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Oral presentations: Session *PCI in ACS*

O-1

Can we improve the accuracy of risk assessment in patients with non ST-segment elevation acute coronary syndromes?

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Background: In patients (pts) with NSTE ACS the long-term risk of death and MI is estimated by scores based on noninvasive variables. Much less is known about the relation between the degree of atherosclerotic burden in the coronary tree and the long-term risk of pts with NSTE ACS. It might be suggested that the predictive accuracy of noninvasive scores could be strengthened if clinical data were combined with findings derived from the coronary angiogram.

Methods: The study group consisted of 112 consecutive pts (age 62±10; 76 men) treated invasively for NSTE ACS. 27 pts (24%) had a history of diabetes mellitus (DM) and 37 pts (33%) a history myocardial infarction (MI). The coronary angiograms prior to the intervention were evaluated blindly for the four angiographic scores: (1) Stenosis score was derived from the assessment of the degree of stenosis in 15 segments of the coronary tree. (2) Vessel score showing the number of main vessels stenosed >70%. (3) Extensity score assessed the proportion of lumen length irregularity in 15 segments. (4) Complexity score described the number of complex plaques. The angiographic analysis also focused on the flow, presence of thrombus and collateral supply prior to the intervention (according to TIMI) and the size of the culprit lesion vessel. The intervention was successful in 95% of cases. All pts were followed-up for 6 to 24 months for the occurrence of death or MI.

Results: In the follow-up period the composite end point of death or MI occurred in 20 pts (17%). In order to indicate the risk predictors from the group of clinical and angiographic variables (age, sex, history of DM or MI, four angiographic scores and culprit lesion vessel characterization) the forwarded logistic regression analysis was performed. The independent angiographic predictors of the composite end point were the stenosis score (OR 1.13; 95%CI 1.05-1.2; p<0.001) and the size of the vessel (OR 0.08; 95%CI 0.01-0.6; p=0.02).

Conclusion: Our preliminary data show that an attempt to add angiographic variables in the risk assessment scoring systems in order to strengthen their predictive accuracy is justified.

O-2

The presence of high risk features of the coronary plaque correlates between the coronary arteries of the same patients and can be predicted by the plasma levels of matrix metalloproteinase enzymes family

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Background: There are conflicting data regarding the extent to which plaque features related to its vulnerability develop on a systemic basis or rather depend on local factors. Matrix metalloproteinase enzymes (MMP) family are involved in the development of the high-risk plaque.

This study was designed to determine intra-patient distribution of the high-risk coronary plaque related features (calcification, plaque burden and remodeling) and its relation to the plasma levels of metalloproteinase family enzymes in stable angina patients.

Methods: A total of 2542 coronary artery slices measured at the 1-mm increments within 140 vessel segments not subjected to prior intervention, within 2 major coronary arteries in each of 36 patients (mean age 58±10y, 32 men) were assessed by IVUS.

The remodeling index at the minimal lumen site, and mean calcium arc (°), vessel and lumen areas (mm^2) were ascertained for each of the arteries. The remodeling index was calculated as the ratio of vessel areas at the minimal lumen site to the mean of the proximal and distal references. Positive remodeling was defined as remodeling index more than 1.05. The plaque burden was calculated as the ratio of plaque and media to the vessel area. Furthermore, the arteries were dichotomized about the medians for the mean plaque burden and mean coronary calcium arc. To check whether the presence of calcification, plaque burden and remodeling in one coronary artery was associated with their presence in other coronary artery of the same individual, the intraclass correlation coefficient analysis was used. Plasma levels of MMP -2, -3, -7, -9, and the tissue inhibitor of MMP (TIMP) -1 and -2 were measured in all patients prior to the procedure.

Results: The mean plaque burden and remodeling index were concordant between the two examined arteries, and coronary calcium arc tended to be concordant (intraclass correlation

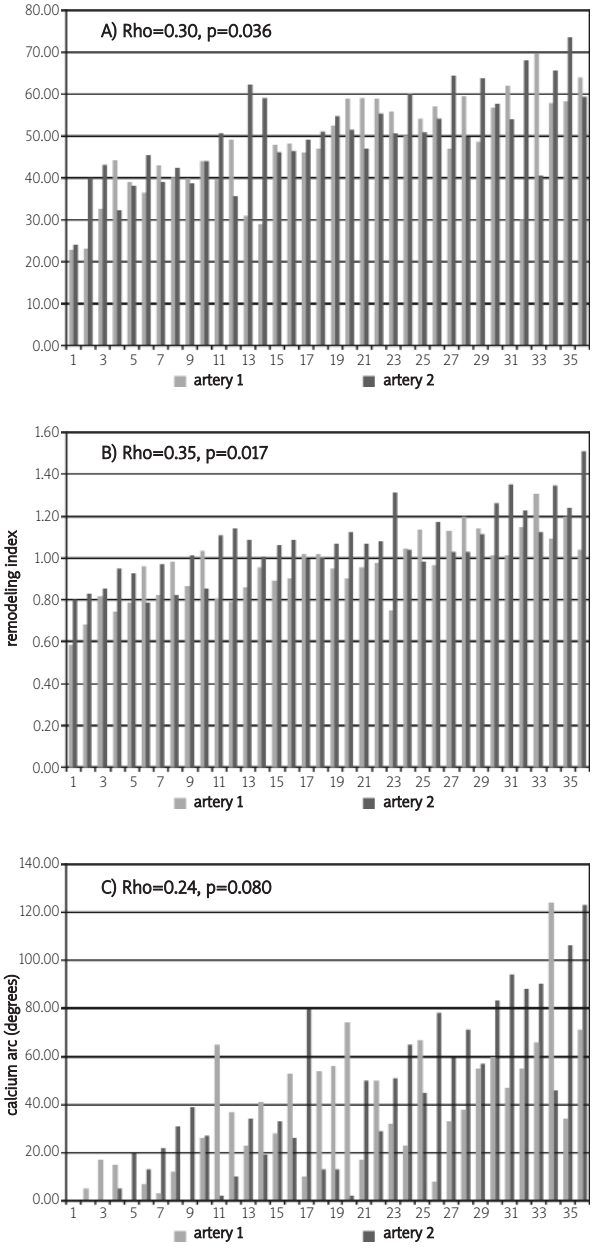

Fig. 1. Plaque burden (A), remodeling index (B) and coronary calcium arc (C) in two arteries of all the examined patients

coefficient rho=0.30, p=0.036; rho=0.35, p=0.017 and rho=0.24, p=0.080, respectively, fig. 1).

TIMP-1 levels were higher for patients with at least one artery higher remodeling index 154.1±48.6 vs. 120.1±34.8, Mann-Whitney U-test p=0.036) as were for patients with at least one artery higher plaque burden (153.6±45.4 vs. 107.6±27.8, Mann-Whitney U-test p=0.006). MMP-2 levels were higher for patients with at least one higher calcium arc (208.0±46.5 vs. 165.6±33.0, Mann-Whitney U-test p=0.018).

In multivariate regression analysis controlling for baseline clinical data and statin treatment TIMP-1 levels remained independent predictors of the presence of at least one artery higher remodeling index (OR 1.032; 95%CI: 1.004-1.061) and at least one artery higher plaque burden (OR 1.0339; 95%CI: 1.006-1.062). Whereas, MMP-2 levels remained independent predictors of the presence of at least one higher calcium arc (OR 1.034; 95%CI: 1.001-1.069).

Conclusions: The coronary remodeling and plaque burden – plaque features associated with its vulnerability – are evenly distributed among human coronary arteries. Presence of higher risk plaque characteristics may be predicted by the plasma levels of the MMP enzymes family.

O-3

The mean platelet volume – a predictor of impaired angiographic reperfusion and long-term mortality in ST-segment elevation myocardial infarction

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Background: It has been shown that platelet size, measured as the mean platelet volume (MPV), correlates with their reactivity and is predictive of an unfavorable outcome among survivors of ST-segment elevation myocardial infarction (STEMI) when measured after the index event. We sought to determine the prognostic value of admission MPV for angiographic reperfusion and the 6-month mortality in patients with STEMI treated with primary angioplasty (PCI).

Methods: Blood samples for MPV estimation, obtained on admission in 388 consecutive patients presenting with STEMI were measured before the primary PCI. No-reflow was defined as TIMI

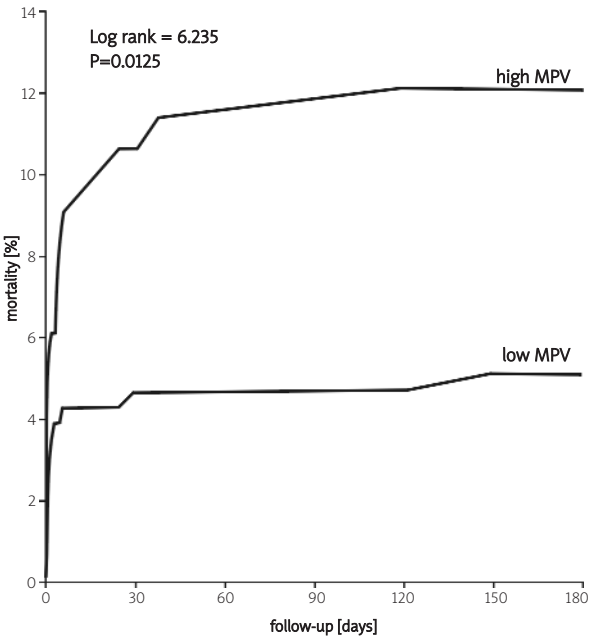

Fig. 1.

flow grade <3 on the final angiogram, in spite of residual stenosis <50%, absence of significant dissection, a visible thrombus or a prolonged spasm in the infarct-related artery. Additionally, corrected TIMI frame count >= 40 (CTFC>=40) was used to identify patients with impaired reperfusion, as opposed to those with a CTFC<40. The clinical end-point was all-cause mortality at 6 months.

Results: Patients were divided into tertiles – a high MPV (n=132) was defined as a value in the third tertile (≥10.3 fl), and a low MPV (n=256) was defined as a value in the lower two tertiles (<10.3 fl). No-reflow was significantly more frequent in patients with high MPV compared with those with low MPV (21.2% vs. 5.5%, *P*<0.0001). The cutoff value for predicting no-reflow was 10.3 fL as identified by receiver operating characteristics. MPV was correlated strongly with CTFC, (*r*=0.698, *P*<0.0001). Kaplan-Meier survival analysis showed 6-month mortality rate of 12.1% in patients with high MPV vs. 5.1% in the low MPV group (log rank=6.235, *P*=0.0125) (Fig. 1). After adjusting for baseline characteristics, high MPV remained a strong independent predictor of no-reflow (odds ratio [OR] 4.7, 95% confidence interval [CI] 2.3 to 9.9, p<0.0001), CTFC ≥40 (OR 10.1, 95%CI 5.7 to 18.1, p<0.0001), and mortality (OR 3.2, 95% CI 1.1 to 9.3, p<0.0084).

