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Posters

1-P

More aggressive pharmacological treatment may improve clinical outcome in patients with non-ST-elevation acute coronary syndromes treated conservatively

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Increased adherence to guideline-recommended therapies, especially introduction of early invasive strategy, may improve clinical outcome in patients (pts) with non-ST-elevation acute coronary syndromes (NSTE ACS). The impact of more aggressive pharmacological treatment and application of guidelines in hospitals without an on-site invasive facility is still under investigation.

We identified 807 NSTE ACS pts treated conservatively in the 29 hospitals participating in the Malopolska Registry of Acute Coronary Syndromes from Feb-Mar 2005 and Dec 2005-Jan 2006. For all pts, the adherence to guidelines index based on the use of pharmacotherapy was assessed (each patient received 1 point for each of the following drugs used: aspirin, clopidogrel, GPIIb/IIIa antagonist, heparin, beta-blocker, ACE-I/ARB, statin – range of points (p) from 0 to 7). In-hospital mortality decreased with increase of adherence index (0 p (5 pts) 80.0%, 1 p (11) 36.4%, 2 p (46) 17.4%, 3 p (106) 7.6%, 4 p (234) 5.6%, 5 p (353) 1.7%, 6 p (52) 0.0%; p<0.0001, total mortality – 5.3%). Independent predictors of in-hospital death were cardiogenic shock, TIMI Risk Score, renal insufficiency and adherence index.

In conclusion, our findings support the need for more aggressive pharmacological treatment of pts with NSTE ACS remaining in community hospitals for conservative treatment. Broader implementation of current guidelines and more frequent invasive treatment could improve the outcomes of pts suffering from NSTE ACS.

2-P

Comparative evaluation of treatment of acute myocardial infarction (STEMI) by primary angioplasty with and without the use of Diver thrombectomy

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Background: The area of myocardial necrosis is directly connected with the time of renewal of blood flow in the epicardium vessel. Closed vessel or significant impairment of the blood flow is mostly caused by a clot formed on a cracked atheromatous plaque which may be the reason for the embolization of a distal part of the vessel during primary angioplasty (p-PTCA). The procedure of thrombectomy might bring better results during the p-PTCA procedure and also improves long-term prognosis.

Aim: The comparative study of acute myocardial infraction treatment by stent implantation with preceding thrombectomy (using Diver catheter) and without. An attempt to evaluate the effectiveness of the use of Diver catheter. Post-treatment analysis and six months of observations.

Method: A retrospective analysis was carried out among a group of patients (n=60) with STEMI, treated by primary angioplasty with stent implantation and preceded by thrombectomy (using Diver catheter). The first group A (n=31) was treated with thrombectomy and the second group B (n=29) was treated by p-PTCA. Both analysed groups had quite the same risk factors. Most of the patients had arterial hypertension, and were

Table 1. Multivariate Cox regression analysis for in-hospital death (1-P)

Variable	OR	95% CI	P Value
Gender (male)	1.46	0.74-2.90	0.280
Cardiogenic shock	7.03	3.23-15.29	<0.001
Adherence to guidelines index (per point)	0.46	0.36-0.58	<0.001
Renal insufficiency	3.64	1.60-8.30	0.002
TIMI Risk Score (per point)	1.52	1.17-1.98	0.002

obese. We analysed TIMI after the p-PTCA procedure, MBG and dynamics of changes of the myocardial necrosis enzymes, the evaluation of heart contractility based on echocardiography and the time of hospitalisation.

Results: The two groups did not differ with respect to TIMI flow after the procedure (gr. A=2.75 vs. gr. B=2.72) and to the increase in CPK enzyme within 6 hours after admission (1708.967 vs. 1657.345). The increase in CK-MB enzyme was by 238.03 vs. 150.89. The patients were admitted at similar time after the first stenocardial pain (4.0 h±2.8 vs. 4.6 h±2.7). Also ejection fraction (45.70%±9.22% vs. 45.68%±10.30%) and the time of hospitalisations (A=9.5 days±4.3 vs. B=9.8 days±3.4) were quite the same in both groups Slight differences were observed in MBG.

Conclusion: The procedure of thrombectomy is used in cases where there is a high risk of embolization of the distal part of the vessel. In the early stage of six-month observations there are no differences in the results of the treatment by primary angioplasty with stent implantation and by angioplasty preceded by thrombectomy.

3-P

Temporal trends in the treatment of acute coronary syndromes from 2002 to 2006 in the Krakow Region of 3.2 million inhabitants

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Background: Transfer of high-risk acute coronary syndrome (ACS) patients to percutaneous coronary intervention (PCI) centres has proven to be the best treatment option. The Krakow Hospital Network Region provides 24/7 PCI duty in a high volume PCI centre for the population of 3.2 million. In 2002 a programme for hospital networking to provide optimal treatment strategies of ACS was initiated. The aim of the registries was to assess the efficacy of the educational programme to implement current guidelines in remote community hospitals and the aptitude of hospital networks in promotion of mechanical reperfusion.

Methods: 29 community hospitals in the Krakow Region participated in the Registry of Acute Coronary Syndromes in 2002-2003 (Registry 1) and 2005-2006 (Registry 2).

Results: A total of 3786 patients with ACS were enrolled, 2382 in Registry 1 and 1404 in Registry 2. ST-Elevation Myocardial Infarction (STEMI) was diagnosed in 1397 patients (37%). The overall mechanical reperfusion rate of STEMI patients with chest pain onset less than 12 hours has risen from 20% in 2002-2003 to 57% in 2005/2006 (p<0.0001) and was particularly observed for remote non-PCI centres outside of Krakow City (24% vs. 61%; p<0.0001). In Registry 1 14.4% of Non-ST-Segment Elevation Acute Coronary Syndrome (NST ACS) patients in comparison to 16.8% in Registry 2 (p=NS) were transferred to a PCI centre. Statin pharmacotherapy among STEMI (59% vs. 70%; p=0.001) and NSTE ACS patients (77% vs. 85%; p=0.001) has improved over the years as well as the administration of acetylsalicylic acid in STEMI (91% vs. 96.5%; p=0.001). The fibrinolysis rate for STEMI patients with <12 hours chest pain onset decreased from 28% to 12% (p<0.0001).

Conclusions: Successive guideline implementation through educational programmes has had an immense impact on the treatment pattern of ACS in the Krakow Region in Poland. However, still more needs to be done to encourage transfer within hospital networks for invasive treatment of NSTE ACS patients. Establishing networks of non-PCI centres with reference high volume PCI centres promotes a more invasive and guideline-recommended approach in ACS patients.

4-P

Prevalence and factors predisposing to left ventricular dysfunction in STEMI patients treated with primary PTCA

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The aim of the study was to determine the prevalence and factors predisposing to left ventricle (LV) systolic and diastolic dysfunction in STEMI patients treated with primary PTCA

Material: 112 consecutive pts (84 males, 28 females, mean age 58 years) with first ST-elevation myocardial infarction (anterior wall in 43%), treated with primary angioplasty. In 81 pts (72%) TIMI 3 flow within 6 hours after onset of chest pain was achieved. Three pts died (1 VSD, 2 severe LV dysfunction). Patients with diabetes, cardiomyopathies, structural valvular dysfunction, atrial fibrillation and history of previous infarction were excluded from the study.

Methods: ECHO was performed three times: within the first 24 hours (E1), on day 5 (E2) and after 3 months (E3). LV systolic dysfunction was defined as mild (LVEF 40-50%) or severe (LVEF<40%). Diastolic dysfunction was defined as mild (impaired relaxation mitral flow pattern) or severe (restrictive or pseudonormal filling). Clinical, echocardiographic and biochemical data were compared in groups with and without above--mentioned types of LV dysfunction.

Results: In consecutive ECHOs (E1, E2, E3) decreasing prevalence of systolic dysfunction was found (mild: 33%, 30% and 12% of patients, p<0.005, severe: 11%, 7%, 6%, p<0.05). Prevalence of severe diastolic dysfunction remained stable (E1-22%, E2-26%, E3-23%, NS). Mild diastolic abnormalities were frequent and decreased during the observation period (E1-58%, E2-49%, E3-40%, p<0.01).

Presence of severe systolic dysfunction in ECHO 1, 2 and 3 was associated with: TIMI flow <3, TMPG grade, development of Q wave in ECG, higher peak CK and CKMB, higher LV dimensions. Presence of pseudonormal or restrictive pattern was associated with TIMI flow <3, higher peak CK, lower left ventricle ejection fraction (LVEF).

LV dysfunction (systolic or severe diastolic) was not significantly associated with age, sex, BMI, presence of other lesions or peak troponin I level. Impaired relaxation pattern was associated with older age.

Conclusion: In first STEMI treated with primary PTCA:

1. Most STEMI patients present only mild systolic LV dysfunction.
2. Restrictive or pseudonormal pattern of diastolic dysfunction is present in 22-26% of patients and its prevalence remains stable during three months of observation.
3. Relaxation abnormalities are very frequent and decrease during the observation period.
4. Systolic dysfunction prevalence decreases during three-month follow-up.

5-P

Left ventricle diastolic function in STEMI patients treated with PCI depends on infarction site and may change during observation period

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Aim: of the study was to assess the relationship between infarct location and diastolic dysfunction in STEMI patients treated with primary PTCA during 3-month follow-up.

Material: 104 consecutive pts (80 males, 24 females, mean age 58 years) with first ST-elevation myocardial infarction treated with primary PCI were observed (anterior wall n-47, 45%; inferior wall n-57, 55%). Patients with diabetes, cardiomyopathies, structural valvular disease, atrial fibrillation and history of previous infarction were excluded from the study.

Methods: Left ventricle (LV) filling pattern was checked in echocardiograms performed within the first 24 hours after PCI (E1), on day 5 (E2) and after 3 months (E3). Diastolic filling patterns were defined as normal (D1), impaired relaxation (D2), pseudonormal (D3) and restrictive type (D4). Clinical, echocardiographic and biochemical data were compared in defined myocardial location site.

Results: In the anterior STEMI patient group severe diastolic dysfunction (D3, D4) was already present on the first day after PCI (E1: D2-36%; D3-21%; D4-15%) and did not vary after 3 months of follow-up (E3: D2-22%, D3-20%, D4-21%). Inferior STEMI patients mostly presented mild diastolic abnormalities during the observation period; only two patients in this group represent restrictive filling in 3-month follow-up (E1: D2-53%; D3-15%; D4-0%); (E3: D2-53%; D3-17%; D4-5%). Clinical and biochemical characteristics of anterior and inferior wall groups showed no differences between them, but comparison of LV diastolic function confirmed substantial differences (E1: p=0.02; E2: p=0.03; E3: p=0.05).

Observation of LV filling patterns frequencies in all groups shows that progression and regression in diastolic function of LV is possible. It is interesting that none of the first day severe dysfunction patients (D3, D4) presented a normal pattern after 3 months of observation and none of the first day normal function patients (D1) presented restrictive filling after 3 months.

Conclusion: In first STEMI patients after primary PCI:

1. Diastolic dysfunction occurs often on the first day after MI.
2. Severity of dysfunction depends on the wall that is affected. It is likely that anterior wall patients manifest more severe diastolic dysfunction.
3. Progression or regression of diastolic abnormalities is possible.
4. Once observed a restrictive filling pattern never transforms back into a normal one.

6-P

Hospital networking and population derived PCI centre distribution increased mechanical reperfusion among patients with acute coronary syndromes in the Krakow Hospital Network Region in Poland

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Background: Until 2005 one high volume percutaneous coronary intervention (PCI) centre provided 24/7 duty for the population of 3.2 million inhabitants in the Krakow Hospital Network Region in Poland. In August and November 2005 two additional round-the-clock duty PCI centres were launched in remote municipal hospitals (Tarnow and Nowy Sacz). The aim of the study was to assess the influence of new hospital networks on treatment strategies of Acute Coronary Syndromes (ACS).

Methods: 29 non-PCI centres participated in the Registry of Acute Coronary Syndromes in February-March 2005 (Registry 1) and in December 2005-January 2006 (Registry 2). While Registry 2 was conducted, three PCI centres provided round-the-clock PCI for the Krakow Region.

