14:55 - 15:45 EC2 - Interventioanl Cardiology Hall A

Chairs: **R. Beyar**
V. Guetta

14:55 **Carotid Stenting for "Restenosis" after Surgical Endarterectomy**
A. Segev, Y. Schwammenthal, D. Orion, V. Guetta
Ramat Gan

15:03 **Thromboelastography for the Assessment for Clopidogrel /Aspirin Resistance in Patients Following Primary PCI for STEMI - Preliminary Results**
I. Litovchik, N. Teodorovich, N. Rahimi-Lewene, V. Papiashvili, Z. Vered, A. Blatt
Zerifin

15:11 **Prognostic Significance of Right Coronary Artery Morphology During ST-Segment Elevation Myocardial Infarction.**
D. Dvir [1], A. Assali [1], S. Kazum [1], E. Lev [1], D. Aravot [2], A. Battler [1], R. Kornowski [1]
[1] Tel-Aviv, [2] Haifa

15:19 **Collateral Circulation to the Infarct Related Artery Was Not Associated with Better Procedural and 6-month Clinical Outcomes of Patients Undergoing Primary Percutaneuos Coronary Intervention for Acute Myocardial Infarction**
D. Brosh, A. Assali, I. Teplitsky, H. Vaknin-Assa, S. Fuchs, E. Lev, A. Battler, R. Kornowski
Petch Tiqva

15:27 **Clinical Characteristics Associated with Poor Long-term Survival Among STEMI Patients Treated with Primary PCI: Mortality insights from a large single-center registry**
A. Assali, E. Lev, H. Vaknin Assa, S. Fuchs, D. Brosh, I. Teplitsky, E. Rechavia, O. Sela, N. Buto, N. Shor, I. Ben-Dor, D. Hasdai, B. Strasberg, A. Battler, R. Kornowski
Petach Tikva

15:35 **Post-Percutaneous Coronary Intervention Creatine Kinase Elevation: An Angiographic Complication Predicts a Worse 1-Year Outcome**
A. Segev [1], P. Fefer [1], A. Dahulah [2], J. Sparkes [2], R. Chisholm [2], B. Strauss [2]
[1] Ramat Gan, [2] Toronto

Carotid Stenting for "Restenosis" after Surgical Endarterectomy

Amit Segev [1], Yvonne Schwammenthal [2], David Orion [2], Victor Guetta [1]

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Background: Carotid endarterectomy (CEA) and carotid stenting (CAS) are potential treatment options for patients with symptomatic and asymptomatic significant internal carotid lesions. In cases of recurrence after CEA, a second surgical approach is optional but usually not recommended. CAS has emerged as good alternative to CEA in general and particularly in cases of "restenosis" after CEA.

Methods: From 2005 to 2008, 200 patients underwent CAS in our institute. In 13 patients (6.5%) the target lesion was "restenosis" after CEA. We describe herein the immediate and long-term results of this group of patients.

Results: Risk factor profile included smoking in 38%, diabetes in 38%, hypertension in 85%, and dyslipidemia in 92%. The recurrence of carotid stenosis was symptomatic in 46% of patients. Stenosis severity by Doppler was >90% in 38% and 70-90% in 54%. In all patients a distal protection device was used and the lesion had to be pre-dilated in 31%. A self-expanding carotid dedicated stent was successfully deployed in all patients and post-dilation was performed. No intra-procedural complications were noted. At 30-day follow-up no major adverse events were recorded.

Conclusions: In this preliminary and limited data in patients with "restenosis" after CEA, CAS seems to be a safe and efficacious method. These patients should be routinely referred to CAS.

Thromboelastography for the Assessment for Clopidogrel /Aspirin Resistance in Patients Following Primary PCI for STEMI - Preliminary Results

Ilya Litovchik [1,2], Nicholas Teodorovich [3], Naomi Rahimi-Lewene [4], Victoria Papiashvili [4], Zvi Vered [3], Alex Blatt [1,2]

[1] Heart Institute, ICCU, [2] Heart Institute, Interventional Cardiology, [3] Heart Institute, [4] Haematolgy, Blood Bank, Assaf Harofeh, Zerifin, Israel

Background: There is growing evidence that substantial portion of STEMI patients successfully treated by primary PCI will not respond adequately to Aspirin and/or Clopidogrel in standard doses, and will suffer recurrent events.

