

**08:30 - 10:00 S14 - Acute Coronary Syndromes**

Hall C

Chairs: **S. Atar**  
**A. Battler**

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- 08:30 **Mortality Rates in Patients with STEMI Undergoing Primary PCI as a Function of the Hemoglobin Level: from Anemia to Polycythemia**  
*E. Lev, R. Kornowski, H. Vaknin-Assa, S. Fuchs, I. Teplitsky, D. Brosh, A. Battler, A. Assali*  
*Petach Tikva*
- 08:45 **Should Therapeutic Strategy be Decided According to Renal Status in Patients with Non ST Segment Elevation Myocardial Infarction?**  
*R. Dragu, M. Kapeliovich, A. Roguin, E. Grenadir, A. Kerner, M. Boulus, E. Nikolsky, R. Beyar, H. Hammerman*  
*Haifa*
- 09:00 **A Comparison of the Quality of Treatment/Management of Patients Presenting at the Emergency Department (ED) with Chest Pain with or without a Cardiologist as Part of the ED Staff**  
*T. Or, A. Darawshe, Y. Rabkin, A. Feldman, Y. Turgeman, S. Atar*  
*Afula*
- 09:15 **Brachial Artery Endothelial Function Predicts Platelet Function in Healthy Subjects and in Patients with Acute Coronary Syndrome**  
*M. Shechter<sup>1,2</sup>, A. Shechter<sup>1,2</sup>, H. Hod<sup>1,2</sup>, P. Fefer<sup>1,2</sup>, N. Koren Morag<sup>2</sup>, M. Feinberg<sup>1,2</sup>, D. Harats<sup>1,2</sup>, B.A. Sela<sup>1,2</sup>, S. Matetzky<sup>1,2</sup>*  
*<sup>1</sup> Ramat Gan, <sup>2</sup> Tel Aviv*
- 09:30 **Cell Free DNA as a Potential Marker in Acute ST- Elevation Myocardial Infarction**  
*A. Shimony, D. Zahger, H. Gilutz, H. Goldstein, R. Ilia, G. Orlov, M. Merkin, A. Shalev, G. Amit, C. Cafri, A. Douvdevani*  
*Beer -Sheva*
- 09:45 **IV Erythropoietin in Acute ST Elevation Myocardial Infarction.**  
*N. Uriel<sup>1</sup>, J. Grunfeld<sup>2,4</sup>, G. Moravsky<sup>2,4</sup>, B. Abramchenko<sup>2</sup>, R. Krakover<sup>2,4</sup>, A. Blatt<sup>2,4</sup>, E. Kaluski<sup>3</sup>, Z. Vered<sup>2,4</sup>*  
*<sup>1</sup> New York, NY, <sup>2</sup> Zerifin, <sup>3</sup> Newark, NJ, <sup>4</sup> Tel Aviv*

## Mortality Rates in Patients with STEMI Undergoing Primary PCI as a Function of the Hemoglobin Level: from Anemia to Polycythemia

Eli Lev, Ran Kornowski, Hana Vaknin-Assa, Shmuel Fuchs, Igal Teplitsky, David Brosh,  
Alexander Battler, Abid Assali

*Cardiology Department, Rabin Medical Center, Petach Tikva, Israel*

**Background:** Anemia has consistently been shown to be a strong predictor of mortality after ST-segment elevation myocardial infarction (STEMI). In contrast, there is very limited information regarding the prognostic effect of polycythemia on outcomes of patients with STEMI. Since polycythemia is associated with a pro-thrombotic state, we hypothesized it will also be associated with increased risk of mortality and re-infarction in patients with STEMI undergoing primary percutaneous coronary intervention (PCI).

**Methods:** We studied 1,042 consecutive patients with STEMI treated with primary PCI, who were included in our primary PCI registry between 01/2001 – 11/2007. Excluded were patients with cardiogenic shock. Patients were allocated into 3 groups according to their baseline hemoglobin (Hg) level upon presentation: anemia (Hg<12 g/dl), normal (Hg=12-16 g/dl), polycythemia (Hg>16 g/dl). Clinical outcomes at 30 days and one year were assessed.