Results: A total of 1404 patients with ACS were enrolled, 695 in Registry 1 and 709 in Registry 2. In comparison to Registry 1, a non-significant trend towards more frequent mechanical reperfusion of ST-Elevation Myocardial Infarction (STEMI) patients with chest pain onset <12 hours was observed in Registry 2 (54% vs. 60%; p=NS). A steep and significant rise was observed particularly among STEMI patients treated in non-PCI centres outside of Krakow City (51% vs. 78%; p=0.001). In the newly established Tarnow and Nowy Sacz PCI networks the reperfusion rates for STEMI patients with chest pain <12 hours were 78% and 88% respectively after these 24/7 PCI centres were launched. The transfer rate for invasive treatment of Non-ST-Segment Elevation Acute Coronary Syndromes (NSTE ACS) has increased from 13.8% in February-March 2005 to 19% in December-January 2005/2006 (p=0.031). In-hospital mortality for patients remaining for conservative treatment in community hospitals has decreased among NSTE ACS patients (6.8% vs. 3.9%; p=0.045) and remained unchanged in STEMI (21.3% vs. 19%; p=NS). The fibrinolysis rate for STEMI <12 hours decreased from 15% to 7% (p=0.15) in the entire Region.

Conclusions: Optimal PCI centre distribution, based on population structure, improves local adherence to guideline-recommended invasive approach in high-risk ACS patients. The Krakow Hospital Network Region model has proved that one high volume 24/7 PCI centre with a network of cooperating non-PCI centres for a population of 0.5 million is sufficient to provide invasive treatment according to ESC guidelines for eligible patients. The Local Networks achieved almost optimal recommended reperfusion rates. However, more educational effort needs to be made to increase the percentage of patients with reperfusion therapy.

7-P

Time of admission influences treatment strategy in ST-Elevation Myocardial Infarction patients in community hospitals in the Krakow region

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Background: Primary Percutaneous Coronary Intervention (PCI) in an experienced high volume centre for patients with ST-Elevation Myocardial Infarction (STEMI) with chest pain onset less than 12 hours has proven to be the best treatment option. In the Krakow Region, Poland, due to 24/7 primary PCI duty, referral of STEMI patients from remote hospitals to an invasive facility centre is possible at any time of day and night. The aim of the study was to evaluate treatment strategies in patients with STEMI with respect to their time of admission to the referral hospital.

Methods: 29 community hospitals without an on-site invasive facility participated in the Registry of Acute Coronary Syndromes in the Krakow Region with a population of 3.2 million in 2005. Patients were stratified according to their time of admission to the remote hospital. The three groups were: admission time 7.00-14.59, 15.00-22.59 and 23.00-6.59. Patients with STEMI with chest pain onset less than 12 hours were included.

Results: 330 patients were diagnosed with STEMI, of whom 191 met inclusion criteria (<12 hours). There were 87 (45.5%) patients in the subgroup admitted at 7.00-14.59, of whom 68% were transferred for invasive treatment. In the late afternoon group (15:00-22:59) there were 64 (33.5%) patients with 55% of them immediately transferred for invasive treatment. During night hours 23.00-6.59, 40 patients were admitted and 45% sent to primary PCI centres. The p value for trend for transfer to the invasive facility was 0.04 for the three groups. Transfer patients in groups did not differ in age (61±12.6 vs. 62±12 vs. 62±11; p=NS). Cardiogenic shock on admission (8% vs. 12.5% vs. 3%; p=NS) and administration of fibrinolysis were similar among the patients in the three corresponding groups (7% vs. 7% vs. 9%; p=NS). In-hospital mortality for patients remaining for conservative treatment in remote hospitals did not differ (7.1% vs. 10.3% vs. 9.1%; p=NS). The pharmacological treatment concerning thienopirydines and antithrombotic agents was similar.

Conclusions: The majority of STEMI patients were admitted during daily working hours. This group of patients was more likely transferred for invasive diagnostic and treatment. Patients admitted in various time slots had similar demographic and clinical features and it remains unclear and requires further investigation why they were less likely to be transferred to invasive facility centres even though they were available round-the-clock.

Oral presentations

8-O

Women with low-risk Non-ST-Segment Elevation Acute Coronary Syndromes are treated less aggressively than men

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Background: Treatment of Acute Coronary Syndromes (ACS) among women is currently a leading topic. The association between age, hormonal influences, gender and prevalence of coronary artery disease is still under investigation. Even though guidelines for the treatment of ACS and most clinical trials publish results irrespective of gender, it is often women who receive less aggressive therapy in ACS.

Methods: 29 community hospitals without an on-site invasive facility participated in the Registry of Acute Coronary Syndromes in the Krakow Region with a population of 3.2 million in the year 2005. Patients with Non-ST Segment Elevation Acute Coronary Syndromes (NSTE ACS) were stratified according to gender into men (M) and women (W) and to TIMI Risk Score scale.

Results: 979 NSTE ACS patients were identified in the Registry. There were 443 (45%) women and 536 (55%) men. Past medical history of diabetes mellitus (34% vs. 23%, p<0.0001), arterial hypertension (86% vs. 80%, p=0.023) and prior angina (80% vs. 72%, p=0.006) was more common among women. Women were also older than men (71±10.2 vs. 65.8±11.6, p=0.001). Men were often current smokers (9% vs. 41%, p<0.0001). Women and men were equally likely to be transferred for invasive diagnostic and treatment (16% vs. 19%, NS) and in-hospital mortality for patients treated conservatively was similar in both groups (5.3% vs. 6.0%, NS). Thienopyridines (29% vs. 39%, p=0.002) and statins (82% vs. 87%, p=0.02) were less often administered to women. Women with negative cardiac necrosis markers were sent to invasive cardiology centres in 11% of cases, men in 16% (p=0.045). Whereas both groups were equally likely to be referred to invasive facilities in the TIMI Risk Score high- and moderate-risk groups (3 to 4 and 5 to 7 points), only 6% of women in comparison to 34% of men were transferred in the TIMI Risk Score low-risk group (0-2 points) p=0.0001.

Conclusions: Even though women were older and had more comorbidities in past medical history, they were sent to invasive facility centres as often as men and received less aggressive antiplatelet therapy. Women with low-risk NSTE ACS are often neglected as potential candidates for an invasive approach in comparison to men.

9-O

Primary coronary angioplasty in elderly patients

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Table 1. Results (9-O)

	<65 years (n=391)	65 to 75 years (n=161)	>75 years (n=69)	p
Age [years ± SD]	53.5±0.5	69.8±0.8	77.9±1.2	<0.001
Women	22.8%	37.5%	29.2%	NS
Hypertension	60.3%	71.4%	75%	0.01
Diabetes	15.4%	12.7%	20.8%	NS
Hyperlipidaemia	82.4%	73.2%	66.7%	0.02
Smoking	63.4%	25%	31%	<0.01
Previous MI	15.4%	21.4%	25%	NS
Previous stroke	3.7%	1.8%	8.3%	0.04
Time from symptom onset [min ± SD]	292±16.7	284±27	280.3±42	NS
Killip Class [med ± SD]	1.5±0.07	1.7±0.1	1.8±0.2	NS
Shock	4.4%	5.4%	8.3%	0.01
Max CPK [U/l ± SD]	2526.1±178.3	1933.1±227.8	1465±435.2	0.03
Abciximab	36.7%	25%	29.1%	NS
30-day mortality	1.6%	3.7%	12.75%	<0.01
1 year mortality	6.5%	8.6%	22.1%	<0.01
1 year MACCE	27.4%	33.5%	42.1%	<0.01

Background: Elderly patients have been underrepresented in many therapeutic trials with AMI. Current evidence suggests that primary percutaneous coronary intervention (PCI) in the setting of ST-segment elevation myocardial infarction (STEMI) reduces the incidence of death, myocardial infarction and angina.

Objectives: The aim of the study was to assess differences in presentation and outcome between younger, elderly and very elderly patients hospitalized for acute myocardial infarction (AMI).

Methods: We compiled a registry of 678 consecutive patients with STEMI. A group of 621 patients treated by primary PCI were analyzed. Early (30 days) and late (12 months) outcomes were evaluated in 3 age groups: <65 years, 65 to 74 years and >75 years.

Results: (Table 1).

Conclusions: The results suggest that primary PCI is safe and effective in elderly patients with STEMI. Despite comparable time from symptom onset to PCI, similar abciximab administration, lower maximal marker levels and risk factors profile the total mortality and MACCE increase with patient's age.

10-O

Improved angiographic and echocardiographic but not clinical outcome after pharmacologic facilitation of coronary intervention in acute myocardial infarction

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Facilitation of percutaneous coronary intervention (PCI) with combined thrombolytic therapy (fibrinolytic agent + GP IIb/IIIa inhibitor) can be an approach to treat pts with ST-elevation myocardial infarction (STEMI), especially if delay in PCI is expected. The advantages and disadvantages of this approach still have to be evaluated.

Aim: To assess whether early administration of combined thrombolytic therapy before PCI has any angiographic, echocardiographic or clinical advantages over primary PCI.

Methods: A prospective cohort of 177 consecutive pts with STEMI were analysed (74% males, 26% females, mean age 57±10.2 years). 111 pts treated with facilitated PCI (FPCI) (reduced-dose fibrinolytic + full dose GP IIb/IIIa inhibitor + immediate transport to cathlab + PCI) and 66 pts treated with primary PCI (PPCI). Pts with cardiogenic shock before treatment onset were excluded.

Results: Time from symptom onset to the beginning of reperfusion therapy defined as pain-drug time in the FPCI group was 197.6±115 min and as pain-balloon-time in PPCI group was 262.1±124.5 min (p<0.001).

The facilitated PCI (FPCI) group had more pts with TIMI flow grade 3 before (68.5% vs. 7.6%; p<0.00001) and after PCI (93.1% vs. 81.5%; p<0.02), more pts with TIMI myocardial perfusion grade 3 after PCI (66.3% vs. 43.7%; p<0.01) and higher left ventricular ejection fraction (LVEF) (57.3±9.4% vs. 53.7±8.6%; p<0.02). FPCI and PPCI groups had a similar incidence of moderate (2.7% vs. 1.5%; p-NS) and major (0.9% vs. 0%; p-NS) bleeding complications. Greater incidence of minor bleeding complications was observed in the FPCI group (25.2% vs. 15.1%; p<0.05). In the 6-month follow-up period there were no differences between groups in the combined clinical end points of death + reinfarction (5.4% vs. 9.1%; p-0.34) or death + reinfarction + infarct-related artery revascularization (16.2% vs. 18.2%; p-0.7).

Conclusion: Facilitated PCI in acute myocardial infarction is combined with shorter delay in treatment onset, better coronary patency and myocardial perfusion, and higher LVEF when compared to primary PCI. No differences in clinical outcome were observed between facilitated and primary PCI groups.

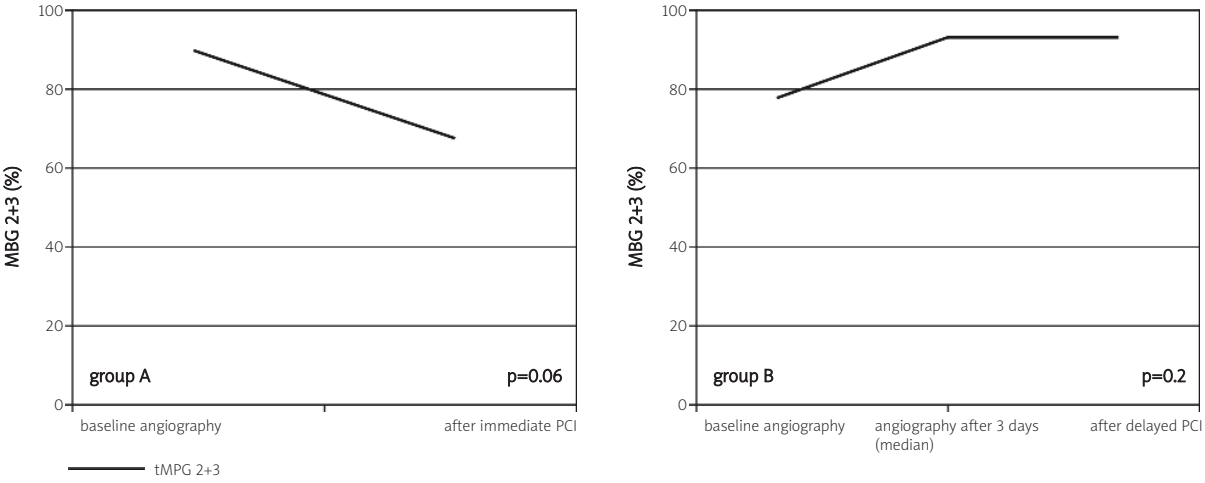

Fig. 1. (11-O)

11-O

Immediate versus delayed angioplasty in patients with ST-segment elevation myocardial infarction after successful thrombolysis

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Background: Primary PCI improves clinical outcome for STEMI patients (pts). Immediate PCI after successful fibrinolysis (TIMI 3 flow) is not recommended due to the risk of ischaemic and bleeding complications. However, delay before PCI even after successful lytic therapy may increase the risk of recurrent infarction for pts staying in hospitals without interventional facilities (IF).