Conclusions: MPV measured on admission, is a strong and independent predictor of impaired angiographic reperfusion and the 6-month mortality in patients with STEMI treated with primary PCI.

O-4

The time to treatment and ST-segment resolution in patients with acute myocardial infarction transferred from community hospitals for coronary angioplasty after pharmacological treatment

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Objective: To evaluate the impact of the symptom-balloon delay on the ST-segment resolution (STR) in patients with acute myocardial infarction transferred from community hospitals for angioplasty after pharmacological facilitation.

Design: Prospective, single centre registry.

Patients: Between October 2000 and December 2003 330 consecutive patients not older than 75 with high risk myocardial infarction were considered. 193 patients underwent primary PCI (Group P), while 137 patients were given the pharmacological facilitation therapy with half-dose of Alteplase plus Abiciximab and then immediately transferred to the Hospital with the cath lab for PCI (Group F).

Results: In comparison with group P, group F showed a longer time to treatment [mean (SD): 253 (136) minutes v 195 (141) minutes, p<0.001] and a greater percentage of TIMI flow grade 2-3 at the pre-PCI angiography [n 107 (78%) vs n 48 (25%); p<0.0001]. The rate of ST segment resolution ≥70% (C-STR) was similar in group P and F [n 123 (62.7%) vs n 94 (68.6%); p=0.88]. Even after accounting for baseline variables, ST segment resolution <70% (I-STR) was not significantly related to the transferral strategy (adjusted hazard ratio 0.94, 95% confidence interval 0.94 to 1.77, p=0.8). Patients with I-STR showed a higher six-month mortality as compared with C-SRT ones [n 10 (8.85%) vs n 6 (2.76%), p=0.024].

Conclusions: The STR index seems to predict survival in patients with "high risk" STEMI treated with angioplasty either directly or after pharmacological treatment and inter hospital transfer. Pharmacological facilitation seems able to counterbalance the negative consequences of the transfer-related time delay on myocardial reperfusion as evaluated by the STR index.

O-5

Do all patients with ST-segment elevation myocardial infarction benefit from invasive treatment? The simple risk-score derived from PL-ACS registry

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Background: Patients (pts) with acute myocardial infarction with ST-segment elevation (STEMI) present with a wide spectrum of risk for death and they are subsequently treated in real life with either a conservative or invasive strategy. The aim of this analysis was (1) to develop the risk score, and (2) to assess the relationship between the developed risk score and the 30-day all cause mortality of STEMI pts treated either with an invasive or conservative strategy.

Methods: We used the 12-month data from a prospective, population-based registry of ACS (total N=14581 pts) conducted

Table 1. (O-5)

Risk score points	Conservative N	Conservative 30-day mortality	Invasive N	Invasive 30-day mortality	Absolute Risk Reduction (95% CI)	Relative Risk Reduction (95% CI)
0	468	4.1%	1032	1.2%	2.9 (1.2-4.3)	71.4 (42.3-85.8)
1	610	8.0%	1022	2.5%	5.5 (3.3-7.4)	68.3 (49.8-80.1)
2	593	21.9%	501	8.8%	13.1 (9.0-16.7)	59.9 (45.1-71.0)
3	385	35.8%	218	17.9%	18.0 (10.7-24.3)	50.1 (32.3-63.7)
4	163	73.0%	58	46.6%	26.5 (11.9-40.3)	36.2 (17.2-52.6)
≥5	57	87.7%	14	85.7%	2.0 (-10.6-25.1)	2.3 (-12.4-27.2)

in the Silesia region of Poland in which 5066 pts (34.7%) were hospitalized due to STEMI. The development of the risk score for predicting the 30-day mortality at presentation was based on the multivariate logistic regression model which included variables available at the first medical contact.

Results: Of 5066 pts with STEMI (mean 30-day mortality – 13.0%), 55.6% had an early coronary angiography performed with lower 30-day mortality than conventionally treated pts (5.6% vs. 22.2%, p<0.0001). The logistic model performance, calculated as the area under the receiver operating curve (AUC) was 0.85. The risk score variables were selected as follows (points): age 65-74y (1); age ≥75y (2); female sex (1); pulmonary edema at admission (1); cardiogenic shock at admission (2); anterior infarction (1). The performance of the risk score (AUC) was 0.83 (0.80 in the conservative, and 0.81 in the invasive group, respectively). The pattern of the benefit of invasive strategy is shown in the table.

Conclusions: Invasive treatment of STEMI is beneficial to the conservative strategy along a wide spectrum of the initial risk, except for the extremely high risk patients. The developed risk score predicts not only the outcome but also the absolute and relative benefit of invasive versus conservative treatment of ST-segment elevation myocardial infarction patients.

Oral presentations: Session *Complex PCI & PTA*

O-6

The unprotected left main coronary artery stenting in patients with a low risk of cardiosurgery operation

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Background: The available data indicate that the left main coronary artery (LMCA) stenting is a safe and feasible procedure. The restenosis phenomenon remains the main limitation of long-term effectiveness of percutaneous coronary interventions (PCI). We evaluated the immediate and long-term outcome of the PCI of unprotected LMCA in 101 consecutive patients.

Methods: The established strategy was to implant the drug eluting stent (DES) when the LMCA reference diameter was ≤3.5 mm (50 patients) or bare metal stent (BMS) when the LMCA reference diameter was >3.5 mm (51 patients) using the provisional T-stenting technique. All patients had a clinical follow up and control angiography at 2 and 6 months after the index procedure. The immediate efficacy of the procedure and major adverse cardiac events (MACE = death, MI, repeat revascularisation because of restenosis within the target lesion (TLR) and because of disease progression in other vessels (nonTLR)) were assessed.

Results: The patients were male in 78%, they were on average 60±9.9 years old. They had stable angina in 63%, unstable angina in 32% and in 5% they had acute ST-segment elevation myocardial infarction (STEMI). The left ventricular ejection fraction was 57±11%. Stents were implanted into the LMCA electively in 86 patients and as a bail-out procedure in 15 patients (5 patients with STEMI and 10 with dissection involving the LMCA). The majority of elective patients (90%) were low risk for cardiosurgery operation, according to the Euroscore scale (<6 pts). The lesion in the LMCA was located in the proximal segment in 17%, in mid-segment in 9% and in 74% involved distal segment of LMCA. Fifty-six percent of patients had 2 or 3-vessel disease apart from LMCA. Thirty-six percent of patients had PCI of another artery during the same hospital stay and in 32% of patients abciximab was used. The procedural angiographic and clinical success rate was 100%. The mean clinical follow up time was 8±5 months. During the follow-up there were two deaths (2%), no myocardial infarctions and 18 repeated PCIs (18%). The TLR rate was 8% (all patients after BMS implantation) and nonTLR rate was 10%. Two patients after the TLR were referred for CABG due to subsequent restenosis.

Conclusions: The immediate effectiveness of the left main coronary artery stenting is very high. The strategy of selective drug eluting stent implantation in an unselected patient cohort was associated with a favorable outcome. The multivessel disease accompanying LMCA disease is associated with high rate of repeated PCIs in other vessels. Further improvement of treatment results can be achieved with more frequent DES implantation in the multivessel disease, as well as with implantation of new larger-size DES into the LMCA with the reference diameter >3.5 mm.

O-7

The unprotected left main PCI in acute coronary syndrome – a preliminary experience

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From January 1, 2004 to October 17, 2005, seventeen patients (15 male, 2 female; 65±18 years) with acute coronary syndrome (4 STEMI, 13 UA/NSTEMI; 3 immediately after resuscitated cardiac arrest) and unprotected LM stenosis as an IRA underwent urgent PCI. Six patients presented with pulmonary edema/cardiogenic shock on admission (Killip 3/4). The LVEF was 36±15%. The immediate coronary angiography revealed either ostial (2 patients), midshaft (8 patients) or distal (7 patients) LM stenosis (88±9%). The concomitant multivessel CAD was documented 14 patients and RCA occlusion in 6 of 17 patients. Following a prepocedural administration of GP IIb/IIIa (9 patients) and insertion of IAPB (7 patients), either direct stenting (8 patients), predilatation with stenting (7 patients) or POBA (1 patient) was performed. Due to severe calcifications, advancement of a balloon was not possible in one patient and PCI was abandoned. The size of the stents (9 DES, 8 BMS), deployed at 15±2 atm was 3.4±0.4 mm and length 15±2 mm. LM-PCI was successful (≤10% residual stenosis, no evidence of dissection/trombosis, TIMI 3) in 16 of 17 patients. Additional PCI on other vessels during the index procedure was performed in 11 patients. There was one hospital death (due to sepsis/MODS with patent LM) and no reinfarction/TVR. At the follow-up (9.9±7.2 months), there were 2 additional deaths (severe CHF, no stent thrombosis on control angiography and autopsy), 1 reinfarction and 2 TVR. Accordingly, our preliminary experience in this high risk subgroup of patients with acute coronary syndrome indicates both feasibility and an acceptable inhospital as well as long term outcome of unprotected LM-PCI.

O-8

Safety and long-term efficacy of the sirolimus-eluting stent in ST-elevation acute myocardial infarction. The REAL (Registro REgionale AngiopLastiche Emilia-Romagna) registry

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Background: Limited data are thus far available for the sirolimus-eluting stent (SES) implantation in patients with ST-segment elevation myocardial infarction (STEMI).

Objective: To evaluate the safety and efficacy of primary percutaneous coronary intervention (pPCI) with SES implantation in patients with STEMI in a multicenter registry.

Methods: From July 2002 to June 2004, the clinical and angiographic data of 1617 consecutive patients with STEMI treated with pPCI were prospectively entered in an electronic web-based database, called REAL registry. Patients were prospectively followed for the occurrence of major adverse cardiac events (MACE=all cause death, non fatal myocardial infarction and target vessel revascularization).

Results: Overall, 205 patients received the SES (12.5%, SES group) and 1412 received the bare metal stent (87.5%, BMS group) in the infarct-related artery. Compared with the BMS group, SES patients were younger, had more often diabetes mellitus and anterior localization but less cardiogenic shock at admission. The angiographic characteristics in the SES group showed longer lesions and a smaller diameter of vessels. After a median follow-up of 386 days, there was no difference in the rate of stent thrombosis (1% in the SES group vs 1.5% in the BMS group, p=ns). The incidence of MACE was significantly lower in the SES group compared to the BMS group (HR 0.6 [95%CI: 0.4-0.95]; p=0.03), principally due to the lower rate of target vessel revascularization in the DES group (HR 0.41 [95%CI: 0.2-0.85]; p=0.01).

Conclusions: Utilization of the SES in the setting of AMI in our "real world" registry was safe and improved the 1-year clinical outcome compared to the bare metal stent by reducing significantly the need of TVR.

O-9

Robotic coronary angioplasty: concept, validation and the first in man pilot clinical trial

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Background: Operator exposure to X-ray radiation during catheterization requires protection measures limiting, but not eliminating radiation hazards, leading to unfriendly operator conditions that are associated with an increased risk for the operator's health. We aimed to asses the feasibility and safety of a remote control system allowing the operator to perform coronary interventions from a distance.