**Results:** Patients with anemia had higher risk clinical characteristics, except for smoking which was more prevalent among patients with polycythemia (Table). Mortality rates were highest among patients with anemia, followed by patients with polycythemia, who in-turn had higher mortality rates than patients with a normal baseline Hg level. Re-infarction rates were highest in patients with anemia, and similar in the two other groups (Table). When plotting mortality vs. baseline Hg level an inverse “J shaped” curve was obtained with higher mortality rates in the anemia side.

**Conclusions:** Both anemia and polycythemia are associated with increased mortality rates, and therefore, portend poor prognosis in patients with STEMI treated with primary PCI. However, anemia appears to be a stronger risk factor for mortality and re-infarction than polycythemia.

	Anemia (n=138)	Normal (n=841)	Polycythemia (n=63)	P value
Age (years)	68±13	60±12	55±12	<0.0001
Women (%)	43	15	16	<0.0001
Diabetes (%)	40	24	16	<0.0001
Hypertension (%)	64	42	44	<0.0001
Hyperlipidemia (%)	42	46	46	0.6
Current Smoker (%)	23	47	62	<0.0001
Ant. Wall MI (%)	51	46	60	0.3
<b>Outcomes:</b>				
30 day mortality (%)	7.3	2.4	4.8	0.01
30 day re-MI (%)	8	2.3	3.2	0.001
1 year mortality (%)	13.1	5.9	8.9	0.02
1 year re-MI (%)	14	6	7	0.01

## Should Therapeutic Strategy be Decided According to Renal Status in Patients with Non ST Segment Elevation Myocardial Infarction?

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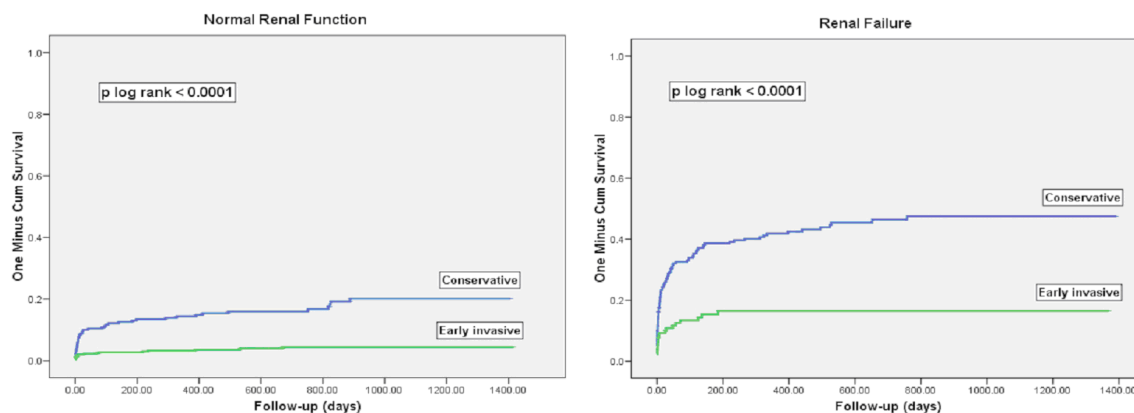
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**Aim:** To evaluate the preferred therapeutic strategy and its long term significance in patients with Non ST Elevation Acute Myocardial Infarction (NSTEMI), according to their renal status.

**Methods:** We prospectively studied 1038 consecutive patients admitted with NSTEMI. The glomerular filtration rate (GFR) was estimated by means of Modification of Diet in Renal Disease equation. Study population was grouped according to GFR, above and under 60 ml/min/1.73 m<sup>2</sup> body surface area (BSA). Long term mortality (mean follow-up 24 months) was compared for early invasive and conservative strategies. Cox regression models were used to assess the relationship between the therapeutic approaches and long term survival.