Methods: All pts received iv bolus of heparin, alteplase and abciximab in the local hospital and were immediately transferred to IF. PCI eligible pts with pain relief, ECG ST-segment resolution >50% and TIMI 3 flow in angiography were randomized to immediate angioplasty (gr A, n=48) or conservative treatment with angioplasty 3-5 days later (gr B, n=48).

Results: There was no difference in the baseline characteristics and angiography between study groups. In gr A after immediate PCI, there was no significant improvement in cTFC (27±18 vs. 23±14, p=NS). However, decreased myocardial perfusion (MBG2+3 85% vs. 67%, p=0.06) was noted. In gr B there was a spontaneous myocardial perfusion improvement after 3 days' delay (81% vs. 91%, p=0.2). Delayed PCI improved cTFC (27±15 vs. 19±8, p=0.01) and myocardial perfusion was not changed (figure). However, there were two pts (4.1%) with refractory ischaemia in gr B who needed immediate PCI vs. 0 pts in gr A (p=NS).

Conclusions: Immediate angioplasty decreased myocardial perfusion; however, waiting for delayed angioplasty increased risk of refractory ischaemia. Delayed angioplasty did not worsen myocardial perfusion.

12-O

Early treatment with fluvastatin enhances the mobilization of CD34$^+$, CD117$^+$, CXCR4$^+$, c-met$^+$ stem cells into peripheral blood in patients with acute myocardial infarction. LAVA Trial

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Background: Stem cells can be mobilized into the peripheral blood in the setting of acute myocardial infarction. Statin use is associated with improved survival in patients with acute coronary

Table 1. Data expressed as median and range (12-O)

	Stable angina	STEMI baseline	STEMI baseline	STEMI day 7	STEMI day 7	STEMI day 30	STEMI day 30
		group A	group B	group A	group B	group A	group B
CD34$^+$	43 (0-82)	93 (0-154)	89 (0-148)	142 (0-187)*	86 (0-158)	57 (13-112)	49 (0-82)
CD117$^+$	41 (1-374)	82 (0-231)	86 (0-229)	103 (0-208)*	72 (0-154)	60 (0-159)	57 (0-210)
CXCR4$^+$	151 (21-289)	268 (32-298)	254 (0-301)	243 (0-297)*	172 (0-247)	143 (17-226)	123 (0-303)
c-met$^+$	50 (3-273)	178 (0-245)	185 (0-218)	157 (13-256)*	93 (0-231)	67 (0-206)	72 (28-212)

** p<0.05 vs. group B*

syndromes. The aim of the study was to assess the influence of early (<12 hours) and late (first dose given on day 4-5 after admission) treatment with 80 mg of fluvastatin on the dynamics and magnitude of stem cell mobilization in patients with STEMI.

Methods: 25 patients with STEMI (<12 hours after chest pain onset) and randomized to early treatment (group A, n=13) and late treatment (group B, n=12) with 80 mg of fluvastatin. 20 patients with stable angina were the controls. Peripheral blood samples were drawn on admission, and after 7 and 30 days. FACSCalibur flow-cytometer was used for stem cell assay.

Results: Table 1 shows the changes in absolute number of stem cells in both groups of STEMI patients in comparison to patients with stable angina. Stem cell numbers were significantly higher at baseline and after 7 days in all STEMI groups than in stable angina and comparable after 30 days. Fluvastatin started early was associated with significantly higher number of stem cells after 7 days than in the group treated with fluvastatin later (day 4-5). There were no differences in SDF-1, VEGF, IL-6 or HFG levels between groups A and B.

Conclusion: Early administration of 80 mg fluvastatin significantly increases the mobilization of $CD34^+$, $CD117^+$, $c\text{-}met^+$, $CXCR4^+$ stem cells in acute myocardial infarction.

Posters

13-P

Ostial LM stenting with an *extra* wire located in the coronary sinus of Valsalva. IVUS insights into the acute results of a novel technique

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A 51-year-old woman with hyperlipidaemia and hypertension, 10 years after coronary artery bypass surgery due to left main (LM) disease (vein graft to the circumflex and left internal mammary artery to the left anterior descending artery), was admitted because of angina at rest with concomitant ST-depressions of 2-mm in leads I, aVL and V2-V6. Emergent angiography revealed significant ostial LM stenosis and no lesions in bypass grafts. However, large diagonal branch (Diag) was unprotected (panel A). Intravascular ultrasound (IVUS) confirmed presence of tight stenosis of LM ostium, with minimal lumen area of 3.7-mm^2 (panels 1-5). The decision to perform LM stenting was made. Two BMW guidewires were used for the most precise stent positioning. The first wire with Taxus stent (3.5x16.0 mm) was placed distally in Diag and the second – an *extra* one – was suitably (perpendicularly to the LM take-off) located in the coronary sinus of Valsalva (CSV). Then, the guiding catheter was gently pushed forward and the proximal marker of the stent was positioned just next to its tip. Following the above manoeuvres the stent was successfully deployed under the pressure of 16 atmospheres (panels B, C and D). Postprocedural IVUS examination confirmed optimal stent location (panels 6-12). This is the first report documenting with IVUS the favourable acute results of ostial LM stenting with an *extra* wire located in the CSV. This technique assures the operator that the

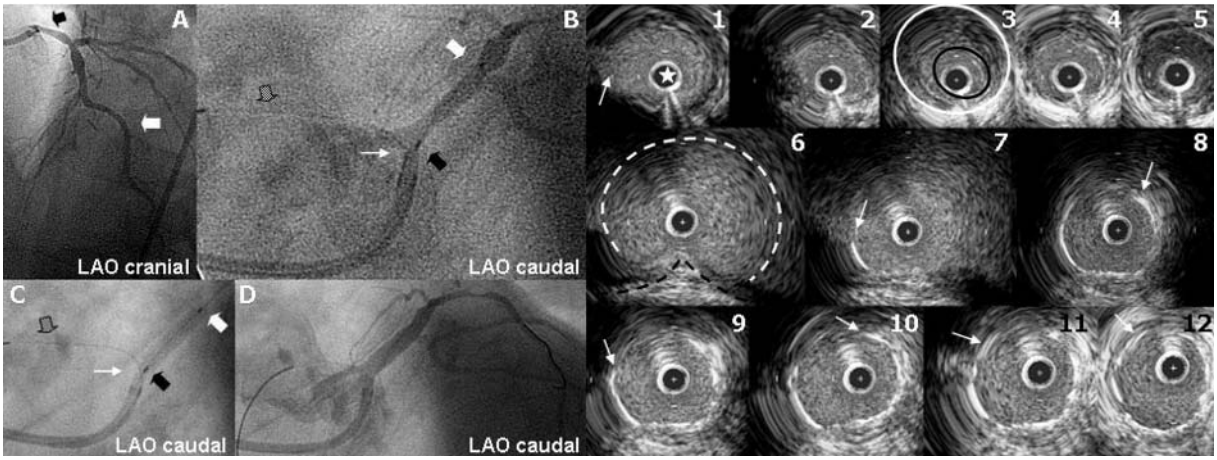

Fig. 1. A. Ostial LM stenosis and large unprotected Diag are seen on the baseline angiography (black and white arrows, respectively). **B.** Stent positioning in LM. Proximal (black bold arrow) and distal (white bold arrow) markers of the stent running on the guidewire placed in Diag and extending from LM ostium to proximal LAD, are seen. An extra guidewire is located in the CSV (grey arrow). Catheter tip is indicated by the white thin arrow. **C.** Stent deployment. **D.** Final angiography (13-P)

Panels 1-5 display preprocedural IVUS (asterisk) cross-sections of LM ostium, obtained at 1-mm step. Note the blood speckles of the CSV marked with arrow on panel 1. Vessel (white circle) and minimal lumen cross-sections (black circle) are marked on panel 3. Respective IVUS images recorded immediately after stenting and beginning from the very LM ostium are shown on panels 6-12. Blood speckles of the CSV (white dashed arc) and opening of LM ostium, signified by three-layer vessel wall structure (black dashed lines), are shown on panel 6. Note that there are no blood speckles behind the first (arrow, panel 7) and the second (arrow, panel 8) as well as other stent struts that appear in turn on panels 9-12 (arrows). LAO: left anterior oblique

pushed forward guiding catheter will not be able to go further then the "carina" of 2 wires and therefore the tip of the guiding catheter could be used as a landmark for the proximal marker of a stent, securing its exact location in the very ostium of LM. This novel and simple technique used during ostial LM stenting seems to be helpful in avoiding stent protrusion and target missing.

14-P

Immediate and one-year clinical outcomes after left main trunk percutaneous revascularization in 178 patients

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The use of percutaneous coronary intervention (PCI) with stent implantation for patients with significant left main stenosis is a reasonable revascularization strategy, especially in patients not suitable for coronary artery bypass grafting (CABG).

We reviewed outcomes among 178 consecutive patients who underwent left main trunk PCI. All-cause mortality, myocardial infarction, target lesion revascularization and the combined major adverse clinical event rates at one year were computed.

The mean age was 64±12 years; and the majority of patients were male (68.5%). 119 (66.8%) patients were admitted with acute coronary syndromes, and cardiogenic shock was observed in 13.5% of patients. 31.5% of patients had diabetes mellitus, 67.4% had hypertension, mean left ventricular ejection fraction was 48.9±11.2%, 93.8% had multivessel disease.

The rate of death at 30-day observation was 15.7%. At the 12-month clinical follow-up, the incidence of MACE (cardiac death, non-fatal myocardial infarction, target vessel revascularization) was 30.9%. Cardiac deaths occurred in 37 patients (20.8%).

In multivariate analysis the independent predictors of major adverse cardiac events were: post-procedure recurrent angina (OR 3.10, 95% CI, 1.20-4.19, p=0.03), heart failure (OR 4.65, 95% CI, 1.87-7.36, p=0.001) and cardiogenic shock (OR 5.76, 95% CI, 3.76-9.21, p<0.001).

PCI for left main stenosis showed satisfactory short- and long-term clinical success rates for a selected proportion of elective patients. Additionally it may be appropriate for highly symptomatic inoperable patients.

15-P

Outcome in patients with cardiogenic shock treated by primary percutaneous coronary intervention stratified by left main coronary artery disease

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Background: Cardiogenic shock (CS) is a complication of acute coronary syndrome (ACS) in 5-10% of patients and is associated with high (65%) mortality.

Aim: to assess outcome in patients with CS stratified by the involvement of left main coronary artery (LMCA) in angiography.

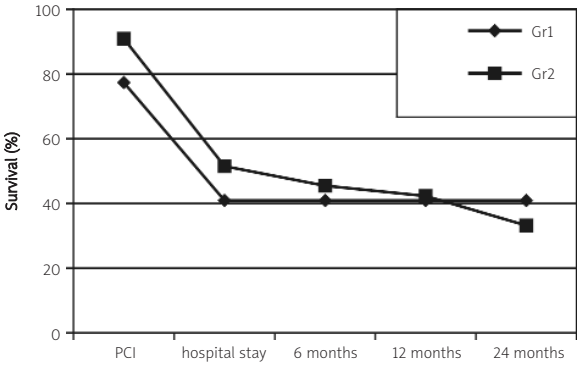

Fig. 1. (15-P)

Methods: 55 patients (age 69.3±10.1 years) with CS treated with primary PCI were included. Group 1 consisted of 22 patients (age 65.7±11.4 years) with critical LMCA stenosis (%DS ≥50) requiring revascularisation. Group 2 comprised 33 patients (age 72.8±8.8 years) with no critical lesions in LMCA (%DS <50). Lesion distribution in coronary arteries, extent and PCI complications and major adverse cardiac events (death, rePCI) were assessed both in-hospital and in minimum of 12-month follow-up.