Methods and results: The system involves a mechanical wire manipulator for advancing, retracting and rotating the wire and a delivery system manipulator that advances or retracts the balloon and/or stent. The system is controlled by a computer via a joystick. In all patients the guidewire, balloon and stent were manipulated by the system, while coronary injections and balloon dilatations were performed manually. Fifteen patients underwent single vessel remote control PCI. The guidewire crossed the lesions using the system in 14/15 patients. In one patient, the system malfunction caused abortion of the navigation procedure. A continuous advance mode was utilised to drive the balloon/stent to its site and 1mm steps were used for accurate positioning. The stent was successfully positioned in 13/14 cases. Direct stenting was employed in 8 patients, predilatation in 2 and postdilatation in 3 patients. Clinical success was 100% and technical success 92%.

Conclusion: The remote control PCI with guidewire manipulation, angioplasty and stenting is safe and feasible in the treatment of patients with coronary artery stenosis. The system offers radiation safety for the operator and may optimize precision of stent placement and balloon dilatation strategy.

O-10

The intravascular ultrasound can resolve decision-making in carotid or vertebral interventions in borderline lesions

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Background: The intravascular ultrasound (IVUS) has a well-established role in evaluating border-line (BR) coronary artery lesions and optimizing angioplasty or stenting. Many operators, however, believe that IVUS has no important role to play in carotid or vertebral interventions.

Material and methods: Over the last three years, we have performed neuroprotected (proximal 32%, distal 68%) carotid artery stenting (CAS) in 253 patients (pts; bilateral CAS in 9). IVUS (Volcano Therapeutics; ChromaFlo for optimal lumen border detection) was performed only if the combined imaging modalities that we use routinely (Duplex Doppler, CT angiography and invasive quantitative angiography [QCA]) failed to provide a consistent BR carotid (de novo, in-stent restenosis [ISR] or restenosis after endarterectomy) lesion severity determination in the context of neurological presentation (n=11 pts). IVUS was also used in one pt referred for vertebral artery stenting (VAS), one with the subclavian and one with the vertebral artery BR ISR.

Results: Fourteen lesions (QCA diameter stenosis [DS] from 37 to 56%) required IVUS assessment; this was done without complications. The IVUS-generated data indicated performing intervention (IP) in 9 (QCA-DS 44±6%) and deterring it (ID) in 5 (QCA-DS 43±4%) cases. On IVUS, the mean minimal lumen area (MLA) and area stenosis (AS) were respectively 6.7±2.07 mm^2 (range 3.9-7.2 mm^2) and 77% (range 69-81%) in IP, and 10.8±2.73 mm2 (range 7.4-13.8 mm^2) and 48% (range 17-62%) in ID. The IVUS data could not be deduced from the QCA parameters. There was no correlation between QCA-AS and IVUS-AS (r=0.33, p=0.31), QCA-MLD and IVUS-MLD (r=0.29, p=0.35), or QCA-MLA and IVUS-MLA (r=0.37, p=0.22). The densitometric QCA-MLA showed the relatively highest correlation with IVUS-MLA (r=0.46) but this did not reach statistical significance (p=0.12).

Conclusions: In ≈1 for every 20 patients referred for the supraaortic artery angioplasty by independent neurological consultation (with prior Duplex Doppler *plus* CT angiography), IVUS provides otherwise unavailable data that critically influence the decision on whether to perform the intervention.

Moderated Posters – Session 1

MP-11

Use of distal protection devices vs. optimal pharmacological treatment during primary angioplasty – prospective randomised double blind trial

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Background: Distal embolization occurring after successful revascularization could worsen the results and decrease left ventricular ejection fraction (LVEF). Optimal pharmacological treatment with UFH, clopidogrel and GPIIb/IIIa blocker is widely used to protect myocardium during primary angioplasty. We tested the hypothesis that distal protection used in time of primary angioplasty with stenting could be safer and more efficient in protecting revascularized myocardium.

Methods and materials: We randomised 120 consecutive patients (pts) with acute myocardial infarction qualified to primary angioplasty. Group I – 60 pts were pre-treated with UFH and a loding dose of clopidogrel and distal protection was used during primary angioplasty (PCI). In group II – pts were pre-treated with UFH, clopidogrel and received GP IIb/IIIa blocker in time of primary PCI. Left ventricle (LV) function was measured at baseline, during follow-up (f-u) at 30 and 180 days with TTE. All major adverse cardiac events (MACE) and bleeding complications were analysed during the f-u. High risk pts were excluded from the trial.

Results: Distal protection in group I was used successfully in all except 3 cases. In 56 pts we achieved optimal results of primary PCI with stenting (93%) compared with 58 pts in group II (97%), p<0.6. LV ejection fraction (EF) at baseline was similar in both groups (42%±3% vs. 40%±4%; p=0.18) and increased significantly to 49%±2%; p=0.04 in group I and to 50%±3%; p=0.03 in group II, however there was no difference between the groups, p=0.34. At 180 days the results were similar, the increase of LVEF was not significant any longer. There were 8 MACE in group I (1 death, 2 reMI and 6 rePCI) and 9 in group II (1 death, 4 reMI, 4 rePCI), p=0,23. The number of pts with moderate bleeding was significantly higher in group II (1 vs. 5, p<0.01). Vessel diameter and time to intervention were similar in both groups.

Conclusion: The use of distal protection during primary PCI with stenting in pts with acute myocardial infarction is safe and feasible. The use of mechanical devices is associated with comparable results in terms of LV function and number of MACE with the use of GP IIb/IIIa blocker. The risk of bleeding complications is lower in the group of pts treated with mechanical distal protection.

MP-12

The immediate and long-term results of successful thrombectomy during primary coronary angioplasty in acute myocardial infarction

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Background: We hypothesized that successful thrombectomy before primary coronary intervention (PCI) may improve immediate and long-term results in patients with STEMI.

Methods: We evaluated 40 consecutive patients (pts, aged 56.5±11.3 y) with STEMI, treated with trombectomy before PCI. Death and recurrent AMI were recorded during a 1-year follow-up. TIMI flow grade was assessed after thrombectomy and after the whole procedure. Successful thrombectomy (STh) result was defined as TIMI-2 or -3 flow immediately after thrombectomy. Enzymatic injury was expressed as an area under the curve of CK-MB release in the first 48 hours (AUC [x10]). The sum of ST-segment elevations (ST) was obtained before PCI (B), immediately after thrombectomy (O) and 1 hour after PCI (O60). The reduction of ST-segment elevation after thrombectomy (ST-O) and 1 hour after PCI (ST-60) was calculated according to the formulas ST-O/ST-B and ST-O60/ST-B. LV ejection fraction (LVEF), wall motion score index (WMSI) and LV end-diastolic volume (LVEDV) were evaluated by echocardiography 24 hours (1d) and 6 months (6m) after PCI. Contrast-enhanced (GDPTA) magnetic resonance imaging (MRI) used as a method for the evaluation of the risk area (RA), the infarct area (IA) and the microvascular damage area (MA) was performed 2-4 days (d) and 6 months (6m) after STEMI using a 1.5-T MRI scanner. The following indexes were calculated: RA/LV, IA/RA and MA/RA.

Results: STh result was achieved in 19 (47.5%) pts. After a 1-year follow-up 2 persons died in the STh group and 1 person in the unsuccessful thrombectomy (uSTh) group (p=NS). During a 6-month follow-up the infarct area decreased in both groups (STh: p=0.025; uSTh: p=0.035), WMSI decreased in the STh group (p=0.04). LVEF and LVEDV did not change significantly. The results are shown in the table.

Conclusion: Successful thrombectomy before PCI in STEMI reduces infarct size and microvascular damage, which is associated with an improvement of segmental contractility in a 6-month follow-up. At the same time, STh does not influence long-term clinical results and the global LV function.

Table 1.

	STh	uSTh	p
AUC [x10]	1150±820	1335±962	ns
ST-O/ST-B	0.4±0.13	0.8±0.12	<0.001
ST-O60/ST-B	0.32±0.11	0.4±0.14	ns
MA/LV-d	0,09±0,08	0,17±0,16	0.022
IA/RA-d	0.5±0.18	0.65±0.2	0.035
IA/RA-6m	0.3±0.2	0.39±0.21	0.04
LVEF-1d	54±11	48±10	ns
LVEF-6m	54±10	48±11	ns
WMSI-1d	1.63±0.42	1.76±0.38	ns
WMSI-6m	1.35±0.35	1.73±0.39	0.019
EDV-1d	92±31	103±34	ns
EDV-6m	116±42	122±45	ns

MP-13

Prognosis assessment for ACS patients over 65 years according to invasive or noninvasive strategy. Evaluation after 6 month (preliminarydates)

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Background: The N pro BNP level has a prognostic value for MI patients. The population over 65 years of age with ACS was separated to optimise diagnostic and therapeutic strategy.

Methods: 82 elderly patients (over 65 years old) admitted to the Coronary Care Unit (CCU) with ACS were assessed according to invasive or non-invasive strategy. The average age of patients was 77±8 years. 41 patients developed NSTEMI and 41 patients STEMI. 22 patients underwent an invasive strategy (PCI); 60 patients underwent an conservative strategy (pharmacological treatment) because of time limit. 6 minute walk test; ECHO with left ventricular ejection fraction (EF), N pro -BNP level were performed after 6 months.

Results: The patients that underwent an invasive strategy were younger than the patients treated pharmacologically way (71±4 vs 79±8 years, p=0.0001). The initial N pro BNP level in the PCI group was 1535±2250 pg/ml and was substantially lower than in the conservative treatment group 7605±9040 pg/ml, p<0.001.

The average N pro BNP level in the whole group after 6 months was 2668±4239 pg/ml and was substantially lower in the group after invasive treatment than in the group with conservative stategy: 434±347 pg/ml vs 4057±4996 pg/ml, p<0.05.

In a 6 month follow-up the walking distance in 6 minute walking test was substantially longer in invasively treated patients (478±88 m) comparing to noninvasively treated patients (302±38 m) p<0.01. The EF in both groups did not differ substantially (53±10% vs. 47±13%, NS) after the 6 month follow-up.

Conclusion: Elderly patients (over 65 years old) with ACS that underwent invasive strategy (PCI) demonstrate a better exercise tolerance and a lower N pro BNP level, which indicates a better prognosis after 6 months from ACS.

Key word: N pro BNP, EF, 6 minute walk test, acute coronary syndrome.

MP-14

Transient left ventricular apical ballooning – a new type of acute coronary syndrome?

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Background: A new syndrome called transient left ventricular apical ballooning (TLVAB) was described very precisely in Japanese patients. However, we have observed the evidence of TLVAB in the Polish population as well. The aim of the study was to evaluate short- and long- term follow-up and clinical course of the patients' with this syndrome.

