Conclusions: %L is a cheap, readily available, and simple prognostic marker in patients with suspected CAD. It should be included in clinical models to predict subsequent patient outcome.

1028-63 Cardiac Troponin T as a Marker for Perioperative Myocardial Ischemia in Noncardiac Surgical Patients

Bernd W. Böttiger, Mark Schweizer, Peter Teschendorf, Georg Rehmert, René Gust, Johann Motsch, Eike Martin. *Departments of Anesthesiology and Internal Medicine, University of Heidelberg, Heidelberg, Germany*

Episodes of perioperative myocardial ischemia (PMI) occur in 18 to 74% of noncardiac surgical patients with or at risk for coronary artery disease (CAD). PMIs correlate with adverse postoperative cardiac outcome. To determine the diagnostic value of cardiac troponin T (TnT) in PMI, we studied 28 patients (63.9 ± 8.9 years) undergoing peripheral vascular surgery (n = 16) or carotid endarterectomy (n = 12). Patients included had either documented CAD (n = 16) or two (n = 7) or more (n = 5) risk factors (age >65 years, smoking, diabetes mellitus, hypertension, or hypercholesterolemia >240 mg/dL). Patients with uninterpretable ECG for PMI were excluded. 12-lead ECG recordings and blood sampling for measurement of CK-MB activity and TnT levels (ELISA troponin T, Boehringer Mannheim, Germany) were carried out preoperatively, and immediately, 20 h, 48 h, 72 h, and 84 h postoperatively. ECG recordings were analysed by an independent blinded cardiologist for signs of PMI (new ST segment depression >0.1 mV 60 ms after the J point, new T inversion). We found an overall incidence of ECG documented PMI of 54% (n = 15), 93% occuring immediately postoperatively. Patients undergoing peripheral vascular surgery developed significantly less PMI than carotid surgical patients (38% vs. 75%; $p < 0.05$, Fisher's Exact test). TnT levels >0.1 μg/L were found in 80% (n = 12) of patients with PMI (ECG). Only one patient without ECG-documented PMI had TnT levels >0.1 μg/L. Thus, comparing a TnT cut off level of 0.1 μg/L with intermittent 12-lead ECG recording, we found a sensitivity of 80% and a specifity of 92%. We were unable to detect elevated levels of CK-MB in any patient (tab.).

	overall (n = 28)	per. vasc. surg. (n = 16)	carotid surg. (n = 12)
CK-MB >6 U/L	0	0	0
ECG (PMI)	15 (54%)	6 (38%)	9 (75%)
TnT >0.1 μg/L	13 (46%)	5 (31%)	8 (67%)

Conclusion: In contrast to CK-MB, TnT is a specific and sensitive marker of PMI in patients with or at risk for CAD undergoing noncardiac surgery.

1028-64 Functional Significance of Hystopathological Evidence of Microvascular Abnormalities in Syndrome X and Other Myocardial Diseases

Alfredo Marchese, Adele Chiddo, Sergio Musci, Nino Camassa, Alessandro Bortone, Antonio Gaglione, Gilda Caruso [1], Paolo Rizzon. *Institute of Cardiology, University of Bari, Italy; [1] Institute of Phatology, University of Bari, Italy*

In order to investigate if structural abnormalities of intramyocardial small vessels could be responsable for impaired coronary blood flow reserve (CBFR) and myocardial ischemia in pts. with chest pain but normal coronary artery, in 34 consecutive pts we performed a Treadmill stress-test (TST) (Bruce's protocol), a great cardiac vein CBFR evaluation by thermodilution technique (dypiridamole 0.56 mg/kg i.v.) and a Right-ventricular septal biopsy (King's College bioptome). About 3 to 5 samples including at least 3 arterioles (<100 μm) (well-defined elastic lamina and well-developed smooth-muscle coat) in each pt. were histologically analyzed; Small vessels disease (SVD) was defined if hypertrophy and thickening of the medial layer, myointimal proliferation and luminal narrowing were present. All pts were classified as having (Group SVD+) or not (Group SVD−) a SVD and in both groups mean arteriolar wall area (mWA; μm^2) and mean arteriolar luminal area (mLA; μm^2) were calculated by counting cross-points. *Results:* 21 pts were SVD+ (46 arterioles), 13 SVD− (32 arterioles). In group SVD+, TST induced typical exertional angina in 11 pts (64%) and ST-segment depression (≥1.5 mm) in 10 pts (58%); CBFR resulted always reduced. Conversely, TST and CBFR resulted normal in SVD−. Final clinical and angiographic diagnosis in SVD+ group was: Syndrome X in 9 pts, Dilated Cardiomyopathy in 9 pts, Right ventricular dysplasia in 3 pts.