Results: Gr2 population was significantly older than Gr1 and had lower left ventricular ejection fraction, LV EF (27±7 vs. 38±9%). In long-term follow-up statistically significant higher LV EF function recovery was observed in Gr1 than in Gr2 (47±8 vs. 40±10%). During 6-month observation, 9% of patients in Gr1 and 24% in Gr2 required further revascularisation. Event-free survival is shown below.

Conclusions: Survival analysis of CS patients treated with primary PCI has proven that the presence of LMCA disease worsens outcome.

16-P

Association of a common interleukin-6 promoter haplotype with localization of coronary artery occlusions

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Background: We have previously reported association of a common haplotype of interleukin (IL)-6 with coronary artery occlusions. The aim of this study was to investigate whether this association is similar in all major coronary arteries.

Material and methods: Presence and site of coronary artery occlusion was analysed in 686 patients who were included in the study when referred for elective coronary angiography. Sites of occlusion were categorized in three groups: (I) left anterior descending artery or diagonal branch (LAD/D), (II) left circumflex artery or obtuse marginal branch (LCX/OM), and (III) right coronary artery, posterolateral or posterior descending artery (RCA/RPL/RPD). We analyzed the following genetic variations: IL-1B (+3954)C/T, IL-1B(–511) C/T, IL-1RN(VNTR) as well as haplotypes of IL-6 promoter constituted by (–596)A/G, (–572)G/C, (–373) AnTn and (–174)G/C.

Results: The most prevalent IL-6 haplotype (AG8/12C or Hap*1; n=677, 49.3%) was associated with more frequent coronary

occlusions in a co-dominant fashion in LAD/D arteries (12.3%, 16.0% and 21.4% in non-carriers and carriers of one or both such haplotypes, respectively; p for trend 0.028) and LCX/OM arteries (6.1%, 10.8% and 13.0%, respectively; p for trend 0.042). No such correlation, however, was observed in RCA/RPL/RPD arteries (19.0%, 18.2% and 16.9%, respectively; p for trend 0.623).

Conclusion: Presence of IL-6 Hap*1 is associated with more common occlusions of LAD/D1 and LCX/OM arteries, but not for RCA/RPL/RPD arteries.

17-P

Effect of successful recanalization of CTO on heart rate variability and LV function

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Background: chronic total occlusions (CTO) are technically the most challenging lesions for percutaneous coronary interventions (PCI). Moreover, qualifications for these procedures may be difficult and controversial. Heart rate variability (HRV) and left ventricular (LV) parameters are important prognostic factors in patients with coronary artery disease.

The aim of study was to evaluate the effect of PCI in CTO on heart rate variability (HRV) and LV function.

Material and methods: we included 68 consecutive patients (mean age 58.4±9.2) after PCI of CTO. For every patient before PCI and after 6 months 24-hour ECG with HRV analysis and echocardiography were performed. Patients were divided into two groups: A – successful PCI (51 patients – 75%); group B – unsuccessful PCI (17 patients – 25%). Groups were comparable in terms of age, sex, CCS class, CTO duration and pharmacological treatment.

Results: at baseline there were no significant differences in LVEF and HRV parameters between groups. After 6 months we observed improvement of HRV and LV parameters only in group A.

Conclusions: Successful recanalization of CTO leads after 6 months to significant improvement of HRV parameters and LV contractility.

Table 1. Results for group A (17-P)

	Baseline	p	After 6 months
SANN [ms]	76.90±19.18	<0.001	97.00±22.28
SDANN [ms]	61.00±21.46	<0.001	83.24±30.94
SDNNI [ms]	44.19±10.79	<0.05	50.00±13.59
rMSSD [ms]	22.05±9.54	<0.001	30.19±11.18
pNN50 [%]	4.62±3.01	<0.01	8.05±5.62
LVEF [%]	48.66+10.62	<0.001	53.19+11.38
Wall motion score index (WMSI)	1.59±0.12	<0.01	1.41±0.16

18-P

The increase of chronically occluded coronary artery diameter in long-term follow-up after successful recanalization

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Introduction: Immediately after successful recanalization of chronic total occlusion (CTO) quantitative coronary angiography (QCA) shows vessel diameter increase due to improved blood flow. Vascular size assessed by QCA is not reliable, and the stents implanted directly after recanalization based on the QCA results may be undersized. Only intracoronary ultrasound (ICUS) shows the real vessel diameter.

Methods: We performed 6-month follow-up of a group of 35 patients after ICUS-guided CTO recanalization (TIMI 0-1, duration of occlusion >15 days, mean 4.9±3.6 months), without restenosis. 20 pts after balloon angioplasty (group A) and 15 pts with stents (group B). ICUS was performed immediately after recanalization and inflations of a balloon sized to match the vessel dimension determined on ICUS, as well as 6 months later.

Results: Vascular area (VA) in the distal and proximal reference segment and at the point of occlusion significantly increased during the procedure and at 6 months in group A. In group B there were no changes in VA at the point of occlusion, whereas VA in distal and proximal segments significantly increased.

Conclusions: During recanalization of CTO and at 6 months pts had significantly larger vessel areas on ICUS. This may explain the high rate of restenosis after CTO recanalization – due to underestimation of the true vessel size, which must be taken into account when matching the stent.

Table 1. (18-P)

	Distal VA	VA at point of occlusion	Proximal VA
Group A			
After recanalization [mm^2]	12.81±3.36	14.01±3.57	16.13±3.64
p	<0.001	<0.001	<0.001
After optimization	13.24±4.01	14.65±4.25	16.67±4.35
p	<0.001	<0.001	<0.001
At 6 months [mm^2]	14.41±3.71	15.28±3.48	17.83±4.35
Group B			
After recanalization [mm^2]	12.11±4.59	15.94±4.69	15.39±3.66
p	<0.001	<0.001	<0.001
After optimization	13.46±4.61	16.64±4.55	17.11±3.68
p	<0.001	NS	<0.001
At 6 months [mm^2]	15.54±4.26	16.93±4.1	19.54±2.89

19-P

New epicardial segmentation system related to the standard left ventricular segments – validation by CT and autopsy studies

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Background: The standardized myocardial segmentation recommended 17 myocardial segments which can be assigned to the 3 major coronary arteries. However, the epicardial coronary segmentations have not established the relation between the epicardial branches and the supplied myocardial segments.

Aims: To generate such a correlation between the epicardial coronaries and the left ventricular segments on the basis of coronary angiography and to validate the system by multislice CT and autopsy studies.

Methods: The coronary angiograms of 37 patients were analyzed by a computer program called Holistic Coronary Care. The software registered 23 epicardial coronary segments using the modified Syntax segmentation system in 12 coronary circulation types. The supplied left ventricular segments on the standard 17-segment polar map were rendered to each coronary branch by an appropriate algorithm. The data were compared with 16-slice computed tomography (CT) examination in 11 patients in vivo, and with 26 autopsy studies in cases that died due to cardiac causes 16.1±12.2 days after the cardiac catheterization.

Results: Analysis of the coronary angiograms showed that out of the 17 left ventricular segments 9.5±1.9 (range: 7-11), 3.3±2.4 (range: 2-9) and 4.2±2.5 (range: 0-7) were supplied by the left anterior descending, the left circumflex and the right coronary artery, respectively. In the 11 patients the numbers of myocardial segments associated with the main coronary branches were 10.9±0.16, 2.6±1.6 and 2.7±1.2 on the CT, while in the 26 autopsy studies they were 9±1.9, 3.1±2.4 and 4.9±2.5, respectively. The myocardial segments predicted by invasive coronary angiography overlapped the CT and the autopsy studies in 96%, 82%, 83% and in 93%, 91%, 84%, respectively. A highly significant correlation was found between the angiographic and both the CT and the autopsy determination of the number of left ventricular segments ($r=0.97$ and 0.94, $p<0.001$).

Conclusions: Coronary angiography from multiple projections can determine accurately the supplied left ventricular segments of the 3 main coronary branches.

20-P

Evaluation of the early learning curve of the transradial approach

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Background: The transradial approach for coronary interventions is known to have certain advantages over the femoral approach, especially in patients with peripheral artery disease and those with advanced heart failure. Implementation of the transradial approach is often delayed due to the problem of the learning curve.

Aim: The purpose of our study was to evaluate the initial learning curve of a well-defined group of operators who completed their training in the femoral approach.

Methods: Five operators who completed initial training in the femoral approach (600-700 coronary angiographies performed) and underwent very brief training in the femoral approach (3 instructed cases performed under supervision) were evaluated. Each of them performed up to 50 consecutive transradial approach procedures measuring well defined times of procedural steps. In every procedure a dedicated 6F radial approach cannulation system (Terumo) was used.

Results: Radial artery access was achieved in 96% of pts. In 4% the angiography was abandoned due to radial artery spasm and in an additional 4% due to tortuosity of the radial artery. Median times for the first 5 cases and subsequent cases in the series were: time of artery cannulation 5 min 52'' and 5 min 48''; time of LCA cannulation 4 min 40'' and 2 min 50''; time of RCA cannulation 4 min 05'' and 2 min 29''; total fluoroscopy time 9 min 45'' and 8 min 18''; whereas the total procedure time was 35 min 00'' and 28 min 30''; respectively (n.s.).

Conclusion: When using the dedicated radial approach with vascular sheaths (Terumo), the initial learning curve for the radial approach among trained femoral approach operators does not seem to importantly affect the operator's performance. This observation should encourage wider use of the transradial approach for coronary interventions.

21-P

Four years of experience with transradial coronary angioplasty in ST-segment elevation myocardial infarction

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Background: Percutaneous coronary intervention (PCI) via the radial approach has been shown as an alternative to the femoral approach in emergency interventions as well. This single centre study was performed to compare the outcome and complication rate between transradial (TR) and transfemoral (TF) PCI in STEMI.

Methods: The clinical and angiographic data of patients with STEMI treated by PCI between January 2001 and December 2005 were reviewed and evaluated. Patients with STEMI (n=582) were treated via transradial (TR; n=167) or transfemoral (TF; n=415) approach. Access site crossover, rate of access site complications, major adverse cardiac events (MACE) at 1-month and consumption of angioplasty equipment were evaluated. Selection of the access site was left to the operator's discretion. Patients with rescue PCI and cardiogenic shock were excluded.

Results: From the TR group 156 interventions were performed from the right radial (93%) and 11 (6.5%) procedures from the left radial artery. The indication of left radial access was small radial artery in 7 patients (63%) and negative Allen test in 4 pts. (36%). From the TF group 43 pts. (7.3%) were excluded due to cardiogenic shock and rescue PCI. TF interventions were performed in 357 (96%) pts. from the right femoral and in 15 (n=15, 4%) pts. from the left femoral artery. In the TR group the crossover rate to femoral approach was 8 (n=8, 5.1%). In the TF

group the procedure was accomplished via the radial artery in 3 pts. (n=3, 0.8%) due to severe iliac artery tortuosity (p<0.05). The procedure was angiographically successful in all pts. in the TR group (100%) and in 370 (99.4%) pts. in the TF group (ns.). Major access site complications occurred in 19 pts. (5.1%) in the TF group and none in the TR group (p<0.05). Minor entry site complications were detected in 35 pts. in the TF group (9.4%), and in 6 pts. in the TR group (3.5%) (p<0.05). MACE rate was 7 in the TR group (4.4%) and 41 (11%) in the TF group (p<0.05).

Conclusions: Our results suggest that the TR approach is a safe and effective way to treat STEMI. The lack of site-related complications in the TR group is extremely important in the STEMI patient subset with high risk of bleeding.