**Results:** In the renal failure group (mean GFR=41.4±13.7 ml/min/1.73 m<sup>2</sup> BSA), out of 353 patients, 130 (36.8%) were treated by early invasive strategy, while 223 (63.2%) received medical treatment. In the normal renal function group (mean GFR=92.1±24.9 ml/min/1.73 m<sup>2</sup> BSA), out of 685 patients, 445 (65.0%) had early invasive intervention, with the remainder of 240 (35.0%) assigned to conservative strategy. In normal renal function group, patients assigned to early invasive strategy had lower mortality rates as compared to those treated by a conservative approach (3.8% vs. 17.5%, p<0.0001). Furthermore, in renal failure group, the long term mortality was significantly lower with early invasive strategy as compared with medical treatment (15.4% vs. 43.9%, p<0.0001). After adjusting for age, gender, diabetes mellitus, anterior wall involvement, left ventricular function and Killip class, the hazard ratio for mortality were: 4.01 (95%CI [1.84-8.71], p<0.0001) for renal failure and conservative treatment, 1.02 (95%CI [0.34-3.09], p=0.963) for renal failure and invasive strategy and 2.33 (95%CI [1.06-5.14], p<0.035) for normal renal function and conservative treatment, as compared to normal renal function treated invasively. Figure 1 depicts the survival in the different groups in a Kaplan-Meier model.

**Conclusion:** Our results suggest that in patients with NSTEMI, early invasive strategy is the preferred therapeutic approach, irrespective to the renal status.



## **A Comparison of the Quality of Treatment/Management of Patients Presenting at the Emergency Department (ED) with Chest Pain with or without a Cardiologist as Part of the ED Staff**

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**Background:** The concept of having a "chest pain (CP) unit" in the emergency department (ED) is evolving. The additional value of just having a cardiologist involved in the ED team, without a dedicated space or monitored beds (a "mobile CP unit") has not been evaluated yet.

**Methods:** We studied efficacy and diagnostic accuracy parameters in the management of 221 patients admitted to the ED for CP. We compared days with a cardiologist in the ED staff (Group A) and days when he was not present (Group B). All patients were followed in-hospital (if admitted) and at 30 days.

**Results:** Groups were similar in baseline characteristics including TIMI risk score. In patients in group A diagnostic and imaging studies were used significantly more often (10.4% vs. 2.2%, p=0.04). Pharmacological treatment according to ACC/AHA guidelines was used more often in group A (mainly heparins, p=0.048). Moreover, patients in group B with a discharge diagnosis of acute coronary syndrome less often received any treatment in the ED (63.1% vs. 37.5%, p=0.042). Admission rate to the hospital was higher in group B (74.7% vs. 66.4%, p=0.01). Patients in group B who were discharged from the ED used more medical resources after discharge (25.3% vs. 9.7%, p=0.002).

**Conclusions:** The addition of a cardiologist to the ED staff (a "mobile CP unit") is effective, saves resources and significantly improves treatment and diagnosis of patients with acute CP.

## **Brachial Artery Endothelial Function Predicts Platelet Function in Healthy Subjects and in Patients with Acute Coronary Syndrome**

Michael Shechter<sup>1,4</sup>, Alon Shechter<sup>1,4</sup>, Hanoch Hod<sup>1,4</sup>, Paul Fefer<sup>1,4</sup>, Nira Koren Morag<sup>4</sup>,  
Micha Feinberg<sup>1,4</sup>, Dror Harats<sup>2,4</sup>, Ben Ami Sela<sup>3,4</sup>, Shlomi Matetzky<sup>1,4</sup>

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**Background** - Platelet activation occurs in conditions associated with impairment of endothelium-dependent flow-mediated vasodilation (FMD). Nitric oxide, a key product of the endothelium, is antithrombotic via potent antiaggregating and antiadhesive properties. The aim of the present study was to explore the association between platelet function and endothelial function assessed by brachial artery FMD in healthy subjects and patients with acute coronary syndrome (ACS).

