, venous thromboembolism, acute limb ischemia) in cardiac patients undergoing non-cardiac surgery.

METHODS

- Analysis of prospective multicenter PRAGUE-14 study was performed.
- Demographic characteristics, cardiovascular risk factors, presence of CV diseases, significant comorbidity (presence of organ dysfunction, cancer), history of bleeding, type of surgery and long-term pharmacotherapy were included in the MACVE prediction model.

Patients, type of surgery

N = 1211 (all pts. with CV disease undergoing major non-cardiac surgery during the study period 2011–13 (6,3% of 18 951 surgical pts) General anesthesia in 64,4%



Enrolling surgical departments:

General surgery (43,3% pts) Trauma / orthopedic surgery (39,9%) Urology (10,5%) Neurosurgery (5,5%) Anesthesiology (0,8%) <u>Study design, coordination, data</u> <u>analysis:</u> Cardiology





Perioperative cardiovascular complications n = 91 (7.6%)



36 patients had \geq 1 event.

Predictors of ischemic complications

	OR (95% CI)				
(0	5	10	15	р
Age > 75 years				2.13 (1.36; 3.33)	<0.001
Chronic lung disease				1.89 (1.10; 3.22)	0.020
Valvular heart disease				1.72 (1.02; 2.90)	0.043
History of CAD and PCI				1.67 (1.02; 2.72)	0.041
Diabetes mellitus		•		1.37 (0.88; 2.14)	0.164
History of Bleeding	_	•		1.36 (0.17; 10.83)	0.773
History of CAD and PCI/CABG		•		1.34 (0.86; 2.10)	0.200
History of MI		⊷		1.31 (0.83; 2.07)	0.243
Atrial Fibrillation		←		1.31 (0.84; 2.04)	0.239
Chronic liver disease	_	•		1.26 (0.49; 3.24)	0.636
History of CAD and CABG	_	•—-		1.19 (0.66; 2.16)	0.569
Stroke	_	•—		1.18 (0.61; 2.27)	0.630
Any vascular stent	_	-		1.14 (0.68; 1.89)	0.616
Hematological disease	_			1.08 (0.61; 1.93)	0.790
Women	_	–		1.05 (0.68; 1.61)	0.826
Betablockers	-	-		1.01 (0.65; 1.56)	0.975
Weight	•	•		0.99 (0.97; 1.00)	0.089
Statins	-	_		0.94 (0.59; 1.51)	0.794
Chronic kidney disease	-+	_		0.74 (0.35; 1.57)	0.440
Pulmonary embolism	-+			0.71 (0.25; 2.01)	0.523
Cancer	-•			0.69 (0.16; 2.91)	0.612
Hypertension	+	•		0.69 (0.43; 1.11)	0.129
Neurosurgery	-+-			0.62 (0.24; 1.59)	0.317
BMI 25-30	+			0.55 (0.34; 0.89)	0.015
BMI >30	+			0.55 (0.31; 0.97)	0.041
Orthopedic-traumatological surgery	+			0.38 (0.23; 0.62)	<0.001
BMI < 19	•			0.35 (0.05; 2.64)	0.307
Urological surgery	-			0.06 (0.01; 0.44)	0.006

In-hospital mortality of patients with a cardiovascular disease (n=1200) vs. those without CVD (n=17740)



In-hospital mortality

Case fatality (CFR) rate of perioperative MACVE

CFR of perioperative MACVE was 37.4%

MI was 16.7%,

Stroke 100%,

Pulmonary embolism 58.3%,

Acute heart failure 48.3%,

Acute limb ischemia 18.2%

Ischemic complications as predictors of mortality



CONCLUSIONS

- Case fatality rate of perioperative MACVE in cardiac patients undergoing non-cardiac surgery is extremely high,
- Integration of identified predictors of these complications, which do not replicate known cardiovascular risk factors, into the perioperative cardiovascular risk assessment and decision-making process may improve prognosis of these patients.

Causes of death

n=47, i.e. 3.9%



Baseline characteristics

Mean age	74,2 ± 10,2 years
Female sex	43,9%
Mean body weight	78,9 ± 16,2 kg
Diabetes mellitus	30,9%
Hypertension	77,8%
Chronic kidney disease	11,3%
Chronic liver disease	4,5%
Chronic pulmonary disease	12,9%
Current tumor	15,6%
Current hematologic disease	3,2%
History of any vascular stent implantation	14,3%
History of any previous bleeding requiring treatment	3,5%