22-P

Renal insufficiency is an independent risk factor associated with high mortality in Non-ST-Segment Elevation Acute Coronary Syndromes independent of TIMI Risk Score values

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Background: The TIMI Risk Score scale is widely accepted to predict mortality in Non-ST-Segment Elevation Acute Coronary Syndrome (NSTE ACS). However, other comorbidities not included in this scale may influence outcome independently. The aim of this study was to assess creatinine clearance as an independent risk factor from the TIMI Risk Score in predicting mortality among NSTE ACS patients.

Methods: 29 community hospitals participated in the Registry of Acute Coronary Syndromes in the Krakow region. Data on 870 patients with ACS were gathered. Creatinine clearance (CrCl) was calculated according to the Cockroft-Gault formula. Impaired renal function was defined as CrCl less than 60 ml/min. Patients were divided according to TIMI Risk Score.

Results: 295 patients were assigned to the group with CrCl<60 ml/min, whereas 575 (66%) patients had preserved renal function. Patients with impaired renal function were more often older (79±9 vs. 62.9±9 p<0.001) and women (55% vs. 35% p<0.0001) with past medical history of myocardial infarction (45% vs. 32% p<0.001), diabetes mellitus (30% vs. 22% p=0.01) and stroke (8% vs. 4% p=0.04). Patients with CrCl<60 ml/min received less aggressive pharmacotherapy in terms of thienopyridines (46% vs. 54% p=0.009) and statins (64% vs. 74% p=0.01). In-hospital mortality rate in all TIMI Risk Score groups was significantly higher among patients with renal insufficiency (Table 1). Logistic regression of multivariate analysis revealed one independent risk factors for death CrCl<60 ml/min OR 6.0 (95%CI 1.5-22.5), p=0.03.

Conclusions: The TIMI Risk Score does not include renal insufficiency, which has proven to be a strong and independent risk factor of mortality in NSTE ACS. Creatinine clearance should be taken into consideration prior to planning invasive therapy in NSTE ACS patients.

Table 1. In-hospital mortality in NSTE ACS (22-P)

TIMI Risk Score	CrCL<60 ml/min	CrCL>60 ml/min	P=
0-2	3.6%	0%	<0.001
3-4	4.1%	1.4%	NS
5-7	7.3%	2.4%	0.03

CrCl – creatinine clearance

23-P

Renal insufficiency is a stronger independent risk factor than any other currently known comorbidities for adverse outcome in acute coronary syndromes

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Background: Renal insufficiency has been proven an independent risk factor for adverse outcome in patients with acute coronary syndromes (ACS). The measurement of renal function based on creatinine clearance may become an additional independent risk factor. The aim of this study was to assess the influence of renal insufficiency along with other known comorbidities in ACS patients.

Methods: 29 community hospitals without an on-site invasive facility participated in the Registry of Acute Coronary Syndromes in the Krakow Region. Data on 2471 patients with ACS were gathered. Creatinine clearance (CrCl) was calculated according to the Cockroft-Gault formula. Impaired renal function was defined as CrCl less than 60 ml/min.

Results: 900 (36%) patients were assigned to the group with CrCl<60 ml/min, whereas 1571 patients had preserved renal function. Patients with impaired renal function were more often older (78±8.7 vs. 62.7±10.7 p=0.001) and women (59% vs. 35% p<0.0001) with past medical history of myocardial infarction (39% vs. 28% p<0.001), diabetes mellitus (29% vs. 19% p<0.001) and stroke (8% vs. 5% p<0.001). Patients with CrCl<60 ml/min received less aggressive pharmacotherapy in terms of thienopyridines (31% vs. 43% p<0.05) and statins (48% vs. 80% p<0.001). Transfer for invasive treatment to the PCI centre was more frequent in patients with normal renal function (10% vs. 18% p<0.001). In-hospital mortality for patients remaining for conservative treatment was (8% vs. 3% p<0.001) in renal insufficiency and normal renal function groups respectively. Logistic regression of multivariate analysis revealed independent risk factors for death: CrCl<60 ml/min OR 4.3 (95%CI 1.3-14.3, p=0.02); stroke OR 4.8 (95%CI 1.5-15.7, p=0.009); left ventricular ejection fraction (LVEF) <40% OR 10.6 (95%CI 3.7-30, p<0.0001). Combined independent risk factors of decreased LVEF and creatinine clearance increased the risk of death by 46 times (OR 46 95%CI 7.8-270; p<0.0001).

Conclusions: Over one third of patients with ACS have impaired renal function on admission. These patients are usually older women with a past medical history of coronary artery disease risk factors. Modern antiplatelet and statin therapy as well as an aggressive invasive approach are less frequently used in patients with impaired creatinine clearance. Creatinine clearance turned out to be an independent risk factor for death in ACS and a helpful tool for risk stratification.

24-P

MRI-determined microvascular obstruction and infarct size accurately express reperfusion injury and predict left ventricular function recovery after primary coronary angioplasty

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Background: The aim of this study was to evaluate the relations between MRI-determined microvascular obstruction (MO) and infarct size (IS) and reperfusion injury following primary coronary angioplasty (PCI) in ST-elevation myocardial infarction (STEMI), and secondly to assess the predictive value of IS and MO for left ventricular (LV) function recovery.

Methods: We evaluated 96 consecutive patients (aged 56.8±11.5 y) with STEMI treated with PCI. A 1-year clinical follow--up was recorded. Magnetic resonance imaging (MRI) used as a method for the evaluation of MO and IS was performed 2-4 days after AMI by a 1.5-T MRI scanner. The following indices were calculated: MO/LV and IS/LV. All patients were divided into three groups according to the size of MO: I. no MO (MO/LV=0, n=19), II. small MO (0<MO/LV<0.1, n=46) and III. large MO (MO/LV≥0.1, n=31). Reperfusion injury was assessed by: (i) CK-MB release in the first 48 hours of reperfusion (AUC, Uxh) and (ii) ST-segment elevation resolution (STR) 1 hour after PCI. LV function recovery was evaluated by echocardiography 24 hours and 6 months after PCI on the basis of the changes (Δ) of ejection fraction (EF, %) and end-diastolic volume (EDV, ml).

Results: MO/LV was strongly correlated with STR (p<0.001; r=0.81), moderately correlated with EF (p=0.015; r=–0.44) and not correlated with AUC at all. IS/LV was strongly correlated with AUC (p<0.001; r=0.69) and moderately correlated with EF (p=0.006; r=–0.5). During 6-month follow-up EF increased significantly in group I (Δ=8.9; p=0.04) and did not change significantly in group II (Δ=4.8) and III (Δ=0.9). EDV did not change significantly in group I (Δ=5) and II (Δ=–5) but increased significantly in group III (Δ=34 ml, p=0.02). After 1 year two persons in group II and three persons in group III died (p<0.05 for I-III). A large MO was independently associated with lack of EF improvement and EDV enlargement of >25 ml.

Conclusions: MRI-determined MO and IS were best correlated with routinely used STR and enzymatic injury respectively. Absence of MO was related to mild myocardial injury and implicated good microvascular integrity and preserved LV function. In contrast, large size of MO was associated with major injury as well as with poor LV function recovery.

25-P

Microvascular and Myocardial Injury During STEMI Determines Endogenous Regenerative Potential in a Post-Infarcted Heart

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Background: The SDF1/CXCR4 axis participates in stem cell homing in a postinfarcted myocardium and may express endogenous regenerative potential (ERP). We hypothesized that the size of microvascular obstruction (MO) and infarct area (IA) may influence ERP in patients with ST-segment elevation myocardial infarction (STEMI).

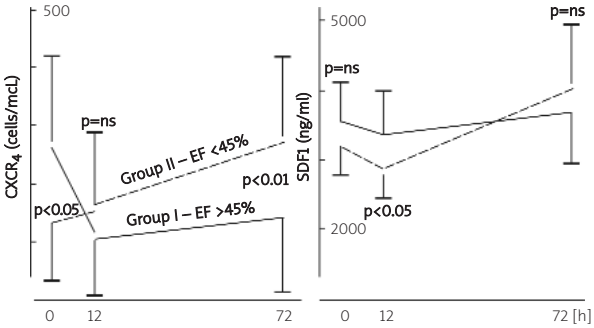

Fig. 1. (25-P)

Methods: We evaluated 36 patients (aged 63.9±10.4) undergoing primary coronary angioplasty (PCI) in anterior STEMI. Magnetic resonance imaging (MRI) used as a method for the evaluation of the MO and IA was performed 3 days after PCI by a 1.5-T MRI scanner. Enzymatic injury was assessed by CK-MB release in the first 48 hours of reperfusion (AUC, Uxh). Ejection fraction (EF, %) and end-diastolic volume (EDV, ml) were evaluated by echocardiography 24 hours after PCI. The concentration of SDF-1 and the number of CD34/CXCR4+ [CXCR4] stem cells were assessed on admission [0] and 12h [12] and 72h [72] after PCI. Two indices were calculated: [Δ1]=[12]-[0] and [Δ2]=[72]-[12].

Results: The size of MO was correlated with SDF1-0 (p=0.002; r=0.69), CXCR4-Δ2 (p=0.001; r=0.63) and SDF1-Δ2 (p=0.002; r=0.68). All patients were divided into two groups according to EF: I. >45% (n=20), II. <45% (n=16). The similar values of IA and AUC in compared groups indicated that there was a larger area of stunned myocardium in group II. It implicated different profiles of CXCR4 and SDF1 release in groups I and II (figure).

Conclusion: The larger the area of MO the greater and more dynamic ERP. In contrast with preserved LV contractility, substantially depressed LV function due to stunned myocardium was associated with a poor baseline ERP which dynamically improved in early reperfusion.

26-P

Baseline platelet reactivity in acute myocardial infarction treated with primary angioplasty – influence on myocardial reperfusion, left ventricular performance and clinical events

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Background: Platelet reactivity is believed to play a key role in the pathophysiology of acute myocardial infarction. Recent experimental research suggests that the process of thrombus formation is not only limited to the epicardial part of the infarct-

Table 1. Prognostic significance of CADP-CT in multivariate analysis and C-index of multivariate models (26-P)

	OR (95% CI)	P	C-index without CADP-CT	C-index with CADP-CT
MBG 0/1	8.1 (2.9-22.6)	<0.0001	0.83	0.89
STR≤50%	11.7 (3.7-36.5)	<0.0001	0.84	0.90
LV remodelling	18.9 (4.7-76)	<0.0001	0.78	0.91
Lack of LV functional recovery (early)	5.5 (2.5-12.4)	<0.0001	0.66	0.75
Lack of LV functional recovery (late)	5.9 (2.4-14.4)	<0.0001	0.64	0.77
Combined clinical outcome	8.3 (2.3-29.8)	0.001	0.85	0.88

C-index – concordance index; LV – left ventricular; MBG – Myocardial Blush Grade; OR – odds ratio; STR – ST-segment resolution

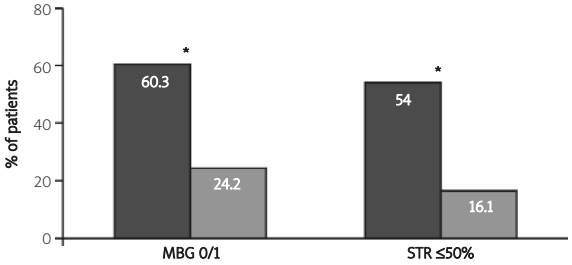

Fig. 1. Prevalence of impaired microvascular reperfusion in HR group (black bars) and LR group (open bars). * P<0.0001. HR, high reactivity; LR, low reactivity; MBG, myocardial blush grade; STR, ST-segment resolution (26-P)

-related artery but may also spread further distally towards the coronary microcirculation Thus, we sought to determine whether platelet reactivity measured with an automated platelet function analyzer (PFA-100) predicts impaired myocardial reperfusion, left ventricular (LV) dysfunction and clinical events in an unselected group of STEMI patients treated with primary angioplasty with stent implantation.