Methods: During the period of 2001-2004, the total population of 1869 patients was screened. The demographics, medical history and data regarding ECG abnormalities and activities of myocardial necrosis biomarkers were collected. TLVAB was diagnosed according to the presence of balloon-like left ventricular contractility abnormalities.

During the follow-up, evidence of cardiac events (death, recurrence of chest pain, re-hospitalisation) was collected. In part of the patients, the follow-up angiography with left ventriculography was repeated.

Table 1. (MP-15)

	Admission to a hospital without catheterisation facilities			Admission to a hospital with catheterisation facilities		
	transfer for primary PCI + tirofiban n=201	thrombolysis n=200	p	PCI n=130	PCI + tirofiban n=128	p
30 day						
death	12 (5.97%)	18 (9.0%)	0.23	3 (2.31%)	3 (2.34%)	0.99
re-AMI	4 (1.99%)	11 (5.5%)	0.06	0	2 (1.56%)	0.15
stroke	1 (0.5%)	3 (1.5%)	0.3	0	0	–
death/re-AMI	16 (7.96%)	29 (14.5%)	0.038	3 (2.31%)	5 (3.91%)	0.46
death/re-AMI/stroke	17 (8.46%)	32 (16%)	0.021	3 (2.31%)	5 (3.91%)	0.46
1 year						
death	16 (7.96%)	25 (12.5%)	0.12	7 (5.39%)	4 (3.13%)	0.37
re-AMI	6 (2.98%)	15 (7.5%)	0.04	1 (0.77%)	2 (1.56%)	0.55
stroke	2 (1%)	5 (2.5%)	0.21	1 (0.77%)	2 (1.56%)	0.55
death/re-AMI	22 (10.94%)	40 (20%)	0.012	8 (6.15%)	6 (4.69%)	0.6
death/re-AMI/stroke	24 (11.94%)	45 (22.5%)	0.005	9 (6.92%)	8 (6.25%)	0.83

Results: We identified 30 patients with TLVAB (1%) (all women, mean age 72±12 y) in the analysed population. In all patients, there was an evidence of trauma (in 40% physical and in 60% emotional). An analysis on ECG recordings showed negative T waves on anterior leads in 93% and ST elevation in 7% of cases. The clinical course of index hospitalisation was benign in 96%, but in one patient (4%) the pulmonary oedema occurred. Maximal MB creatine kinase and troponin I levels were 38±12 U/l and 1.12±0.75 ng/dl, respectively. During the follow-up (range 6-24 months, mean 12 months), there were two cases of chest pain recurrence, but without clinical features of TLVAB (checked by echo or angiography). In 12 patients follow-up ventriculography was performed (mean time-point 3±1 months) – in all patients left ventricle abnormalities disappeared.

Conclusions: Transient left ventricular apical ballooning is a benign syndrome mimicking acute coronary syndrome with a good long-term outcome.

MP-15

Different reperfusion strategies in patients with acute myocardial infarction in the Białystok region in North Eastern Poland. One year follow-up of randomised open-label study

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Background: Primary percutaneous coronary intervention (PCI) is a treatment of choice in patients with ST segment elevation acute myocardial infarction (STEMI) treated directly in PCI centres. However, the majority of patients are treated in local hospitals without catheterisation facilities. A transfer for primary PCI is an option for these patients. The longer the transport distance and the longer the transfer time, the advantage of this strategy over on-site thrombolysis may be not clearly evident. We performed a randomised study to asses different reperfusion strategies in STEMI patient admitted to hospitals with and without catheterisation facilities in our region.

Methods: Patients (pts) with STEMI (duration of AMI<12 hours, typical clinical and ECG signs of AMI) were included into the study. Pts admitted to community hospitals (without cath-lab.; 20-150 km from an invasive cardiology centre) were randomised to on-site thrombolytic therapy (streptokinase) or to transportation for primary PCI with adjunctive therapy with tirofiban (10 µg/kg bolus i.v. + i.v. infusion 0.1 µg/kg/min) started in the emergency room of the hospital of admittance. Pts admitted directly to an invasive cardiology centre (within a distance of less than 20 km) were randomised to primary PCI without or with adjunctive therapy with tirofiban (10 mg/kg bolus i.v. + tirofiban infusion 0,4 mg/kg for 30 minutes + i.v. 0,1 mg/kg/min) during and after the completion of the procedure. All patients with cardiogenic shock were excluded from the analysis.

Results: The results are shown in the table.

Conclusions

1. Outcomes at one year follow-up showed that transportation for primary PCI with adjunctive therapy with GP IIb/IIIa inhibitor-tirofiban is superior to on-site thrombolysis in patients with STEMI treated in a hospital without catheterisation facilities.
2. Primary PCI in patients with STEMI admitted directly to a hospital with an invasive cardiology department was associated with a low rate of mortality, re-AMI and stroke and this effect was irrespective of adjunctive therapy with tirofiban.

Moderated Posters – Session 2

MP-16

Effect of impaired myocardial reperfusion on left ventricle remodelling in anterior wall acute myocardial infarction treated with primary coronary intervention

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Background: Left ventricular (LV) remodelling after acute myocardial infarction (AMI) is an important predictor of long-term prognosis and is associated with a development of congestive heart failure (CHF). The benefits of primary coronary angioplasty (pPTCA) have been ascribed to the achievement of early and sustained patency of the infarct-related artery (IRA) with significantly larger myocardial salvage and improved survival. Thus pPTCA should decrease the number of patients with LV remodelling (open artery theory). However patency of IRA does not always correlate with the presence of myocardial reperfusion in the related area (no-reflow phenomenon). The aim of our study was to evaluate the impact of impaired myocardial blush after successful primary coronary intervention (PCI) on left ventricular remodelling in patients with first anterior ST segment elevation myocardial infarction (STEMI).

Methods: The study population consisted of 145 patients (pts) (106 men and 39 women, mean age 61±18 years) with first anterior ST elevation AMI, admitted to our institution and successfully (TIMI 3) treated with pPTCA within 12 hours from the onset of symptoms. We evaluated angiographic (myocardial blush grade – MBG, TIMI flow, corrected TIMI frame count – CTFC) as well as electrocardiographic (resolution of ST segment elevation – rST) markers of myocardial reperfusion. Echocardiography was performed at baseline and 6 months after pPTCA. End-diastolic volume (EDV), end-systolic volume (ESV) and LV ejection fraction (EF) were calculated. LV remodelling was defined as an increase in end-diastolic volume (EDV) ≥20%, based on repeated measurements in individual patients. The study population was divided into 2 groups according to the presence (MBG 2-3-group 1, n=86) or absence (MBG 0-1 – group 2, n=59) of myocardial reperfusion.

Results: In all study groups left ventricular remodelling appeared in 21% of cases. Poor myocardial blush after PCI was associated with an increased rate of LV remodelling in comparison to patients with good myocardial reperfusion (32% vs 14%), HR=2.308, 95%CI 1.21-4.39, p=0.014. In a mulitivariate analysis only age (OR: 0.96, 95%CI: 0.92-0.99, p=0.02) and MBG 0-1 (OR: 3.15, 95%CI: 1.35-7.31, p=0.008) remained associated with the LV remodelling.

Conclusions: Impaired microvascular reperfusion is associated with LV remodelling and a development of congestive heart failure in pts with anterior AMI successfully treated with primary coronary angioplasty.

MP-17

Immediate coronary angiography and primary PCI in patients with STEMI and resuscitated cardiac arrest

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We investigated angiographic features of 110 patients with STEMI and resuscitated cardiac arrest (CA) who underwent immediate coronary angiography and primary PCI strategy between January 2001 and September 2005. This group was compared to 107 randomly selected patients with STEMI without preceding CA who underwent the same strategy. As shown in the table, patients with resuscitated CA were mostly male and had less evidence of previous history of CAD. LAD more frequently presented as infarct related artery (IRA) and there was more unprotected LM involvement in patients with resuscitated CA. To the contrary, multivessel obstructive coronary disease was less frequent in this group of patients. Furthermore, these patients were less likely to undergo primary PCI and had lower rates of IRA patency at the end of the procedure.

Table 1.

	Resuscitated CA (110)	No CA (107)	p
Age, years	58±11	63±12	NS
Male, %	86	67.5	<0.05
Previous history of CAD, %	19.5	33	<0.05
IRA, %			
LAD	54.5	41	
LCX	13.5	15	
RCA	28.5	43	
LM	0	1	
Unknown	3.5	0	<0.05
Proximal lesion, %	42	48	NS
Patent IRA TIMI 2/3, %	18	16	NS
IRA collateral flow	0.30±.67	0.46±.91	NS
Multivessel CAD, %	41.5	60.5	.004
Cumulative unprotected LM, %	6	1	<0.05
Primary PCI, %	70.5	99	<0.05
Stenting, %	77.5	73	NS
Final TIMI 2/3 flow, %	84	97	<0.05

MP-18

The routine use of the transradial approach in patients with ST elevation myocardial infarction treated with primary PCI (one operator experience)

Bogdan Klotz

The advantages of the transradial approach are widely accepted, especially because of its safety in terms of limiting vascular access site complications and bleeding. Nevertheless the

femoral approach remains the preferred method in most cathlabs.

The goal of the study was to assess the feasibility and safety of a routine application of the transradial coronary approach in patients with ST-elevation myocardial infarction (STEMI) qualified to primary percutaneous coronary interventions (PCI).

The study group consisted of 296 consecutive patients with STEMI, referred to one experienced operator for primary PCI.

The 90% (266) of them were eligible for transradial approach. The technical success of the procedure was 97.4% with cross-over to femoral access in 7 patients. Only Judkins and Amplatz type catheters vene used. 65% (145) of stents were implanted as a direct stenting procedure with a success rate of 92%. The use of abciximab was 60%.

There were no serious access site complications. The only puncture site complication without clinical consequences was the loss of the radial pulse in 4 patients (1.6%).

Conclusions: The vast majority of patients with STEMI are eligible for cardiac catheterisation via the radial route. Only a few require a switch to a femoral access. The transradial approach for primary PCI in patients with STEMI enables a high procedural success rate and, in contrast to the femoral approach, where access site bleeding rate may be as high as 14%, eliminates access site bleeding complications, despite extensive use of IIb/IIIa blockers.

Because of its efficacy and safety, this technique should became the first choice especially in patients on antiplatelet and antithrombotic treatment.

MP-19

Short term anti-inflammatory therapy improves endothelial function in patients with non – ST segment elevation Acute Coronary Syndromes

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Background: Endothelial inflammatory activation is associated with a profound impairment in the vasodilator endothelial function. We earlier proved that short term aggressive treatment with statins and cyclooxygenase-2 (COX-2) inhibitors reduce CRP level – the major inflammatory marker. The aim of the present study was to analyse the impact of the same therapy directly on endothelial function in patients with non – ST segment elevation Acute Coronary Syndromes (NSTE ACS).