**Methods and Results** - We prospectively assessed FMD in 151 consecutive subjects [47 ACS patients (31%) and 104 healthy subjects (69%)], 115 men (76%), mean age 53±11 years. Following overnight fasting and discontinuation of all medications for ≥ 12 hours, percent improvement in brachial artery FMD (%FMD) and nitroglycerin-mediated vasodilation (%NTG) were assessed using linear array ultrasound. Platelet aggregation was studied by conventional aggregometry, while platelet adhesion and aggregation under flow conditions were assessed by the cone-and-plate(let) technology (Impact-R). Cigarette smoking, type 2 diabetes and hypertension were more common in the ACS patients compared to healthy subjects (43% vs 18%, 17% vs 5%, 45% vs 17%, p<0.01; respectively). Furthermore, the use of aspirin, clopidogrel, beta-blocking agents, angiotensin-converting enzyme inhibitors and statins was more common in ACS patients compared to healthy subjects (81% vs 12%, 58% vs 0%, and 55% vs 7%, 47% vs 4% and 60% vs 22%, p<0.01; respectively). %FMD and %NTG were significantly lower in ACS patients compared to healthy subjects (10.2±6.2% vs 16.4±9.4% and 14.2±6.9% vs 19.0±9.7%, p<0.01; respectively). %FMD was significantly and inversely associated with platelet function (p<0.001) in all study participants as well as in ACS patients and healthy subjects. Furthermore, while dividing the entire study cohort into 2 groups: < and ≥ the median FMD of 13.4%, platelet function was significantly higher in the former compared with the latter group (p<0.001).

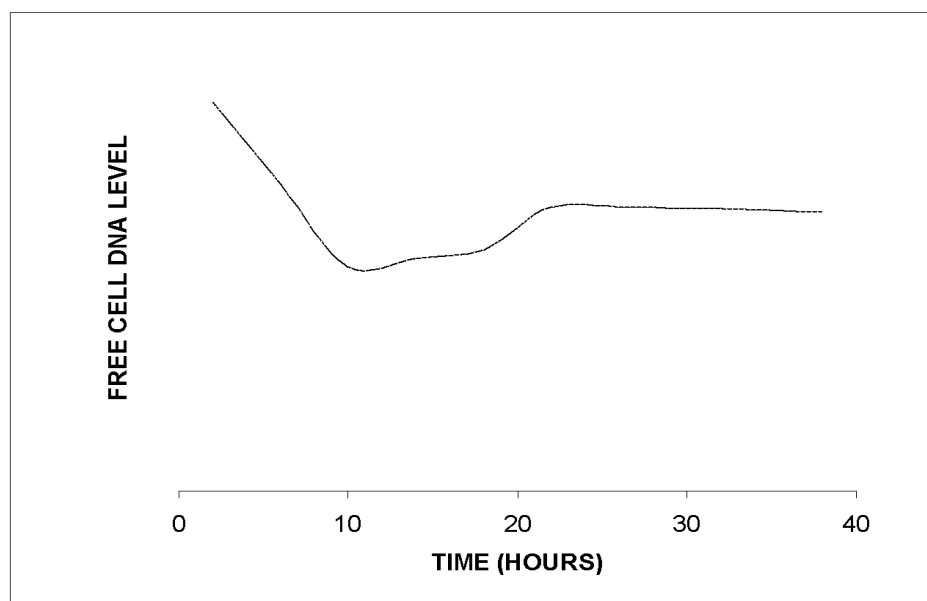
**Conclusions** - Endothelial function is inversely associated with platelet function in healthy subjects and ACS patients, suggesting that endothelial function may play a major role in determining platelet reactivity.