Thromboelastography (TEG) may be a valuable tool to assess the response to antiplatelet therapy. However, there is little data on its use in STEMI patients undergoing PCI. Our study is designed to assess platelet response to aspirin and clopidogrel by TEG in this group. Patients in the 3rd and 4th quartile according MA-thrombin >69mm (High MA), were at greater risk of recurrent ischemic events, the 4th quartile (MA >72mm) imposed the greatest risk. On-treatment platelet reactivity after stimulation with ADP or ASA is utilized to assess proper response to therapy (<70% for clopidogrel; <50% for aspirin). Based on these data we considered reasonable to suggest the goal for on-treatment platelet inhibition of MA-ADP <50.4mm and MA-AA <36mm in these high risk patients.

Methods: Fifteen patients with STEMI treated by PCI with BMS were enrolled so far. All received ASA 200 mg/d for 1 month followed then by 100mg/d, and Clopidogrel 75mg/d after loading dose, all medications on a fixed time-point. TEG analysis was performed just before the next ASA and Clopidogrel dose ("trough"), on the day of discharge (or 5th day of hospitalization) – Visit 1, on day 14 – Visit 2, and is planned on day 90 – Visit 3. On every visit, parallel to TEG, serum was separated and frozen for further pharmacokinetic analysis.

Results: Visit 1: 7 of 15 patients (46.7%) were in High MA group. Four (27%) were clopidogrel non-responders (MA-ADP >50.4mm), three of them in High MA group, all presented normal (<70%) on-treatment reactivity. One clopidogrel non-responder was in the 1st quartile (MA-thrombin 62.1mm, 81.3% on-treatment reactivity). There were two cases of aspirin non-responsiveness (13%) one - also clopidogrel non-responder.

Visit 2: Data on nine patients (one refused follow up). No change in medications or dosage was reported. Seven patients were in High MA group, six of them remained in High MA from their first visit. However, of three clopidogrel non-responders (30%) found on Visit 2, only one preserved his pattern of response, two others either lost or gained responsiveness to clopidogrel compared to previous visit. Two previously good aspirin responders on visit 1 appeared non-responders on visit 2.

Within 3 months two events were observed. One, who is combined aspirin-clopidogrel non-responder, suffered recurrent ischemic event (hospitalization for UAP). Additional patient, who was good responder initially, suffered ischemic CVA. At the point of the event he shifted from 3rd to 4th quartile and turned combined aspirin-clopidogrel non-respoder.

Conclusions: These preliminary results show that a large portion of patients with STEMI (47%) are in substantial risk of recurrent ischemic events. Longer observation in perspective of clinical outcome is needed to select the candidates for dose modification and to estimate if the change in treatment regiment will prevent recurrent ischemia.

Prognostic Significance of Right Coronary Artery Morphology During ST-Segment Elevation Myocardial Infarction.

Danny Dvir [1], Abid Assali [1], Shirit Kazum [1], Eli Lev [1], Dan Aravot [2], Alexander Battler [1], Ran Kornowski [1]

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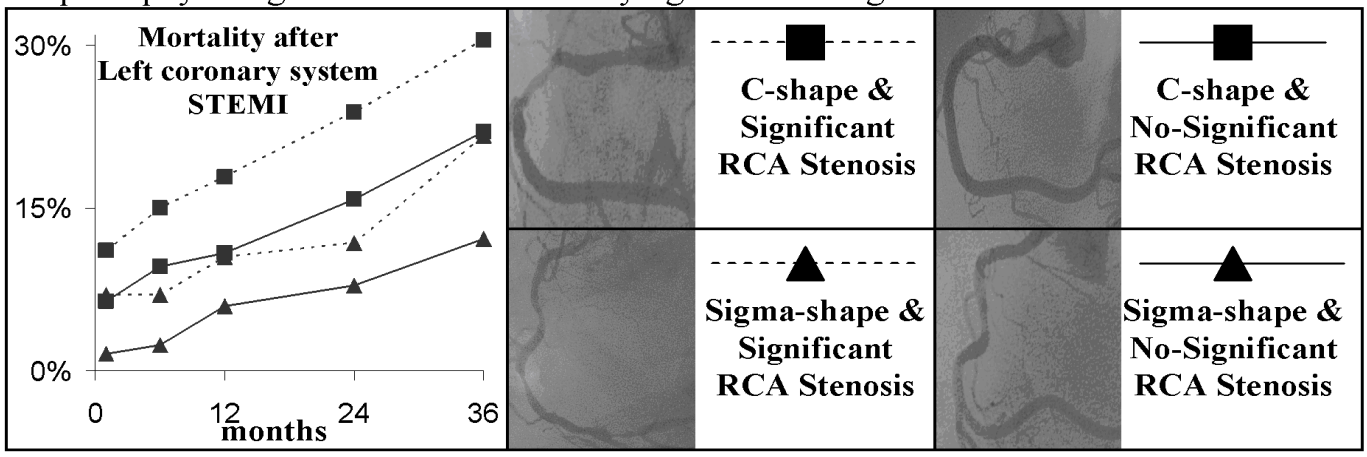
Background: Previous studies have shown that C-shaped morphology of the right coronary artery (RCA) is independently associated with atherosclerotic lesions and endothelial dysfunction. However, its prognostic significance (vs. Sigma-shaped RCA) in patients with ST-segment elevation MI (STEMI) is unclear.