Methods: In 23 pts with NSTE ACS and elevated CRP level endothelial function was assessed by coronary Acetylcholine (Ach) test within non-culprit vessel. Quantitative coronary angiography (QCA) was done at baseline and after the highest dose of Ach. Vessel response was calculated as a percent change of mean lumen diameter (% change of Mean Lumen Diameter (LD)). Then pts were randomised to three groups of therapy A (n=7) placebo, B (n=8) 80 mg atorvastatin, C (n=8) 80 mg atorvastatin and 25 mg rofecoxib. After 7 days of therapy a control test was performed within the same indicatory segments. A recovery of endothelial function in all groups was calculated as delta in % changes of Mean LD between day 1 and day 7.

Results: At day 1, significant decrease in Mean LD between baseline and the highest dose of Ach was observed in all groups: -20% (group A), -25% (B) and 26% (C). After 7 days of therapy these changes averaged – 21% (A), – 15% (B) and 10% (C). Differences between day 1 and day 7 were -1%, +10% and +16% respectively (fig. 1).

Conclusions: In the majority of pts with NSTE ACS, profound endothelial dysfunction was observed at baseline and after seven days of therapy. Short term (7 days), aggressive anti-inflammatory therapy with 80 mg of atorvastatin and 25 mg of rofecoxib partially reversed endothelial dysfunction. Short-term (7 days) administration of COX-2 inhibitor (rofecoxib) in high risk ACS patients, simultaneously treated with double antiplatelet therapy, was safe, without adverse events during hospitalisation and 12-months follow up.

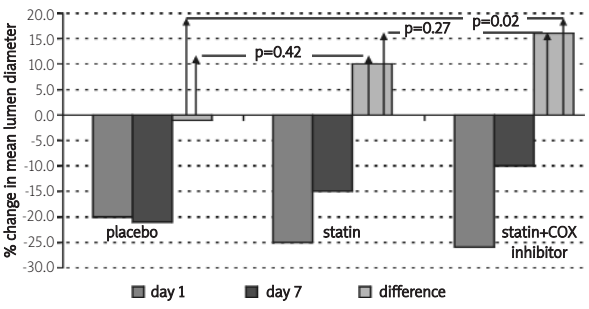

Fig. 1.

MP-20

Early interventional approach at the patients with non-ST elevation acute coronary syndrome. Results of the Center

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Background and the aim of the study: TACTICS and VINO trials show the benefits due to early invasive treatment in patients with non ST elevation acute coronary syndrome (non ST elevation ACS) with effective antiplatelet and anticoagulative medical regimen. The study presents the outcome of patients treated with early interventional strategy with intensive adjunctive pharmacotherapy in patients with non ST ACS in the region of Opole.

Materials and methods: 100 patients hospitalised with primary diagnosis of non ST elevation ACS (years: 2001-2002), both in PCI center and cooperative non PCI hospitals were treated with IIb/IIIa blocker- eptifibatide, enoxaparine and aspirin. All patients from non PCI hospitals (60 patients) were then sent to a tertiary hospital (Oddział Kardiologii WCM w Opolu). All the patients included into the study underwent coronary angiography within 24 hours from the start of the therapy. Then patients were treated with PCI, CABG or given a conservative medical treatment, depending on their clinical status and angiography results. PCI were performed ad hoc; patients underwent CABG due to their clinical status – urgent or scheduled manner. Follow-up was conducted up to 30 and 180 days: deaths, MI, rehospitalisation and bleedings were estimated, as an well as extension of coronary artery disease and TIMI flow.

Results: (Table)

Conclusions:

1. Early interventional approach with adjunctive intensive medical therapy is safe and preserves the occurrence of MI and rehospitalisation at 30 day follow up.

Table 1. (MP-20)

PATIENTS	PCI	CABG		Conservative medical treatment	Deaths	MI	Rehospitalisations	Bleedings		
		qualified	performed					minor	medium	major
follow up – 30 day										
100	58	20	10	22	3	0	0	10	1	0
follow up – 180 day										
100	58	20	18	24	4	0	6	10	1	0

2. Early interventional treatment combined with aggressive antiplatelet and anticoagulative therapy seems to be the best therapeutical option for the patients with non-ST elevation ACS.
3. Multivessel disease is a predominant finding in coronary angiography in patients with non-ST elevation ACS.

Normal coronary arteries were found at 11% of the patients with the clinical signs of non-ST elevation ACS.

Impaired coronary blood flow (TIMI 0,1,2) at the artery related to ACS was noticed in 43.82% of patients with coronary artery disease.

Moderated Posters – Session 3

MP-21

Impaired mobilization of CXCR4$^+$/CD34$^+$ stem cells early in acute myocardial infarction is associated with low left ventricular ejection fraction and high NT-proBNP levels after 1 year follow-up in patients treated with primary PCI

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Stem cells are mobilized into peripheral blood early in acute myocardial infarction (AMI). In patients with low left ventricular ejection fraction (LVEF) and high levels of NT-proBNP in the acute phase of AMI the mobilization of CD34/CXCR4$^+$ cells is significantly impaired. It remains unknown whether the stem cells mobilization can influence the LVEF in a long-term follow-up after AMI.

The aim of the study was to correlate the early mobilization of CD34$^+$, CD117$^+$, CXCR4$^+$, c-met$^+$ stem cells in patients with STEMI treated with primary PCI with LVEF, NT-proBNP levels, hematopoietic cytokines, spiroergometric exercise test results in one-year follow-up.

Methods and Results: 40 patients with STEMI (<12 hours) treated with primary PCI were enrolled. Blood samples were obtained on admission, after 24 hours and 7 days as well as after 1 year (12-16 months). The number of stem cells was measured using FACS and concentrations of NT-proBNP, SDF-1, G-CSF, VEGF, IL-6 and HGF were measured using ELISA kits.

Echocardiography was carried out on admission and after 1 year and ergospirometric exercise test (VO2 max., VE/VCO2 slope, VE/VCO2 peak/rest, VE/VCO2 peak, VE/VCO2 rest) after 1 year post AMI.

In patients with baseline LVEF ≤40% as well as with NT-proBNP levels in the highest tertile the number of mobilized CXCR4$^+$/CD34$^+$ stem cells on admission was significantly lower in comparison to patients with LVEF >40% ($p<0.03$) and NT-proBNP levels in the lowest tertile ($p<0.001$). Moreover, patients with LVEF ≤40 after 1 year had lower baseline CXCR4$^+$ cell counts than patients with LVEF>40% on their follow-up visit ($p<0.03$). The baseline number of CXCR4$^+$ cells was positively correlated with LVEF after 1 year ($r=0.55$; $p<0.03$) and in multivariate regression was an independent predictor of LVEF <40% after 1 year. The peak number of mobilized CXCR4+ stem cells early in STEMI was also significantly positively correlated with the number of circulating CD34$^+$, CXCR4$^+$ and CD117$^+$ cells after 1 year (CD34$^+$: $r=0.35$, $p<0.05$; CXCR4$^+$: $r=0.38$; $p<0.03$; CD117$^+$: $r=0.4$, $p<0.02$) and patients with low baseline CXCR4 counts

had a lower number of $CD34^+$, $CD117^+$ and $CXC4^+$ cells as well, as higher levels of NT-proBNP after 1 year (all $p<0.03$). The number of stem cells both on admission and at follow-up was significantly lower in patients aged >50 years in comparison to younger subjects ($p<0.05$). No significant correlation between baseline stem cells number and exercise test results were found.

Conclusion: In STEMI patients with low LVEF and high NT-proBNP levels the mobilization of $CD34^+$, $CD117^+$, $CXCR4^+$, c-met^+ stem cells into peripheral blood is significantly compromised. The impaired mobilization of stem cells early in STEMI is associated with lower LVEF, higher levels of NT-proBNP and a lower number of circulating stem cells after 1 year.

MP-22

N-terminal pro-brain natriuretic peptide levels in relation to coronary and myocardial reperfusion in acute myocardial infarction treated with facilitated angioplasty

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Introduction: The relation between the efficiency of reperfusion therapy in acute myocardial infarction (MI) and brain natriuretic peptide level was not investigated. The aims of this study were firstly to evaluate the relations between N-terminal pro-brain natriuretic peptide (NT-proBNP) concentration after MI and microvascular and myocardial reperfusion injury, and secondly to compare the prognostic value of NT-proBNP to other reperfusion parameters.

Methods: We evaluated 202 consecutive patients (pts, aged 57.7±9.4 y) with ST-segment elevation MI treated with facilitated angioplasty. In local hospitals without an on-site cathlab patients received a half-dose of actylise plus abciximab before being transferred to a cathlab. The anticipated transport time had to be more than 90 minutes. PCI was subsequently performed in 176 pts. TIMI flow, TIMI myocardial perfusion grade (TMPG) and ST-segment elevation resolution (iST) were assessed before (O) and 30 minutes after (O30) PCI. Enzymatic injury was expressed as an area under the curve of CK-MB release in the first 48 hours (AUC, [Uxh]). 48 hours after PCI, the concentration of NT-proBNP ([pg/ml]) and echocardiography-determined left ventricle ejection fraction (LVEF, [%]) were assessed. Death and heart failure requiring rehospitalisation or with symptoms in NYHA scale ≥2 were recorded during a 1-year follow-up and defined as a composite endpoint.

Results: NT-proBNP concentration 48 hours after PCI was correlated with iST-O ($p<0.001$; $r=0.48$), iST-O30 ($p<0.001$; $r=0.57$), AUC ($p<0.001$; $r=0.54$) LVEF ($p<0.001$; $r=-0.5$) in a single and multiple regression model. Killip class on admission ($p<0.001$), TIMI flow before ($p=0.008$) and after ($p<0.001$) PCI as well as TMPG before ($p=0.0015$) and after ($p<0.001$) PCI significantly affected the NT-proBNP release 48 hours after PCI. After a 1-year follow-up 8 (4.4%) patients died. Increasing quartiles of NT-proBNP were related to mortality ($p=0.0012$) as well as to a composite endpoint that reached 9.1%; 13.6%; 20.0% and 35.6% ($p=0.0012$) respectively at 1 year. In a logistic regression model Killip class 3/4 on admission (OR 12.5; 95%CI 3.0-24.4), fourth quartile of NT-proBNP (OR 2.17; 95%CI 0.5-5.7), TIMI-3 flow after pharmacotherapy (OR 1.56; 95%CI 1.0-4.0), LVEF<45% (OR 2.71; 95%CI 1.0-7.3) and TMPG-3 after PCI (OR 1.64; 95%CI 0.9-5) were significantly and independently associated with a composite endpoint at a 1-year follow-up.

Conclusions: N-terminal pro-brain natriuretic peptide level after an acute myocardial infarction correlates with the degree of microvascular reperfusion and myocardial injury and function. NT-proBNP is independently associated with a mortality rate and the frequency of heart failure in NYHA scale ≥2 as well as of a heart failure requiring rehospitalisation.

MP-23

Relationship between desmin presence in cardiomyocytes and left ventricle function in patients with heart failure

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Background: Desmin is the first, basic muscular – specific structural protein which decides about cardiac muscle cells function. It is supposed that both down- and up-regulation of desmin in cardiomyocytes plays an important role in the progression of heart failure (HF).