	CBFR	mWA	mLA
Group SVD+	1.11 ± 0.27	299 ± 58	207 ± 21
Group SVD−	3.13 ± 0.90*	195 ± 55*	283 ± 11*

*$p < 0.001$ Group SVD− vs Group SVD+

In Group SVD+ no statistical differences in terms of CBFR, mWA and mLA were observed among pts with Syndrome X, Dilated Cardiomyopathy and RV Dysplasia.

Conclusions: Hystopathologically proved SVD is always responsible of reduced CBFR and often associated with clinical and EKG evidence of myocardial ischemia. Further investigations are required to assess if SVD represents a secondary phenomenon or the actual cause of different diseases.

1028-65 The Clinical Significance of High Pain Tolerance in Individuals with Coronary Artery Disease

Craig R. Narins, Wojciech Zareba, Arthur J. Moss, Multicenter Myocardial Ischemia Study Group. *The University of Rochester Medical Center, Rochester, NY*

Although previous studies have shown that patients with silent myocardial ischemia tend to be less sensitive to somatic pain than individuals with symptomatic coronary disease, the clinical relevance of this association has not been examined prospectively. The tourniquet test, a previously validated indicator of somatic pain tolerance, was performed on 280 patients 2.7 ± 1.4 months following an acute index coronary event — either myocardial infarction (MI, n = 192) or unstable angina (n = 88). Patients were then followed for a mean of 2 years. The relationship between pain tolerance (PT) and several clinical and ischemic test variables (including stress thallium scintigraphy — STS) was examined.

Variable	High PT (n = 121)	Low PT (n = 159)	Multivariate p value
Age (years)	57 ± 10	61 ± 9	0.005
Female (%)	14	19	NS
Diabetes (%)	19	21	NS
Prior MI (%)	39	41	NS
Prior Angina (%)	45	61	0.01
Ischemia on STS (%)	45	34	0.03
Recurrent MI or Death (%)	9	6	NS

Multivariate logistic regression analysis revealed that patients with high PT were more likely to be younger (odds ratio (OR) = 1.5), to have no history of angina prior to the index event (OR = 2.0), and to have ischemia on STS (OR = 1.8) than low PT patients. There was no difference in cardiac event rates (death or nonfatal MI) between the low and high PT groups.

Conclusion: Patients with a high PT appear to have an impaired anginal warning system. The high PT patients had less angina prior to the index coronary event, but more inducible ischemia after the coronary event.

1028-66 Clinical and Demographic Findings in Patients with Ischemia and "Normal" Coronary Arteries: An ACIP Ancillary Study

Barry L. Sharaf, Martial G. Bourassa, Carl J. Pepine, Bernard R. Chaitman, David O. Williams, Nicholas J. Miele, Richard F. Davies, Robert P. McMahon, Michael Proschan, C. Richard Conti, ACIP Investigators. *Rhode Island Hospital, Brown University, Providence, Rhode Island*

Little information is available on patients (pts) with abnormal exercise tests (ETT) and ischemia on ambulatory ECG (AECG) monitoring who have normal coronary arteries or minimal coronary stenosis (<50% diameter). Accordingly, we characterized the clinical, demographic and angiographic features of 68 pts with asymptomatic cardiac ischemia (ACI) during AECG monitoring, an abnormal ETT but *no* significant coronary narrowing (Gpl) and compared them to 615 pts enrolled in the Asymptomatic Cardiac Ischemia Pilot (ACIP) study all of whom demonstrated ischemia *and* significant coronary narrowing (Gp II).

	Gp I	Gp II	p
Age, yrs. (mean ± s.d.)	58 ± 10	62 ± 8	<0.001
Male (%)	58.8	84.7	<0.001
History of MI (%)	8.5	40.0	<0.001
Hypercholesterolemia (%)	22.0	43.4	<0.001
Diabetes Mellitus (%)	3.4	17.1	<0.01
Ever Smoked (%)	37.2	65.5	<0.001
Angina (ETT, AECG, Hx)	69.2	70.9	0.80
AECG Ischemic Episodes/24 hrs (mean ± s.d.)	1.7 ± 1.4	2.6 ± 2.8	<0.01
LVH by EKG (%)	8.2	6.3	0.62
Any Coronary Narrowing (≥20% Stenosis) %	52.9	100	–
Maximum % Stenosis (mean ± s.d.)	18.8 ± 18.7	89.1 ± 14.0	–
Complex Plaque (%)	4.4	50.2	<0.001
Ejection Fraction <55%	1.5	18.6	
55–70%	37.9	67.6	<0.001
>70%	60.6	13.8	

Pts without significant coronary narrowing were younger, had higher ejection fractions, were less often male, less likely to have risk factors, history of MI, complex plaque and had less AECG ischemia. These demographic and clinical differences may help identify pts with an alternative mechanism of ACI.