Objective: To evaluate, if a C-shaped RCA is associated with worse clinical outcome than a Sigma-shaped RCA in STEMI patients. The primary end-point was 30 days MACE rate: a composite of death reinfarction and need for target vessel revascularization.

Methods: The study consisted of 1520 patients with STEMI who underwent urgent coronary angiography and enrolled in a prospective Database from 1/2001 to 7/2008. The RCA morphology was determined according to conventional angiographic images and only patients with dominant RCA were included. Data on clinical outcomes with a follow-up of up to 3 years was collected.

Results: In left coronary system-related STEMI, patients with a C-shaped RCA had worse outcome than patients with a Sigma-shape (30 days: death- 8.2% vs. 2.9%, p=0.037; MACE- 22.6% vs. 12.6%, p= 0.004). These differences were independent of existing RCA stenosis (p=0.007) and were sustained to the end of follow-up (Figure). Among patients with RCA-related STEMI, there was no association between RCA morphology and MACE rate (30 days: 9.8% vs. 8.9%, p=0.85).

Conclusions: In STEMI patients with a culprit in the left coronary system, those with C-shaped RCA have worse clinical outcome than those with Sigma-shaped RCA. Evaluating the RCA morphology in left STEMI patients may improve risk stratification of STEMI. However, the pathophysiological mechanism underlying these findings warrants further evaluation.



Collateral Circulation to the Infarct Related Artery Was Not Associated with Better Procedural and 6-month Clinical Outcomes of Patients Undergoing Primary Percutaneuos Coronary Intervention for Acute Myocardial Infarction

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Background: During acute occlusion of an epicardial vessel, collateral circulation to the infract related artery (IRA) preserve the microvascular perfusion and may limit the extent of myocardial damage. Therefore, we hypothesized that in patients undergoing primary percutaneuos coronary intervention (PCI) for acute myocardial infarction (AMI), who's their initial TIMI flow is 0-1, the existence of collaterals would result in better outcomes, compared to those without collaterals.

Method and Results: We used our database of all pts undergoing primary PCI for AMI between 1/2001 and 7/2008, excluding those with cardiogenic shock and late arrivals (>12hrs from symptoms onset to 1st balloon inflation). Only patients with initial TIMI 0-1 flow were included in this analysis. Patients (n=436) were allocated into 2 groups: 1st Group (n=334 pts) included those without collaterals and 2nd Group (n=102 pts) included those with collaterals. Patients' clinical and angiographic characteristics as well as 6-month outcomes are shown in **Table:**

	No Collaterals	Collaterals	P Value
N	334	102	
Age	61±13	60±13	0.6
Male (%)	83	78	0.4
Anterior AMI (%)	46	39	0.4
Diabetes (%)	24	26	0.6
Kilip >1 (%)	12	10	0.6
Ischemic time (hours)	4.6±3.1	4.3±2.6	0.4
Distal embolization (%)	13	12	0.8
Myocardial blush 3 (%)	80	85	0.7
No/Slow Reflow incl. transient (%)	8	5	0.3
Successful procedure (%)	93	92	0.8
Peak CK (IU/L)	2.4±2.2	2.0±2.0	0.2
LVEF <40% (%)	47	42	0.3
Six Months			
Death (%)	5.8	6.3	0.9
Stent thrombosis (%)	3.1	0	0.1
TVR / CABG (%)	7.2 / 3.1	3.1 / 5.2	0.1 / 0.3
MACE (%)	15.9	12.5	0.4

Conclusion: Despite our hypothesis, the existence of collaterals to IRA in patients undergoing primary PCI for AMI was not associated with better procedural or 6-month clinical outcomes.