Aim: Evaluation of desmin in samples taken from the right heart ventricle during diagnostic endomyocardial biopsy (DMB).

Material and methods: The study population consisted of 100 patients (85 males) who underwent DMB. Four samples were taken from the right heart ventricle. Immunohistochemical assays of the endomyocardial muscle biopsies included immunostainning with antibodies to desmin and αβ-crystallin.

Results: Twenty one (21%) patients with HF had no desmin in cardiomyocytes (group 1). Abnormal accumulation of desmin deposits was observed in 23 patients (group 2). Fifty six patients had a normal expression of desmin in cardiac muscle cells (group III). The ejection fraction was significantly bigger in group 3 than in the other groups and the dimension of the left ventricle (LV) was statistically bigger in group 1 (see table below).

Table 1.

	LV ejection fraction (%)	LV transverse dimension (cm)
Group 1	27.5±6.1	7.3±1.0#
Group 2	28.9±10.8	6.4±0.9
Group 3 (control)	32.04±11.2*	6.2±0.8

 # = p<0.05 Gr1 vs Gr 2 and Gr 3
**= p<0.05 Gr3 vs Gr 1 and Gr2*

Conclusions: Our results have confirmed that either lack or abnormal accumulation of desmin in cardiomyocytes accompanies with HF development.

However, the lack of desmin in cardiomyocyte in immunohistochemical assay is associated with a significant enlargement of the LV.

MP-24

Periprocedural circulating monocytes level but not hs-CRP predicts in-stent neointimal hyperplasia after coronary stenting in patients with stable angina treated with statins

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Background: A growing body of evidence supports the theory that an inflammatory process may contribute to the pathogenesis of in-stent restenosis (ISR). There are conflicting reports concerning the value of different inflammatory markers especially in patients treated with statins. Circulating white blood cells (WBC) levels and high sensitivity CRP (hsCRP) measurements are accepted methods of assessing inflammatory status.

Objectives: The aim of the study was to investigate the relationship between periprocedural WBC, hsCRP and ISR and in-stent neointimal volume at six-month follow-up in patients with stable angina treated with statins.

Methods: We prospectively studied 64 patients (pts) with stable angina, who underwent angioplasty with bare metal stent implantation (PCI) for de-novo lesions in native coronary arteries. All subjects were treated with statins. Peripheral blood was obtained from all patients immediately before PCI, 24 h and 48 h after the procedure. Total WBC, neutrophil and monocyte fractions counts were measured with an automated hematology analyser. CRP levels were determined with high sensitivity ELISA kits. At six-month follow-up, all patients underwent angiography with quantitative coronary analysis (QCA) and intravascular ultrasound study with volumetric evaluation. ISR was defined as ≥50% stenosis by QCA.

Results: At 6 months, ISR was found in 15 pts (23.8%). We have observed no significant differences in preprocedural levels of total WBC, monocyte and neutrophil fraction counts between ISR and no-ISR pts. The median monocyte count 48 h after stent implantation was significantly higher in subjects with ISR (640±28/mm^3 vs 490±21/mm^3; p<0.001). Monocyte count 48 h after PCI showed a significant positive correlation with late lumen loss (r=0.42; p<0.001) and in-stent neointimal volume (r=0.31; p=0.013). Other analysed fractions did not correlate with late lumen loss and in-stent neointimal volume. There were also no significant differences in hs-CPR periprocedural levels between ISR and no-ISR patients, neither did hs-CRP correlate with in stent neointimal volume. In a multiple regression analysis monocyte count 48 h after PCI and stent length were proved to be the only significant independent predictors of in-stent neointimal volume.

Conclusions: Despite previously published data, in our patients treated with statins, hs-CRP levels did not bring any additional information concerning the risk of ISR. Post-procedural increase in plasma monocyte levels correlated with the development of ISR. Our results suggest that circulating monocytes may play an important role in the process of in-stent neointimal hyperplasia.

MP-25

Interleukin 1 genes cluster variants and neointimal proliferation after percutaneous coronary intervention

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Background: An arterial wall injury during percutaneous coronary intervention (PCI) induces vascular inflammation and neointimal hyperplasia, leading to restenosis. Interleukin-1 is a key regulator of inflammation. Recent studies have shown that genes contribute to the development of restenosis. We investigated whether Interleukin-1 beta (IL-1B) and IL-1 receptor antagonist (IL-1RN) genes polymorphism interacts with neointimal proliferation after PCI.

Methods: DNA samples were collected from 100 patients who underwent IVUS guided stenting. IVUS was performed at baseline and 6 months. DNA polymorphisms within IL-1 genes cluster (IL-1B (-511), IL-1B (+3954) and IL-1RN variable number tandem repeat (VNTR)) were genotyped using methods based on polymerase chain reaction. We compared combined heterozygous and homozygous carriers of the allele T with homozygous carriers of the allele C in IL-1B (-511), IL-1B (+3954) and heterozygous and homozygous carriers of the allele 2 with homozygous carriers of the allele 1 in IL-1RN (VNTR).

Results: Overall, the IVUS analysis revealed that the carriers of the allele 2 in IL-1RN (VNTR) had significantly lower late loss in MLD and MSA than non-carriers. No statistically significant relationship was found between late loss and polymorphisms within IL-1B (-511) and IL-1B (+3954) (fig.).

Conclusions: This study demonstrated the association between DNA polymorphisms within IL-1RN (VNTR) and neointimal proliferation after PCI, as evidenced by less 6-month neointimal hyperplasia in the carriers of the allele 2 of IL-1RN (VNTR) compared to non-carriers. Allele 2 at IL-1RN (VNTR) may be associated with a protection against restenosis after PCI.

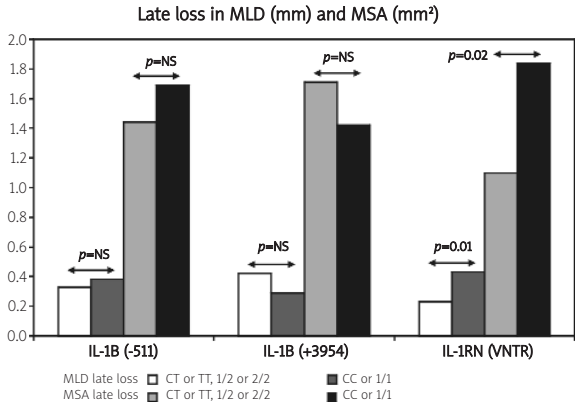

Fig. 1.

Moderated Posters – Session 4

MP-26

The impact of enhanced platelet reactivity on microvascular reperfusion and left ventricular remodeling in ST-segment elevation myocardial infarction

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Background: Platelet reactivity is believed to play an important role in both ischemic and reperfusion phases of myocardial infarction. We tried to determine whether measurement of platelet reactivity on admission allows identifying patients with an increased risk of impaired microvascular reperfusion and left ventricular remodelling in ST-segment elevation myocardial infarction (STEMI) treated with primary angioplasty (PCI).

Methods: Platelet reactivity was estimated on admission in 110 patients presenting with STEMI with the use of PFA-100 (Dade Behring®) as the time for flowing the whole blood to occlude a collagen-ADP ring, with shorter closure times (CADP-CT) indicating greater reactivity. Impaired microvascular reperfusion was defined as myocardial blush grade 0 or 1 (MBG 0/1) on the final post-PCI angiogram and the sum of ST-segment resolution ≤50% on ECG recorded 30 minutes after PCI relative to the baseline (STR≤50%). An increase of more than 20% in the end diastolic volume index (EDVI) at 6-months relative to the baseline value was considered as the left ventricular remodeling.

Results: The study population was divided according to median CADP-CT (95 seconds). MBG 0/1, STR≤50% and left ventricular remodeling were significantly more frequent in the inframedian group (≤95s.) (55.4%, 48.2%, 56% respectively) compared with the supramedian group (>95s.) (24.1% and 14.8%, P<0.008, P<0.0002 and P<0.0001, respectively) (fig.). In the multivariate logistic regression model, after adjusting for baseline characteristics CADP-CT≤95s. remained an independent predictor of MBG 0/1 (odds ratio [OR] 5.3, 95% confidence interval [CI] 2.1-13.5, P=0.0004), STR≤50% (OR 8.9, 95%CI 2.9-27.3, P=0.0001) and remodeling (OR 7.6, 95%CI 2.2-27, P=0.0016). The performance of multivariate models after incorporation of CADP-CT showed improvement with the concordance (C) index increase from 0.76 to 0.78 for MBG 0/1, 0.78 to 0.84 for STR≤50% and 0.83 to 0.9 for remodeling.

Conclusions: Enhanced platelet reactivity estimated by the rapid, point-of-care platelet function analyzer (PFA-100) is a strong and early predictor of impaired microvascular reperfusion and the left ventricular remodeling in STEMI treated with primary PCI.

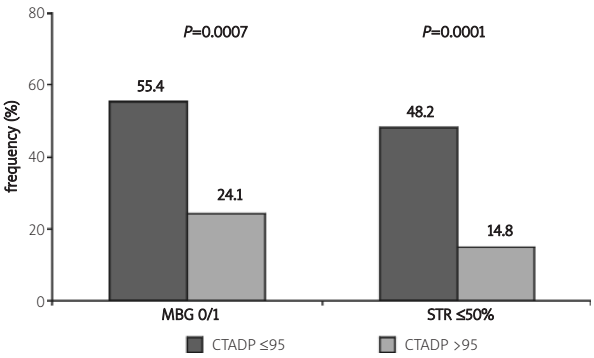

Fig. 1.

MP-27

Conduction abnormalities and arrhythmias after the transcatheter closure of the atrial septal defect

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Objective: Conduction abnormalities and arrhythmias may occur in patients following the secundum atrial septal defect (ASD) closure using the Amplatzer Septal Occluder (ASO). Therefore, the aim of the study was to prospectively perform ambulatory 24-hours ECG monitoring to assess the electrocardiographic effects of the transcatheter closure of the ASD using the ASO.

Methods: Between December 2001 and March 2004, 42 adult patients (30 F, 12 M) with a mean age of 40.7±14.6 (18-63) years were enrolled for an attempt at the ASD closure with the ASO device. All patients had an isolated secundum ASD with the pulmonary to systemic blood flow ratio, Qp: Qs: 1.89±1.6 (1.5-2.89). Holter monitoring was performed on all patients before the procedure, 1, 6 and 12 months of follow-up. The Holter analysis included: heart rate (HR), ECG intervals, supraventricular ectopy (SVE), ventricular ectopy (VE), and AV block.

Results: The ASO devices were successfully implanted in all patients (procedure time 43±4.5 (19-63) minutes, fluoroscopy time 12.6±7.1 (4-40) minutes), with only 3 patients with a trivial residual shunt. The defect echo diameter was 12.2±5.3 (7-32) mm. The mean balloon stretched diameter of ASD was 16.2±5.9 (11-36) mm. The diameter of the implanted devices ranged 13-38 mm.