## Cell Free DNA as a Potential Marker in Acute ST-Elevation Myocardial Infarction

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Mari Merkin<sup>1</sup>, Arie Shalev<sup>1</sup>, Guy Amit<sup>1</sup>, Carlos Cafri<sup>1</sup>, Amos Douvdevani<sup>2</sup>

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**Background:** High levels of circulating cell free DNA, originating from apoptotic and necrotic cells, have been associated with poor prognosis in various malignant and inflammatory states. Data pertaining to cell free DNA in acute MI are scarce and the clinical significance of elevated levels in this situation is yet unknown. Moreover, the available data have been obtained by either slow electrophoresis or PCR, methods which are not practical for routine use. **Objective:** To evaluate a quick novel method for the detection of circulating cell free DNA in patients with ST elevation myocardial infarction (STEMI) and to examine their correlation with established markers such as troponin -T, CK and ejection fraction. **Methods:** The serum concentrations of cell free DNA, troponin-T and CK were measured simultaneously upon arrival from a Randomly selected STEMI patients admitted to the ICCU and at 3 more time points, 5-8 hours apart. Cell free DNA was quantified by a novel rapid fluorometric assay. Ejection fraction was assessed by echocardiography, blinded to lab results. **Results:** Specimens were taken from 16 patients aged  $50.3 \pm 12.5$  years (Figure 1: average serum levels vs. time). 14 patients had primary PCI. Peak DNA levels were found at  $11.5 \pm 10.0$  hours after admission and correlated with peak levels of CK and troponin -T ( $R=0.79$ , 95% CI 0.48-0.92);  $R=0.65$ , 95% CI 0.23-0.87, respectively). Levels of cell free DNA were higher during the first 6 hours after admission than later ( $147 \pm 69.9$  ng/ml vs.  $98.5 \pm 48.4$  ng/ml  $P=0.01$ ). Peak levels tended to correlate negatively with ejection fraction ( $R=-0.46$  (95% CI -0.776 -- +0.051)/  $P=0.075$ ). **Conclusion:** With this rapid novel method, peak cell free DNA levels correlate significantly with the levels of established markers of myocardial necrosis but not with ejection fraction. The kinetic pattern of DNA release after STEMI and its prognostic value require further investigation.



## IV Erythropoietin in Acute ST Elevation Myocardial Infarction.

Nir Uriel<sup>1</sup>, Jonathan Grunfeld<sup>4,5</sup>, Gil Moravsky<sup>2,5</sup>, Boris Abramchenko<sup>2</sup>, Ricardo Krakover<sup>2,5</sup>,  
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**Purpose:** Erythropoietin has shown a potent cardioprotective effect during acute myocardial infarction (AMI) in *in-vitro* and animal models. This study aims to investigate the effect of IV erythropoietin in patients with AMI.

**Methods:** A double blind, placebo controlled, randomized study for patients with first occurrence of STEMI was performed. The trial compares the safety and efficacy of patients receiving reperfusion treatments plus intravenous erythropoietin (20,000 units), versus patients receiving identical treatments plus placebo. Data was collected for one year post event.

**Results:** Between July 2006-May 2008, 32 patients enrolled in the study. Patients were randomly assigned into treatment (17 Patients aged 57.5±8.7 years) and placebo (15 Patients aged 50.1±11.0 years). Baseline characteristics of the groups were without significant differences. 94.1% of patients in the treatment arm and 93.3% in the placebo were treated with primary PCI, while others were treated with thrombolysis. Standard medical regimen post infarction was consistent in both groups. Erythropoietin levels in the blood peaked at 2914.1 and 113.8 munits/mL in the treatment vs. placebo group respectively. Side effects included two patients with allergic reaction (one per group), and one with thrombocytopenia due to aspirin. There were no differences in CPK levels. BNP levels at 30 days were not significant (1727.0±3095.8 and 788.4±691.6 pg/mL for treatment and placebo respectively). Left ventricular ejection fractions at baseline (43.8±8.1 vs. 43.1±8.9) and follow-up (50.0±9.6 vs. 46.9±9.7) were not significant.

**Conclusion:** Treatment with IV erythropoietin is safe during AMI. A larger study is needed to assess erythropoietin's efficacy.