Methods and results: Platelet reactivity (collagen adenosine diphosphate closure time [CADP-CT]) was measured on admission. Subsequent MACE (*death, non-fatal myocardial infarction, stroke, rehospitalization due to heart failure*) were recorded during six-month follow-up. In patients with high platelet reactivity (HR, [CADP-CT ≤90 seconds]) impaired myocardial reperfusion defined as Myocardial Blush Grade 0 or 1 (MBG 0/1) or the absence of ST-segment resolution (STR≤50%) was observed more often compared to those with low reactivity (LR, [CADP-CT>90 seconds]) (60.3% vs. 24.2%, P<0.0001 and 54% vs. 16.1%, P<0.0001, respectively) (Fig. 1). HR patients were more likely to have LV remodelling and sustain adverse clinical event during 6-month observation than LR patients (51.7% vs. 11.7%, P<0.0001 and 34.9% vs. 8.1%, P=0.0004, respectively). In multivariate logistic regression analysis CADP-CT≤90 was an independent predictor of impaired myocardial reperfusion, LV remodelling, lack of LV functional recovery and clinical events (Table 1).

Conclusions: Platelet reactivity is an independent predictor of myocardial reperfusion. Moreover, CADP-CT as a marker of myocardial reflow may provide early prognostic information concerning LV performance and adverse clinical events after STEMI.

27-P

Long-term effect of inadequate platelet function inhibition in the early phase of acute myocardial infarction. A prospective study

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Background: Most data on the antiplatelet effect of aspirin and clopidogrel come from studies in healthy controls or patients undergoing elective coronary stenting in stable CAD. Moreover, there are limited data concerning the simultaneous responses to both aspirin and clopidogrel antiplatelet therapy. This study sought to determine the clinical significance of inadequate platelet function inhibition in the acute phase of ST-segment myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (PCI).

Methods and results: Platelet function was estimated using an automated platelet function analyzer (PFA-100®, Dade Behring). Blood samples for platelet function measurements were obtained by venipuncture on day 3 (48±2 h after PCI). Inadequate platelet function inhibition was defined as CADP-CT<130 sec. and CEPI-CT<193 sec. (inadequate inhibition of platelet activation pathways dependent on ADP and cyclooxygenase-1). Aspirin was

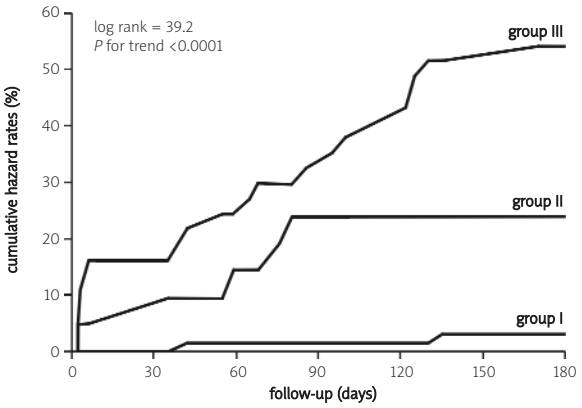

Fig. 1. Kaplan-Meier cumulative hazard rates for combined clinical outcome of cardiovascular death, nonfatal reinfarction, stroke and rehospitalization due to heart failure. Group III vs. I, P<0.0001; III vs. II, P=0.027; II vs. I, P=0.002 (27-P)

Table 1. Prognostic significance of inadequate platelet function inhibition in multivariate analysis (27-P)

	Group II+III vs. I		Group III vs. II	
	OR (95% CI)	P	OR (95% CI)	P
Lack of early LV functional recovery	17.5 (6.3-49.1)	<0.0001	1.3 (0.3-4.6)	0.750
Lack of late LV functional recovery	17.4 (6.4-47.6)	<0.0001	1 (0.3-3.3)	0.963
LV remodelling	14.5 (4.6-45.7)	<0.0001	2.5 (0.7-9.1)	0.156
Combined clinical events	65.7 (10.6-408)	<0.0001	3.6 (0.9-14.8)	0.079

LV – left ventricular; OR – odds ratio

given as 300 mg loading dose before PCI and 75 mg/daily maintenance dose, clopidogrel as 600 mg loading dose during PCI, and 75 mg/daily maintenance dose for 30 days thereafter. Subsequent MACE (*death, non-fatal myocardial infarction, stroke, rehospitalization due to heart failure*) were recorded during six-month follow-up. The study population (n=125) was divided into three following groups – group I (n=67) (with significant inhibition of both platelet activation pathways), group II (n=21) (with significant inhibition of one of the platelet activation pathways), group III (n=37) (without significant inhibition of both pathways). A progressive increase in risk of MACE during six-month follow-up was observed – lowest in group I (2 pts/3%), intermediate in group II (5 pts/23.8%), and highest in group III (20 pts/54.1%; log rank=39.2 P *for trend*<0.0001) (Fig. 1). Partial or no platelet function inhibition (groups II and III) appeared to be a strong and independent predictor of developing LV remodelling or experiencing at least one of the elements of combined clinical outcome during observation period. By multivariate analysis patients with no or only partial platelet inhibition were also less likely to have LV functional improvement by echocardiography at 1 and 6 months as compared with those with inhibited platelets (group I) (Table 1).

Conclusions: Inadequate inhibition of one or both platelet activation pathways in the first days of STEMI is associated with increased risk of long-term MACE. This observation may suggest the need for intensified antiplatelet therapy in the acute phase of STEMI.

Oral presentations

28-O

Unprotected left main PCI registry. Experience of Latvian Centre of Cardiology

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Background: In an effort to evaluate the safety and efficacy of unprotected LM percutaneous interventions we summarized data from our registry.

Purpose: To evaluate:
- acute and mid-term results of PCI on LM lesions,
- benefit and significance of lesion pretreatment with CB (cutting balloon) before stenting,
- 6 months' clinical, angiographic and IVUS outcome.

Methods: This is an ongoing prospective study enrolling 236 consecutive patients who underwent elective daily practice PCI on unprotected LM from January 2002.

Our main strategy for treatment of LM is IVUS guided lesion pretreatment with CB before stenting across the LCX.

All patients were scheduled for 6-month clinical, angiographic and IVUS follow-up.

Results: The procedure was successful in 99% of patients. Mean length of hospital stay was 5.6 days. Lesion pre-treatment with CB was performed in 188 (80%), IVUS guidance in 129 (55%). Two stents were implanted only in 6 cases. 135 (57%) stents were drug eluted (DES). GP IIb/IIIa blockers were used during the procedure in 74% of cases.

Final "kissing balloon" post-dilatation was performed in 21% cases, but in 17% cases a good angiographic result was obtained after opening the stent strut to LCX.

During the hospital period 1 patient (0.4 %) had Q-MI, 6 patients (2.5%) had non- Q MI and 1 re-PCI (0.4%) was performed; one patient died due to sub-acute stent thrombosis. At present 64% of patients have completed 6-month follow-up.

During the follow-up period we observed 13 TLR (8.6%) (11PCI (7.3%) and 2 CABG (1.3%)), 4 (2.6%) deaths (3 (2%) cardiac and 1 (0.7%) non-cardiac) and 6 (4%) asymptomatic restenoses.

Conclusions: Percutaneous coronary interventions on LM are safe with excellent acute gain and low 6-month MACE rate. Preliminary results of IVUS data analysis show extremely low neointimal growth, 21.3±19.7 mm^3, at 6 months.

29-O

Intracoronary low-power laser phototherapy after percutaneous coronary interventions in restenosis prevention

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Background: The purpose of the study was to evaluate the safety and efficacy of intravascular 808nm laser illumination in the prevention of restenosis after percutaneous coronary interventions (PCI).

Methods: We qualified 101 patients to a prospective, randomized study in which a specially designed balloon catheter was used to perform intracoronary laser phototherapy after coronary angioplasty (PCI). Illumination power of 100 mW and energy 9 J/cm^2 was used during the endovascular phototherapy

Table 1. (29-O)

Laser	Control		
Before treatment			
Referential diameter (mm)	3.20±0.44	3.11±0.43	NS
MLD (mm)	0.83±0.45	0.85±0.42	NS
Diameter stenosis (%)	74.1±14.0	72.4±12.8	NS
Lesion length (mm)	13.6±5.0	12.0±3.1	NS
Stent implantation (%)	73	69	NS
Artery			NS
LAD	29	23	
RCA	12	13	
Cx	11	13	
After treatment			
MLD (mm)	2.71±0.38	2.52±0.37	NS
Diameter stenosis (%)	15.3±12.2	19.0±11.9	NS
6-month follow-up			
MLD (mm)	2.18±0.70	1.76±0.74	p<0.05
Diameter stenosis (%)	32.0±22.1	43.5±23.6	p<0.05
Restenosis rate (%)	15.0	32.4	NS
Late loss (mm)	0.53±0.18	0.76±0.16	p<0.01

Table 1. Preliminary IVUS data (procedural n=129, follow-up n=115) (28-O)

	MLD (mm)	MSA (mm^2)	Lumen volume (mm^3)
Pre-intervention	1.8±0.4	2.9±1.2	102.1±43.3
Post intervention	3.3±0.3*	8.9±1.5**	191.9±66.8
At 6 months f-up	3.0±0.4*	7.4±2.1**	158.1±65.6
Late loss	0.4±0.3	1.6±1.4	22.3±19.9

Neointimal volume (mm^3) at follow-up was 21.3±19.7.
** p<0.01; ** p<0.01*

in 52 patients. The control group consisted of 49 patients. All patients were monitored for major adverse cardiac events (MACE) – death, Q and non-Q wave myocardial infarction, coronary artery bypass grafting (CABG), target vessel revascularization (TVR) – during 6 months' follow-up. 6-month control angiography was performed to assess the influence of the therapy on neointimal proliferation, measured by late lumen loss and restenosis rate.

Results: Angiographic follow-up was performed in all patients. Late loss in the treated group was 0.53±0.18 mm, in the control group 0.76±0.16 mm (p<0.01). Restenosis rate was 15% in the treated group and 32.4% in the control one (NS). MACE rate was 7.6% in the laser group (3 TVR and 1 non-Q myocardial infarction) and 14.2% (5 TVR, 1 non-Q myocardial infarction, 1 CABG) in the control group (NS).

Conclusions: Laser phototherapy gives very promising results in restenosis prevention with significantly lower late lumen loss than in the control group. The treatment method is safe with low MACE rate during follow-up.

30-O

Comparison of angiography, IVUS, coronary flow reserve measurement by TEE in angiographically borderline lesions

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Background: The angiographic assessment of proximal left anterior descending artery (LAD) stenosis can be difficult for borderline lesions in the 30 to 60% range at visual assessment. Intravascular ultrasound (IVUS) and transesophageal coronary flow reserve measurement (TEE-CFR) could offer an alternative diagnostic choice. Our study was designed to evaluate the potential correlations between IVUS, quantitative coronary angiography (QCA) and TEE-CFR measurement in assessing angiographically borderline LAD lesions.

Methods: Forty-two patients (mean age 62±9 years, 25 males) with lesions referred for IVUS examination of proximal LAD entered into the study. IVUS measurements were taken using a 40 MHz Atlantis Plus (Boston Sci.) IVUS catheter. Standard IVUS and routine QCA measurements were assessed before the intervention. During TEE the standard dipyridamole stress protocol (0.56 dipyridamole over 4 minutes) was employed. Coronary flow reserve was calculated as the ratio of the peak/resting diastolic velocities measured in the left anterior descending coronary artery. Minimal lumen cross-sectional area (LCSA), minimum lumen diameter (MLD) assessed by IVUS, stenosis diameter assessed by QCA and CFR measured by TEE were compared.

Results: Nine patients (21.4%) were excluded from the study due to significant left main or ostial LAD lesions. Average LCSA assessed by IVUS was 3.66±1.38 mm^2 for proximal LAD. Baseline mean Doppler velocity in the proximal LAD was 54.79±21.44 cm/s, and increased to 94.56±25.86. Average CFR measured by TEE was 1.90±0.42. Average stenosis diameter measured by QCA was 37.92±10.43%. IVUS-derived LCSA was unrelated to angiography-derived stenosis (r=0.15 p=ns). TEE-CFR was better correlated with IVUS-derived LCSA (r=0.488, p<0.05) than with angiographically-derived stenosis (r=0.12, p=ns).