After 1 month: no change in the baseline rhythm was observed in 40 (95.2%) pts; in 6 (14.3%) pts changes in the AV conduction occurred: one pt (2.4%) had complete AV dissociation, 5 (11.9%) pts present intermittent second degree AV block type II; paroxysmal atrial fibrillation (pAF) occured in 5 (11.9%) pts, 3 of whom had pAF prior to the closure. There were no conduction abnormalities as well as AF after 6 and 12 months. A significant increase in the number of SVE premature beats/24 hours was noted after 1 month.

Conclusions:

- The transcatheter closure of the secundum ASD using the ASO is a safe and effective procedure.
- The transcatheter closure of the secundum ASD using the ASO is associated with an acute increase in supraventricular premature beats and a small risk of AV conduction abnormalities and paroxysmal atrial fibrillation in early follow up.

There is the regression of periprocedural conduction abnormalities and arrhythmias after 6 months of ASD closure.

MP-28

The local ultrasound-guided thrombin injection as a routine treatment for postcatheterization femoral artery pseudoaneurysms: a short-term follow-up

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Table 1. (MP-27)

	before	1 month after	6 months after	12 months after	*p value before vs 1 month*	*p value before vs 6 months*	*P value before vs 12 months*
SVE premature beats/24 hours (mean)	54.5 (7-560)	6020.9 (27-9600)	2079.8 (4-3701)	59.1 (3-612)	<0.001	<0.001	NS
VE premature beats/24 hours (mean)	478.0 (7-803)	711.5 (3-1050)	638.9 (2-731)	470.4 (0-669)	NS	NS	NS

Vascular access complications may be a major cause of morbidity in patients undergoing cardiac catheterization. Most frequently occurring are the femoral artery false aneurysms (FAN), with the reported incidence of up to 6% of procedures. Based on the diagnostic criteria used in the literature, it may seem that the „real life" incidence is largely underreported. There are a number of risk factors related to the formation of iatrogenic FAN, although some are not well documented. The treatment of this complication may be conservative, surgical, it may be with an ultrasound probe or a less effective auscultation-guided prolonged compression. Sometimes, different endovascular techniques are also used. Over the last several years, the duplex ultrasound-guided topical thrombin injection into the FAN cavity has become increasingly popular and accepted. Most centers using this technique routinely report excellent success rates with low complication and exclusion rates. The technique is usually indicated in case of all pseudoaneurysms (FAN) exceeding 2 cm in diameter. Only actively bleeding patients requiring an urgent surgical intervention are excluded. There is some controversy with respect to patients having a multi-chamber, large, unfavorably located FAN, where the optimal closure technique is still a matter of discussion and the outcomes — clearly inferior to patients with simple FAN.

In order to determine the feasibility, safety and efficacy of treating FAN with the local thrombin administration in the hands of an interventionist, we have started treating patients routinely using local thrombin injections since the end of January 2003. We prospectively assessed the short term outcomes and the complication rate.

Patients and methods: Until February 2005 we treated 68 patients with iatrogenic FAN (male/female: 36/32). The mean patient age was 66.5, with the median of 70. The mean diameter of the FAN was 4.9 cm (only those FAN exceeding 2 cm were treated routinely). 16 (23.5%) had a complex multi-chamber structure. As soon as possible after the diagnosis, a topical bovine thrombin was injected under a continuous ultrasound guidance. The tip of the needle had to be well visualized and positioned inside the cavity, away from the FAN neck. An average injection consisted of 700 units (range 300-1600 IU) of thrombin. In case of the multi chamber FAN, an attempt was made to induce thrombosis in the chamber most proximal to the neck. The patients underwent the ultrasound follow-up on the next day after the procedure. If necessary, a second attempt was scheduled.

Results: The eventual procedural success was achieved in all but three patients (95.6%). Out of the three failures, only one patient was electively referred for surgery. In the other two, after three attempts, the residual small multi-chamber FAN underwent spontaneous thrombosis over time, without adverse events. In case of 8 patients, all of them with the multi-chamber FAN, a second session was necessary to induce a complete FAN closure. In case of the single-chamber FAN, the immediate success rate was 100%. In case of the large multi-chamber FAN, the success rate was 81% (13 out of 16). There were no anaphylactic reactions noted. One obese patient, during a subsequent procedure, suffered symptomatic peripheral thrombosis. However, she required neither surgical nor thrombolytic treatment. The symptoms promptly spontaneously resolved. Several patients experienced transient paresthesias or a mild burning sensation lasting up to 30 seconds during the injection, of no clinical relevance. There were no other complications.

Conclusions: The ultrasound-guided obliteration of postcatheterization femoral artery FAN, as described, is an efficacious and safe method for the treatment of this all too frequent complication. It should be generally accepted as the preferred method of treatment, if the patient is not actively bleeding from the puncture site. Prolonged or ultrasound-guided compression should be avoided, as methods both painful and less effective. The method is simple to learn. It must be noted, however, that there is a certain learning curve and especially the treatment of the multi-focal FAN should only be attempted after acquiring sufficient experience.

MP-29

Percutaneous coronary interventions in the treatment of patients with the left main coronary artery disease – a retrospective analysis 1996-2004

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Background: Coronary artery bypass grafting (CABG) has been the treatment of choice for the patients with the left main coronary artery disease (LMCA) for many years.

Thanks to the recent advancement in percutaneous coronary interventions (PCI) some of these patients may benefit from the treatment by invasive cardiology methods. However, the efficiency and safety of this procedures have not been clearly established yet.

The aim of this study was to analyse the short and long-time efficiency of PCI in the treatment of patients with LMCA disease.

Material and Methods: Between January 1996 and December 2004 there were 104 patients with angiographically confirmed LMCA disease who underwent LMCA angioplasty in the Department of Invasive Cardiology. They were consecutively recruited for the study. There were 25 female and 79 male patients with a median age 66 years (range from 35 to 88). Of the described group 74% of patients underwent primary PCI due to the ACS and 26% of patients underwent elective PCI for stable CAD.

81 patients out of 104 have been contacted by phone calls or the follow up information was acquired from medical records from 9 years to 6 months after the PCI procedure (median 30 months).

Results: The angioplasty success rate was 97.1%. The stent was implanted in 99% of the performed procedures. The in-hospital mortality was 10,4% in patients with the ACS (the majority of the patients were in cardiogenic shock) and 0% in the elective group. During the median follow up of 30 months 14 patients died (13.5%) – the death was related to ACS in 10 (9.6%) and to other reasons in 4 (3.8%). Eleven (10.6%) patients underwent a non fatal ACS, three (2.8%) – stroke, twenty two (21.2%) patients required subsequent revascularization because of restenosis in LMCA (9 of them underwent CABG, 10 underwent subsequent LMCA angioplasty, 3 of them underwent the third LMCA angioplasty because of restenosis) during the follow-up.

Conclusions: Our study revealed that in our series of patients who underwent LMCA angioplasty the mortality and reintervention

rate was relatively low during the follow-up. We suggest, that PCI maybe a valuable method of the treatment of patients with the LMCA disease in the ACS and in patients with stable angina.

MP-30

The transradial approach for coronary procedures – advantages and disadvantages. The experience of the Latvian Centre of Cardiology

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Background: Superficial localization and the fact that a. radialis goes separately from other important anatomical structures (veins and n. medianus) make it as an excellent access site for coronary procedures. To compare with the more common a. femoralis approach, the a. radialis approach results in less hemorrhagic and infection complications. Introducer sheaths can be removed immediately after the procedure also for patients who have received large doses of heparin, GPIIbIIIa blockers or even thrombolysis. The post-procedural immobilisation is not necessary and that increase patients comfort and decreases nursing staff work. That results in less hospitalisation time and reduces the overall procedural costs.

Disadvantages of this approach are the more difficult anatomical situations, the a. radialis spasm that may occur during the procedure and the a. radialis occlusion after the procedure (but in the case of normal Allen's test they are asymptomatic). Another negative aspect is a slightly longer X ray exposure time and overall procedural time.

Method: We started to use the transradial approach for coronary procedures in the daily practice in 2003. The outpatient program for coronary angiographies was also started.

Results: After operators learning curve the procedural time decreases significantly (Table 1).

The average hospital stay after femoral or radial access for coronary procedures was 2.4 and 1.6 respectively.

The evolution of transradial procedures (Table 2).

No major complications (stroke, bleeding, symptomatic thrombosis) occurred.

Conclusions

After the learning curve the transradial and transfemoral angiography time is similar. But considering the advantages of the radial access we can conclude that there is a financial gain using this approach in daily practice for coronary angiographies and interventions.

Table 1.

Patients	1.-200.	200.-400.	a. femoralis
Fluoro time	10.3 min*	6.7 min*	5.2
Procedural time	41.5 min**	33.5 min**	28.4

**p≤0.003 **p≤0.002*

Table 2.

	2003	2004	2005
Coronary angio	377	922	1690
PCI	52	254	468

Posters

P-31

The late outcome after eligible stenting of the left main stem – impact of stenosis localization

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The left main stem (LMS) is the first segment of the left coronary artery. LMS dividing into two branches: the left artery descending (LAD) and the left circumflex (LCX), supplies 80% of the left cardiac ventricle. It is the reason why significant LMS stenosis (>50%) is associated with the bad long-term prognosis. LMS stenting is still not advised as a competitive method to coronary bypass grafting (CABG).

The aim of the study was to assess the immediate and long-term results of the stent implantation in correlation with the localization of LMS stenosis.

The study population consisted of 56 patients with significant LMS stenosis who underwent PCI. The population was divided into two groups depending on the localization of LMS stenosis: **Gr. 1** – 36 pts (28M, average age 64.3±10.45y) with the stenosis in its distal portion and **Gr. 2** – 20 pts (16M, average age 64.7±8.6y) with the stenosis in the mid or proximal LMS portion. The majority of patients have two (44% vs 30%) or three coronaries involved (27.8% vs 10%, Gr1 and Gr2 respectively).

The studied population was analyzed considering the procedural data and angiography parameters (MLD, RD, BA/RD ratio) prior and post PCI. The long-term observation included the presence of major adverse cardiac events (MACE – death, myocardial infarction, cardiogenic shock, necessity of secondary revascularization).

PCI was successfully performed in 77.8% patients of Gr1 and in all of Gr2. There were no periprocedural complications in Gr1, while in 2 (5.6%) pts of Gr 2, the cardiogenic shock occurred. The immediate angiographic results (MLD post: 3.78±0.35 vs 3.7±0.32), nominal stent diameter (3.63±0.34 vs 3.69±0.36 mm) and the pressure used (16±2.87 vs 15.75±2.41 atm) in both groups did not differ significantly. However, the mean stent length was significantly longer in Gr 1 compared with Gr2 (17.38±5.29 vs 12.5±4.74 mm, respectively Gr 1 and Gr 2). The follow-up lasted 9.6±5 vs 8.3±5.1 months on the average. During 6 months after the stent implantation angiographic restenosis was found in 5 (13.9%) patients from Gr1 and in 2 (10%) from Gr2. The CABG treatment (3 vs 1, Gr1 vs Gr2 respectively) and sirolimus-eluting stent implantation (2 vs 1, Gr1 vs Gr2 respectively) were administered in restenotic pts. In addition, PCI in other coronaries was performed in 6 (16.7%) patients from Gr1 and 4 (20%) from Gr2. Four deaths were noted in patients from Gr1.

