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Optimal timing of coronary artery bypass after acute myocardial infarction: predicting value of Troponin I levels

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Our study

- Retrospective analysis of 180 consecutive patients, operated in our institution from sep. 2015 to sep. 2016, presenting with ACS and needing CABG.
- Correlation between preoperative level of cTnI and surgical outcome.
- Patients divided into 3 groups according to cTnI level before surgery:
  - G1 (80 pt) = normal cTnI levels (≤ 0.34 ng/ml)
  - G2 (40pt) = borderline cTnI levels (0.34-1.20 ng/ml)
  - G3 (60 pt) = elevated cTnI levels (> 1.20 ng/ml)
- A multivariate analysis of 32 variables was performed to identify independent predicting factors for morbidity and mortality:
  - Hypertension, Diabetes, low EF, urgent operation.
  - ACS-STEMI, pre-op IABP

Results

	Group 1 *≤ 0.34 ng/ml (n=80)* normal	**Group 2** *0.34-1.20 ng/ ml (n=40)* borderline	**Group 3** *> 1.20 ng/ ml (n=60)* elevated	p-value
Death	***0 (0%)***	***1 (2.5%)***	***2(3.3%)***	***0,001***
LCO syndrome	***1 (1.3%)***	***2 (5%)***	***6(10%)***	***<0,0001***
Perioperative MI	***0 (0%)***	***1 (4%)***	***4(6.6%)***	***<0,001***
IABP	***2 (2.5%)***	***3 (7.5%)***	***10(16.6%)***	***<0,0001***
Time in ICU (days)	***2 (1-4)***	***2 (1-4)***	***3 (1-5)***	***<0,0002***
Stroke	0 (0%)	0 (0%)	3(5%)	NS
Bleeding	2 2.7%)	1 (2.5%)	2 (3.3%)	0,33
Acute respiratory failure	0 (0%)	0 (0%)	8 (13.3%)	0,152
Arrhythmia	16 (20%)	8 (20%)	8 (13.3%)	0,892
Acute renal failure	0 (0%)	0 (0%)	4 (6.7%)	NS
Hospital stay (days)	9 (7-13)	8 (5-12)	9(7-14)	0,04

Conclusions

- The optimal timing for coronary artery bypass grafting after acute coronary syndrome is not well established. Most studies have concentrated on the interval between acute event and surgery with unclear indications.
- Our study shows that higher cTnI levels at time of surgery are an important predictor for postoperative adverse events after CABG.
- We strongly believe that cTnI levels compared to time only, can predict better the surgical risk for CABG.

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	Group 1	**Group 2**	**Group 3**	
	≤ 0.34 ng/ ml (n=80) normale	*0.34-1.20 ng/ ml (n=40)* borderline	*> 1.20 ng/ ml (n=60)* positive	p-value
Male sex	64 (80%)	24 (60%)	44 (73.3%)	0,515
Smokers	24 (30%)	20 (50%)	20 (33.3%)	0,159
Ex smokers	36(45%)	4 (10%)	8 (13.3%)	
Age	65.9 ± 5.1	62.4 ± 8.3	64.4 ± 11.4	0,404
Euroscore II (%)	0.9 ± 0.5	1.3 ± 1.1	4.9 ± 17.5	0,542
EF pre-op (%)	52.4 ± 6.5	48.8 ± 11.9	43.6 ± 9.3	0,024
BMI	26.9 ± 3.9	27.9 ± 5.2	28.0 ± 4.6	0,765
Creatinine	0.9 ± 0.2	1.0 ± 0.2	1.2 ± 0.6	0,568
NYHA				
I	20 (26.3%)	12 (33.3%)	16 (28.6%)	1,000
II	36 (47.4%)	16 (44.4%)	28 (50%)	
III - IV	20 (26.3%)	8 (22.2%)	12 (21.4%)	
CCS				
0-I	28 (36.8%)	12 (33.3%)	12 (21.4%)	0,663
II	12 (15.8%)	12 (33.3%)	20 (35.7%)	
III - IV	36 (47.4%)	12 (33.3%)	24 (42.9%)	
Nitrates	4 (5%)	0 (0%)	0 (0%)	1,000
Patients type				<0.001
STEMI	4 (5%)	0 (0%)	12 (20%)	
NSTEMI	36 (45%)	40 (100%)	48 (80%)	
Unstable angina	40 (50%)	0 (0%)	0 (0%)	
Urgency	44 (55%)	36 (90%)	56 (93.3%)	0,025
Preoperative IABP	0 (0%)	0 (0%)	4 (6.7%)	<0,00111
Familiarity	24 (30%)	8 (20%)	16 (26.7%)	0,912
Hypertension	36 (45%)	32 (80%)	52 (86.7%)	0,030
Dyslipidaemia	16 (20%)	20 (50%)	8 (13.3%)	0,144
Diabetes	16 (20%)	28 (70%)	28 (46.7%)	0,023
Periferal arterial disease	8 (10%)	4 (10%)	0 (0%)	0,440
Neurological disease	4 (5%)	12 (30%)	12 (20%)	0,145