Clinical Characteristics Associated with Poor Long-term Survival Among STEMI Patients Treated with Primary PCI: Mortality insights from a large single-center registry

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Background and Aims: Cumulative evidence has demonstrated that rapid primary percutaneous coronary intervention (PCI) is the most effective reperfusion strategy for acute STEMI. The baseline clinical factors associated with one year mortality in these patients are less known. In this study we analyzed pre-angiography clinical, laboratory and echocardiographic factors associated with one year mortality.

Methods: We used our clinical database consisting of all pts treated using primary PCI for STEMI within 12 hours of chest pain between 1/2001 and 1/2008. Patients presented with cardiogenic shock were excluded.**Results:** 1249 pts with STEMI mean age 61±13 years [range 24-101] were included. PCI was successful in 94% of pts. After multivariate analysis including all pre-angiography factor associated with one year mortality in uni-variate analysis [$p<0.05$] the following factors were statistically significant factors predicting one year mortality:

	OR	95 % CI	P-value
Age > 65 y	1.4	1.02-1.9	0.03
GFR (<60 mL/min/1.73 m^2)	1.3	1.1-1.6	0.007
Killip class >1	1.4	1.1-1.7	0.002
History of CVA	3.2	1.4-7	0.004
WBC >15000	2.8	1.5-5.1	0.007
LVEF <40%	1.3	1.1-1.6	0.008

CVA= cerebrovascular attack, WBC= white blood count, LVEF= left ventricular ejection fraction.

Conclusions: Our results show that older age, history of CVA, high killip class, impaired renal function, high WBC and depressed left ventricular function, factors available before angiography, are a significant factors associated with poor one year outcomes in pts with STEMI undergoing primary PCI.

Post-Percutaneous Coronary Intervention Creatine Kinase Elevation: An Angiographic Complication Predicts a Worse 1-Year Outcome

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Background: It is already known that elevated CK-MB after successful PCI is associated with worse long-term outcome. However, it is not clear whether the outcome is different when CK-MB elevation is attributed to an angiographic complication compared to patients with no angiographic explanation for CK-MB elevation.
Objective: To compare 1-year outcomes of patients with post-procedure CK-MB elevation with or without angiographic complication.
Methods: A single center, 1-year period, retrospective analysis of all patients with post-procedure CK-MB >x2 the upper limit of normal. Patients with acute MI and pre-procedure elevated CK-MB were excluded. All cine-angiograms were carefully reviewed for angiographic complications including any side-branch occlusion (TIMI 0 or 1), no flow, transient abrupt closure, and perforation. Patients were divided into group A – with angiographic complication and group B – no angiographic complication. The primary end point was a 1-year composite of death, MI, recurrent revascularization, and re-hospitalization for cardiac causes (MACE).
Results: 149 patients (9% of all patients undergoing PCI) met the inclusion criteria (group A=62, group B=87). Mean age, gender, indication for PCI, GP IIb/IIIa use, coronary risk factors, number of intervened vessels, and number of stents used were similar among groups. Among group A, 74% had side-branch occlusion, 13% no flow, and 11% had abrupt closure (or 31%, 5.3%, and 4.7%, respectively, from all patients with CK-MB elevation). Post-procedure mean CK-MB was 41±36μg/L in group A compared to 30±45 in group B (p=0.10). One year MACE rate was 32.1% in group A compared to 11.0% in group B (p<0.01): death 3.6% versus 2.4% (p=NS), MI 5.3% versus 1.2% (p=0.2), and recurrent revascularization 7.1% versus 6.1% (p=NS).
Conclusions: In patients with post-procedure CK-MB elevation, the occurrence of an angiographic complication identifies a higher risk group. Efforts should be made to avoid any angiographic complication such as side-branch occlusion.