In conclusion, angiographic and intravascular ultrasound-based assessment of coronary stenoses can be substantially unrelated in angiographically borderline proximal LAD disease. TEE-CFR provides an alternative physiological approach, better related to intravascular than to angiographic appearance of the stenosis.

31-O

Association between atheromatous plaque necrotic core content and clinical presentation

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Background: Histopathological evidence indicates that high necrotic core content is one of the main risk factors of coronary atheromatous plaque destabilisation leading to acute coronary syndrome (ACS). Classic diagnostic tools such as angiography and intravascular ultrasonography (IVUS) are not able to identify the particular tissue types that constitute the atheromatous plaque. Recent introduction of IVUS – Virtual Histology (IVUS VH) is an attempt to overcome this limitation. IVUS VH can recognize the following tissue types within the atheromatous plaque: fibrous, fibro-fatty, necrotic core, and calcium.

Aim: To determine whether coronary artery disease (CAD) clinical presentation is associated with atheromatous plaque morphology by IVUS VH.

Patients and methods: Fifty-one patients (33 men) were included in the study. Twenty-one patients with stable CAD and no history of an ACS within the previous 12 months constituted Group A. Fourteen patients with recent (>2 weeks but <3 months) ACS constituted Group B. Group C included 16 patients in the acute phase of ACS (chest pain at rest within 48 hours). The analysis involved plaques that were non-occlusive for the IVUS probe and it excluded those with a thrombotic component by conventional IVUS and/or angiography. Data were expressed as percentage of a particular tissue type within the atheromatous plaque.

Results: Final analysis involved 68 plaques: 25 in stable CAD, 19 in recent ACS, and 24 in the acute phase of ACS. We found (Fig. 1) a significant difference in the necrotic core content by the clinical

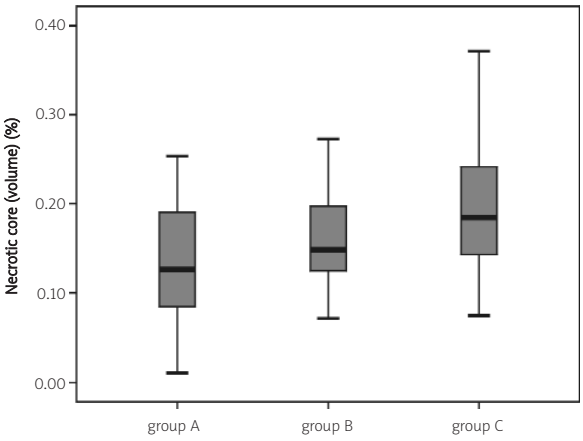

Fig. 1. Coronary atheromatous plaque necrotic core content by clinical presentation (ANOVA; p<0.05) (31-O)

presentation (Group A 13.7±7.2% vs. Group B 15.7±5.7% vs. Group C 20.0±7.5%, p<0.05, ANOVA).

Conclusions: 1. Atheromatous plaque necrotic core content by IVUS VH is associated with the clinical presentation. 2. The highest necrotic core content is seen in the acute phase of ACS. 3. Patients with recent ACS have a significantly smaller necrotic core content than those in the acute phase of ACS; this may be associated with successful aggressive pharmacotherapy leading to plaque stabilization.

32-O

Does stent coating with lactate-based biodegradable polymer affect stent deliverability? Direct randomized comparison of DES and BMS using the same stent platform

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Background: There is certain experimental and clinical evidence indicating that covering of bare metal stents (BMS) with drug-eluting polymers to produce drug-eluting stents (DES) results in increased stent stiffness and modifies mechanical properties of the stent platform. In addition, it may be speculated that the mechanical performance of DES, as compared to BMS, may be related to the type of polymer used to cover the stent.

Aim: We aimed to evaluate the deliverability of DES with a lactate-based biodegradable polymer and BMS in patients with stable coronary artery disease in a prospective randomized study.

Methods: 111 consecutive patients (age: 36 to 77, mean 58.8 years) scheduled for routine angioplasty due to stable coronary disease were randomized to receive BMS (Chopin II, Balton) or paclitaxel-eluting stent (Chopin Luc, Balton) using the same metal platform. Only patients scheduled for angioplasty in the direct implantation technique of a single stent were randomized. The exclusion criteria included pts >80 years, multivessel disease and reference diameter of the target vessel >3.5 mm.

Results: In the BMS group (n=51; 35 males and 16 females) the mean diameter of implanted stents was 3.09±0.40 and the mean length was 11.37±2.80, whereas in the DES group (n=60; 38 males and 22 females) the mean stent sizes were 3.02±0.34 and 17.90±7.38 mm, respectively (p>0.05 for length). The groups did not significantly differ regarding the frequency of stent implantation to particular vessels: the ratio LAD/Cx/RCA was 24/8/16 in the BMS group and 27/7/24 in the DES group. The direct stenting technique was approached and failed leading to the implantation of stents after predilatation in 5 pts in the BMS group and 6 pts in the DES group, respectively. Failure of stent implantation and subsequent implantation of another stent type was not observed in BMS pts and was in 1 DES group patient (n.s.).

Conclusion: Although stent covering with lactate-based drug-eluting polymer may increase its stiffness, it does not affect its deliverability in patients with stable coronary disease.

Posters

33-P

Differences in mechanism of lumen gain and therefore acute results of BMS ISR treatment with either *high*-pressure plain balloon predilatation or direct DES stenting. Volumetric intravascular ultrasound study

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Background: Recurrent renarrowing after DES implantation for BMS ISR treatment is mostly the result of DES underexpansion. Whether the mechanisms and thus acute results of BMS ISR treatment differ between direct DES stenting (DDES) and stenting preceded with *high*-pressure plain balloon predilatation (PDES) is unknown. Serial pre- and postprocedural IVUS examinations were used for comparison of acute results of BMS ISR treatment with DDES vs. PDES.

Methods: Strategy of DES implantation was operator dependent. Procedure was angiography guided. Lumen cross-sectional area (CSA) and BMS CSA were measured in the preprocedural IVUS at 1-mm step along the ISR length and 10-mm long references. Respective CSAs of BMS and DES were assessed after angioplasty. Then, volume (mm^3/mm) of the *stent-stent* gap representing the amount of neointima trapped between the stents' (BMS and DES) struts was calculated.

Results: Of all 61 ISR lesions treated between Dec 2004 and May 2006 serial IVUS was performed in 52 consecutive lesions (85%). Baseline angiographic and IVUS characteristics as well as procedural data were similar for DDES and PDES. Final in-DES lumen was larger in the PDES than the DDES group (7.5±1.6 mm^3/mm vs. 6.5±2.0 mm^3/mm, p=0.025 respectively). Minimal DES CSA (DES MA) and DES expansion index were bigger in the PDES (n=23, 44%) than in the DDES group (6.5±1.6 mm^2 vs. 5.5±2.0 mm^2, p=0.013 and 106±50% vs. 81±28%, p=0.030, respectively). Predilatation was equally superior for restenosis in initially underexpanded (n=9, 17%) and adequately deployed stents (p=0.016 and p=0.039, respectively). Whereas significant DES underexpansion was documented in only 1 lesion (4.3%) from PDES, DES MA of <5.0 mm^2 was noted in 58.6% (n=17) of targets from the DDES group (p<0.001). Whereas dimension of the *stent-stent* gap was the same in both groups, BMS volume increased more after PDES than following DDES (2.7±1.3 mm^3/mm vs. 1.2±1.5 mm^3/mm, p<0.001, respectively).

Conclusions: *High*-pressure plain balloon predilatation preceding DES implantation for BMS ISR treatment results in bigger acute lumen gain and better DES expansion as compared to direct DES stenting, regardless of the initial BMS expansion and due to greater expansion of the initially implanted stent.

34-P

Early treatment with simvastatin in patients with acute myocardial infarction treated with primary PCI to reduce the levels of multiple inflammatory markers in 6-month follow-up. FLAME randomized clinical trial

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Elevated levels of inflammatory markers have prognostic value in patients with acute coronary syndromes. The use of statins was shown to inhibit the inflammatory response and improve outcome in ACS.

The aim of the study: 1) evaluation of the influence of simvastatin administered early (<12 hours) after AMI on plasma levels of IL-18, IL-10, MCP-1, soluble CD40 ligand, TNF-alpha, hsCRP and activity of cathepsin G in 6-month follow-up; 2) to compare two doses of simvastatin (20 and 40 mg/d); 3) to determine whether the effect of simvastatin on inflammatory markers is dependent on reduction of LDL-C levels.

Patients and methods: 82 patients with STEMI admitted for primary PCI <12 hours after symptoms onset, not treated previously with statins, were enrolled. Patients were randomized to receive either 20 mg (n=45) or 40 mg (n=37) of simvastatin daily. Cytokine levels were measured on admission and after 1 and 6 months using high-sensitivity ELISA.

Results: AMI is associated with significant increase of hsCRP, IL-18, MCP-1, sCD40L, TNF-alpha and cathepsin G and low levels of IL-10 in comparison to patients with stable CAD and healthy controls. The baseline number of monocytes was significantly positively correlated with TNF-alpha levels, whereas MCP-1 and TNF-alpha were positively correlated with leukocyte count and fibrinogen levels.

Simvastatin Tx reduced the hsCRP levels after 1 and 6 mo., and higher dose [40 mg daily] was more effective than 20 mg daily in reducing hsCRP levels.

Both treatment groups had significant reduction of IL-10, sCD40L, IL-18, MCP-1 and cathepsin G after 1 and 6 mo. and TNF-alpha after 6 mo. in comparison to baseline. 40 mg daily dose was associated with more marked reduction of sCD40L, IL-10 levels at 1 and 6 mo., IL-18 and cathepsin G at 1 mo. and TNF-alpha at 6 mo. in comparison to lower dose of 20 mg daily. Reduction of inflammatory markers was not dependent on lowering of LDL levels.

Conclusion: Simvastatin treatment initiated within 12 hours after symptom onset in AMI significantly reduces elevated plasma levels of inflammatory cytokines and activity of cathepsin G in 6-month follow-up independently of reduction of LDL-cholesterol. Higher dose of simvastatin is more effective in reducing inflammatory markers than lower dose.

35-P

Long-term outcome in patients with heart failure and complex ventricular arrythmias dependent on desmin expression in cardiomyocytes

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Introduction: Desmin is a key cytoskeletal protein appearing both in cardiomyocytes and impulse conducting cells. The disturbance of its accumulation leads to progression of heart failure (HF).

Aim: to determine the impact of desmin expression in cardiomyocytes on outcome in patients with heart failure and complex ventricular arrythmias.

Methods: Diagnostic muscle biopsy (DMB) was performed in 133 patients (86.7% men, age 49.4±14.1 years) with clinical symptoms of heart failure and left ventricular ejection fraction (EF) <45%. Four bioptates of heart muscle were drawn from the right ventricle. The distribution of desmin in cardiomyocytes (norm, excess, deficit) was assessed using immunohistochemical methods. Patients were divided into two groups: Gr1 – 45 patients with complex arrythmias (VF, VT, nsVT); Gr2 – 88 patients without them (assessed by Holter method). In echocardiography the transversal diameter of the left ventricle in diastole (LVDD) and EF was examined. Average time of observation was 29.4±20.8 (min 3 – max 70 months).

Results: Data are presented in the table below.

Conclusions: Our analysis proves that in patients with HF, incorrect desmin expression, mainly its deficit in cardiomyocytes, is a better predictor of long-term outcome than the presence of complex ventricular arrythmias.

Table 1. (35-P)

		Norm	Excess	Deficit	All
Group I	Patients (n/%)	12/27%	22/49 %	11/24 %	45
	LVDD (mm)	65.7±12.1*	68.3±8.7*	74.4±11.5*	69.5±10.8#
	EF (%)	30.6±15.2^	27.5±9.5^	27.2±8.3^	28.4±11&
	Death	0	1 (4.5%)	2 (18.2%)	3 (7%)
Group II	Patients (n/%)	38/43%	30/34%	20/23%	88
	LVDD (mm)	59.9±8.5*	64.4±10.9*	65.9±11.8*	63.4±10.4#
	EF (%)	36.1±12.3^	30.6±10.9^	29.4±8.6^	32±10.6&
	Death	1 (2.6%)	2 (6.6%)	5 (25%)	8 (9%)

** p<0.05; ^ p>0.05; # p<0.002; & p<0.03*

36-P

Expression of desmin in samples taken from different parts of right ventricle of patients with heart failure

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Background: Desmin abnormalities are observed in cardiomyocytes of patients with heart failure (HF). Immunohistochemical (IH) assay detects abnormal desmin accumulation and differentiates these abnormalities into normal, high and low expression level. The level of desmin in cardiomyocytes has a direct impact on long-term prognosis of HF patients.

Aim: Evaluation of desmin abnormality distribution in samples from different parts of the right ventricle (RV).

Material and methods: The study population consisted of 28 patients (86.7% males, mean age 49.4±14.1 years) with clinical symptoms of HF (LVEF <45%). Patients underwent diagnostic myocardial biopsy for verification of diagnosis. Samples were taken from the right ventricle (apex, free wall of RV and interventricular myocardial septum – IMS). Immunohistochemical studies of the myocardial specimens included immunostaining with antibodies to desmin.

Results: Abnormal accumulation of desmin (high and low expression) was observed more frequently in the free wall of RV than in the apex (p=0.09) and interventricular myocardial septum (p=0.16) and it was found statistically more often (p=0.009) than normal in the free wall of RV.

Conclusions: The most intensive desmin abnormalities are present in the free wall of RV and it might be connected with overloading of the thin wall of RV.

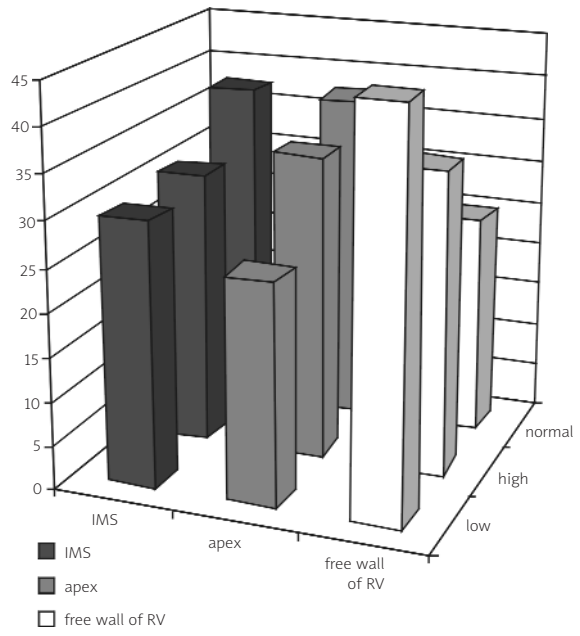

Fig. 1. (36-P)

37-P

Relationship between indices of arterial stiffness, blood pressure, blood viscosity and shear stress

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Purpose: to answer the question whether arterial stiffness is more dependent on blood pressure or rheological factors, i.e. blood viscosity and shear stress.

Methods: In a group of 10 pts (6 men, 4 women; mean age 60.8±9.8 yrs with severe arterial hypertension and angiographically confirmed three-vessel CAD, with elevated indices of arterial stiffness: carotid-femoral pulse wave velocity (aoPWV) and peripheral (pAI) and aortic (aAI) augmentation indices measured by Complior® and SphygmoCor, respectively) we evaluated arterial ($a\eta$) and venous ($v\eta$) whole blood viscosity (Brookfield DV II+Pro viscometer) and calculated shear stress (τ) from blood viscosity ascending aorta diameter and aortic flow velocity measured ultrasonographically using modified Poiseuille formula.

Results: In the selected group peripheral pSBP/pDBP and pPP averaged 131±16/71±11 mmHg and 57.6±17 mmHg while aortic (measured by SphygmoCor) aSBP/aDBP and aPP were 118±15/71±12 mmHg and 47±17 mmHg. aoPWV=10.4±2.2 m/s; pAI=85±12%; aAI=27±9%. Arterial blood viscosity was lower than venous $a\eta$=4.6±1.6 vs. $v\eta$=6.0±2.1 cP; p<0.0001. Calculated value of shear stress for ascending aorta achieved τ=70.6±30 dyne/cm^2. In stepwise regression aoPWV depended on age only. After exclusion of age aoPWV depended on $a\eta$ (regression coefficient [β] –3.34; p=0.0039) and τ (β=0.16; p=0.05) and did not depend on pPP or aPP. In contrast pAI showed dependency on both pPP (β=1.67; p=0.005) and aPP (β=1.87; p=0.05) as well as $a\eta$ (β=–12.3; p=0.001) and τ (β=0.46; p=0.002).

Conclusions: Arterial blood viscosity is significantly lower than venous; thus for calculation of shear stress in the arteries only arterial blood viscosity should be used. The influence of shear stress and blood viscosity on PWV was more pronounced than blood pressure value. Indices derived from SphygmoCor depend similarly on pressure and rheology.

38-P

Influence of smoking cessation on clinical status and outcome in patients who underwent percutaneous transluminal angioplasty

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Background: Smoking is an important social and health issue. It increases mortality rate in the population both by cardiovascular and nonvascular causes. The aim of the study was to investigate the influence of smoking on clinical status and outcome in patients who underwent percutaneous transluminal angioplasty (PTA).

Methods: 91 patients who underwent PTA intervention between January 2003 and October 2005, who stopped smoking after PTA, were included in the study. Patients were divided into two groups: those who smoked before (S) and non-smokers (Non-S).

Results: There were 66 (72.5%) patients in group S and 25 (27.5%) in group Non-S. There were 83.3% men in S and 80%

in Non-S groups respectively. Patients in both groups had similar past medical history of: myocardial infarction (39.4% vs. 44%, p=NS), arterial hypertension (81.8% vs. 84%, p=NS) and diabetes mellitus (18.2% vs. 24%, p=NS). In group S dyslipidaemia (78.8% vs. 68%, p=NS), stroke (34.8% vs. 24%, p=NS) and previous PTA (18.2% vs. 12%, p=NS) were insignificantly more frequent. There were no significant differences in the pharmacological treatment regimens between groups. During the 12-month observation neither death nor myocardial infarction were noticed in the Non-S group. There was no need for repeated PTA or percutaneous coronary intervention among non-smokers, whereas in group S there were 2 (3%) deaths, 3 (4.5%) myocardial infarctions, 9 (13.6%) repeated PTAs and 5 (7.6%) PCIs (composite end point: 0% vs. 28.7%, p=0.006).

Conclusions: Cessation of smoking after peripheral PTA does not improve long-term outcome in patients who were previous smokers. These patients experience more vascular complications during one-year follow-up than patients who have never smoked.

39-P

Disseminated atherosclerosis is associated with high mortality in acute coronary syndrome patients and should be referred for invasive treatment

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Background: Acute Coronary Syndromes (ACS) are associated with increased mortality. Concomitant peripheral artery disease is often present in patients with ACS. The aim was to assess the prevalence and outcome of patients with disseminated atherosclerotic disease in a cohort of consecutive ACS patients.

Methods: 29 community hospitals without an on-site invasive facility but with an established referral pattern with a Percutaneous Coronary Intervention (PCI) centre participated in the Registry of Acute Coronary Syndromes in the Krakow Region in 2005 and 2006. Patients were stratified according to the presence of coronary artery disease (CAD), CAD and peripheral artery disease (CAD+PAD), CAD with PAD and cerebrovascular disease (CAD+PAD+CVD) in the presence of ACS. PAD and CVD were confirmed by either clinical symptoms (claudication, stroke) or imaging techniques (ultrasonography, angioCT).

Results: Of 1313 patients with ACS, 1141 (85%) were in group CAD, 78 (6.8%) in group CAD+PAD, 79 (6.9%) were assigned to CAD+CVD, whereas 15 (1.3%) patients had CAD+PAD+CVD. There were no differences in the final diagnosis of ST-Elevation Myocardial Infarction (STEMI) (25% vs. 22% vs. 33% vs. 20%; NS), Non-ST--Elevation Myocardial Infarction (28% vs. 40% vs. 34% vs. 33%; NS) and Unstable Angina (47% vs. 38% vs. 33% vs. 47%; NS) among the groups. The groups differed substantially in demographic features such as age (67±12 vs. 71±10 vs. 72±10 vs. 74±10; p=0.008) and past medical history of myocardial infarction (31% vs. 44% vs. 35% vs. 67%; p=0.003), heart failure (18% vs. 33% vs. 27% vs. 53%; p<0.0001), diabetes mellitus (19% vs. 28% vs. 32% vs. 27%; p=0.016) and renal insufficiency (4% vs. 9% vs. 13% vs. 20%; p<0.0001). Antiplatelet, antithrombotic and statin treatment was similar in each group. Transfer to a PCI centre for invasive diagnostic and revascularization decreased with diffuse disease (25% vs. 13% vs. 15% vs. 13%; p=0.014). In-hospital mortality for patients remaining for conservative treatment were in non-PCI centres was (8.2% vs. 8.8% vs. 11.9% vs. 30.8%; p=0.044). Patients with STEMI and concomitant peripheral disease were less often transferred to PCI centres (45% vs. 24% vs. 25% vs. 0%; p=0.022).

Conclusions: Patients with ACS and concomitant atherosclerosis in peripheral arteries are less likely to be transferred to PCI centres for invasive treatment. The in-hospital mortality for patients remaining for conservative treatment increases with diffuse disease. It is this group that would benefit most from revascularization techniques. A more aggressive complex invasive treatment strategy should be applied to patients with peripheral and coronary artery disease.

40-P

Physiological endothelium-targeting perfusion technique for transcoronary stem cell delivery in a pilot comparison with 'conventional' OTW-balloon coronary occlusions

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Rationale: Efficient delivery of bone marrow stem cells (BMSC) to the recent infarct zone is a pre-requisite of any effect of BMSC therapy. Recent evidence shows poor efficacy of the widely adopted over-the-wire balloon (OTW) coronary occlusive catheter (myocardial retention of only ca. 2-5% infused BMSC). This may be due – at least in part – to the waterfall effect of OTW inflation/deflation with a reactive ≥2-fold-above-normal coronary flow velocity.

Aim: To evaluate the safety, feasibility and tolerability of perfusion-infusion BMSC delivery with facilitation of undisturbed cell rolling in contact with coronary endothelium (C in Fig. 1; essential step for 'downstream' transmigration).

Methods: We randomly assigned 11 pts (age 41-72 years) with first anterior AMI treated with PTCA+stent and LVEF ≤45% at 6-9 days to conventional OTW in-stent occlusive BMSC delivery or cell infusion via perfusion catheter (A in Fig. 1) with multiple side holes (B in Fig. 1) (SH-PC).

Results: OTW and SH-PC patients had similar infarct size (mean peak CK 4361 vs. 4717 U/L), LVEF (41.2% vs. 40.3%), infused cell number (2.99x10/8 range 0.61-7.48x10/8 vs. 3.28x10/8 range 1.64-4.39x10/8), CD 34+ number (1.79x10/6 vs. 1.62x10/6), cell viability (91.5% vs. 91.8%; viability loss with transcatheter passage of 0.8% vs. 0.6%) and clonogenicity (CFU assay). None of SH-PC but 67% of OTW pts had ST-segment elevation with chest pain (and nsVT in one) that limited OTW occlusion tolerance to 50-110 sec. At 6 months ΔEF in the OTW vs. SH-PC pts was +4.2% (2-6) vs. +8.8% (5-16) by MRI and +4.8 (2-7) vs. +13.8% (2-24) by SPECT (pilot, not powered for stats).

Conclusions: Transcoronary transplantation of BMSC with the SH-PC technique is feasible and safe. Further research is needed to determine whether putative advantages of physiological cell delivery translate into enhanced BMSC homing.

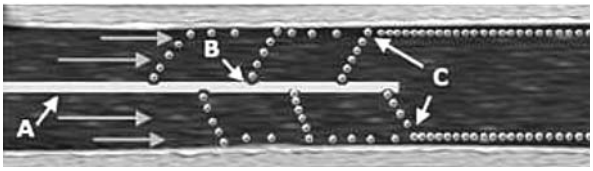

Fig. 1. (40-P)