Conclusions: The distal localization of the significant LMS stenosis treated with stent is associated with more frequent periprocedural complications and a worse long-time prognosis compared with the mid and proximal localization.

P-32

The influence of clinical, echocardiographic, angiographic and inflammatory factors on the LV remodeling in patients with STEMI treated by primary angioplasty

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Background: The LV remodeling after acute myocardial infarction is a precursor of heart failure and higher mortality. However, the predictors of LV remodeling are currently not entirely recognized.

Objectives: The aim of the study was to evaluate the LV remodeling in patients after STEMI treated with primary PCI.

Methods: The study group consisted of 100 patients with STEMI treated with primary PCI. At baseline and after 6 months, clinical, electrocardiographic, angiographic, echocardiographic variables and the level of cytokines in the peripheral circulation were analyzed.

According to the LV remodeling, the patients were divided into 3 groups: I – 28 pts with a decrease in the left ventricular end diastolic volume (Δ% LVEDV) ≥20% in relation to baseline (improvement of the LV function), II – 53 pts with the change in the Δ% LVEDV<20% (no remodeling), III – 19 pts with an increase of Δ% LVEDV≥20% (remodeling).

Results: Risk factors, ECG changes, location, size of STEMI, maximal values of biochemical markers did not differ in the studied groups. Time from the onset of pain to reperfusion was longer in group II (4.5±2.7 h) and III (4.4±3.1 h) than in group I (3.5±2.0 h), (p=0.04).

In group I, TIMI 0 or I after PCI was less frequent than in other groups (TIMI 0 in 11 pts (47%), TIMI I in 2 pts (7,4%)). In group II TIMI 0 was found in 37 pts (70%) and TIMI I in 5 pts (9%) In group III TIMI 0 was seen in14 pts (74%) and TIMI I in 4pts (21%). There was a significant difference between the groups (p=0.02, p=0.01, p=0.04).

TIMI 3 flow after PCI was achieved in group III only in 7 pts (37%), in groups I and II in 23 pts (85%) and 37 pts (70%) respectively (p=0.09).

Restenosis was seen more often in group III – 6 pts (32%) than in group I – 7 pts (25%) and II – 10 pts (19%), p=0.002. The VEGF serum level after PCI was the highest in group III (967±385 pg/ml), lower in group II (691±409 pg/ml) and group III (611±369 pg/ml), (p=0.04, p=0.01).

The serum level of IL-6 on admission was higher in groups II and III than in group I (p=0.02) In group I – 8.8±16.7 pg/ml, in group II – 11.5±28.1 pg/ml, and in group III – 15.1±13.9 pg/ml.

The maximal decrease in LVEDV and LVESV was observed in group I as compared with group II and III (Δ% LVEDV: -31.75±14.3% vs. -0.28±5.16% vs. 47.10±32.50%, %p<0.0001; Δ% LVESV: -46±23.5% vs. -10±37.3 vs. 31±57.3%, %p<0.0001).

The best improvement of LV contractility was also found in group I (Δ% WMSI: I – 10.7±17.04%, II – 2.4±14.4%, III – 1.0±20.5, p=0.03). The change of LVEDV in group I positively correlated with the change of WMSI (r=0,304, p=0,002).

Conclusions: Remodeling of LV depends on an early success of revascularization. The improvement of the LV function in patients with the highest values of LVEDV in the acute phase correlates with the improvement of LV contractility. Remodeling is also associated with a more pronounced inflammatory response.

P-33

The predictive value of TIMI Frame Count in patients with TIMI 3 flow in infarct related artery after an effective primary coronary intervention

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Background: The aim of our study was to evaluate the predictive value of corrected TIMI Frame Count (CTFC) in patients with anterior AMI successfully (TIMI 3 flow in IRA) treated with a primary coronary intervention. We also studied correlations of CTFC with myocardial reperfusion and early- and late left ventricular function.

Materials and methods: 81 consecutive patients with first anterior AMI successfully treated with primary angioplasty were enrolled in the study. CTFC, myocardial blush grade and ST-segment resolution in ECG were evaluated after an intervention. Echocardiography was performed at baseline and 6 months after pPTCA. End-diastolic volume (EDV), end-systolic volume (ESV) and LV ejection fraction (EF) were calculated.

Results: The patients were divided into 2 groups: pts with CTFC>23 (n=20) and pts with CTFC<23 (n=61). In pts with faster flow in the infarct-related artery, MBG 2&3 (85.2% vs 45%, p<0.001) and ST-segment resolution (50.8% vs 25%, p=0.038) were more often. In pts with CTFC>23 LVEF was significantly lower after 3 days (43.6%±8.1 vs 48%±8.7; p=0.017), as well as after 6 months (48.8%±12.6 vs 54.8%±15; p=0.041). WMSI after 3 days and 6 months was lower in patients with the CTFC<23. 12-months mortality was not significantly higher in pts with slower flow. Major adverse cardiovascular events were more often in CTFC>23 group.

Conclusions: The value of CTFC>23 is a predictor of worse in patients with AMI successfully treated with primary coronary intervention. It correlates with deterioration of the myocardial reperfusion and is associated with worse early and late left ventricular function.

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P-34

High dose statin pretreatment before Percutaneous Coronary Intervention in patients with Non ST-elevation Acute Coronary Syndrome influences the long term follow up

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Background: Statin therapy following Non ST-elevation Acute Coronary Syndromes (NSTE ACS) reduces Major Adverse Cardiac Events (MACE) during long term follow up. The aim of the study was to assess the influence of high dose statin pretreatment before Percutaneous Coronary Intervention (PCI) in patients (pts) with NSTE ACS and elevated CRP level on MACE rate in long term follow up.

Methods: 140 consecutive pts with NSTE ACS were enrolled to the study. In group A (n=54) pts did not receive statin before PCI, in group B (n=86) pts were pretreated with 80 mg of atorvastatin for 3-5 days before intervention. Simultaneously the pts were treated with standard cardiac therapy including ASA, thienopyridines and low molecular weight heparin (LMWH). After PCI all pts received 40 mg of atorvastatin. In both groups rate of MACE (death, myocardial infarction – MI, repeat revascularization – re PCI) was analyzed in long term follow up.

Results: Baseline characteristics (age, sex, diabetes, previous MI, left ventricle EF, total and LDL cholesterol) were similar in both groups. There were no differences in the CRP high sensitivity (hs) level and TIMI Risk Score between the studied groups (A vs B: CRPhs 10.8±15.8 vs 8.2±12.8 p=NS; TIMI Risk Score 4.3±0.71 vs 4.37±0.79 p=NS). A significant higher rate of MI and composite MACE (death+MI and death+MI+rePCI) was found in group A (Table).

Conclusions: Pretreatment with a high dose of atorvastatin before PCI is effective in MACE reduction during long term follow up in patients with NSTE ACS despite the similar statin therapy after the procedure.

Table 1. The tate of MACE in the follow-up

	Group A (n=54)	Group B (n=86)	p=
follow-up (days)	641±373	592±373	NS
death	5.5%	1.2%	NS
myocardial infarction	9.25%	1.2%	0.03
rePCI	11.1%	5.8%	NS
death+MI	14.8%	2.32%	0.013
death+MI+rePCI	25.9%	8.1%	0.006

P-35

The predictive value of the presenting Q, R and S-wave changes and their subsequent evolution in patients treated with primary PCI for acute ST-elevation myocardial infarction

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The Evaluation of the presenting and discharge Q, R, S-wave changes proves clinically useful in patients with acute ST-elevation myocardial infarction (STEMI) but only in those treated with thrombolysis. Whether the extent of presenting Q, R, S-wave changes influences postprocedural myocardial tissue reperfusion and if successful primary PCI could attenuate their progression, remains unknown.

Methods: Three in series: 1) presenting, 2) recorded up-to 3 h post and 3) obtained at the discharge, 12-lead ECGs were analyzed in 147 consecutive unselected pts treated with primary PCI up-to 12 h after pain-onset. For assessment of myocardial-tissue reperfusion, Σ of ST-deviations were measured in the presenting ECG and in the one recorded early after primary PCI. Then, the percent of ST-deviation resolution (% STR) was calculated. Patients with % STR>50% were considered to have successful myocardial tissue reperfusion. The Q, R, S-wave changes in the presenting and discharge ECGs were evaluated with the Selvester 29-point QRS score.

Results: About 54% (n=79) of pts had successful myocardial tissue-reperfusion. Overall, a significant increase in the QRS score between presenting and discharge ECG was noticed (7.97±3.22 vs. 8.59±3.94, p=0.042 respectively). Patients with vs. without successful microvascular reperfusion did not differ with regard to the presenting QRS score (8.11±3.49 vs. 7.79±2.88, p=NS respectively). However, whereas the value of the QRS score increased significantly in pts with failed reperfusion (+1.53, p=0.002) it remained unchanged in those with successful reperfusion (-0.16, p=NS). Consequently, the discharge QRS score was smaller in pts with vs. without adequate tissue-level reperfusion (7.95±3.27 vs. 9.32±4.52, p=0.035 respectively). In the multivariate analysis adjusted for baseline clinical data, final TIMI flow grade, admission Killip class, infarction location and presenting QRS score, only the time-to-treatment but not the presenting QRS score was predictive of successful myocardial tissue-level reperfusion (OR 0.80; 95% CI 0.65-0.95; p=0.012). Furthermore, myocardial salvage plus infarct area stabilization – signified by the none-increase in the presenting QRS score (51%, n=75), was predicted by successful tissue reperfusion (OR 1.98; 95% CI 1.00-3.94; p=0.050).

Conclusions: Presenting Q, R, S-waves changes did not influence reperfusion efficacy of primary PCI. Successful myocardial tissue-level reperfusion achieved with primary PCI attenuates the subsequent progression of the QRS changes, indicating myocardial salvage and scar stabilization.

P-36

The comparison of direct drug eluting versus balloon predilation drug eluting stenting for treatment of in-stent restenosis. An Intravascular Ultrasound Study

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Acute results of drug-eluting stents (DES) implantation for bare-metal stent (BMS) in-stent restenosis (ISR) seem to influence long-term outcomes. Stent underexpansion proved to add to the ISR occurrence and thus its correction might facilitate restenting of BMS-ISR with DES. Therefore, results of direct DES implantation (DDES) versus DES implantation with balloon predilation (PDES) for BMS-ISR were compared by means of intravascular ultrasound (IVUS).

Methods: All procedures were angiography-guided. Serial (pre- and postprocedural) IVUS studies were performed. The preprocedural lumen and BMS cross-sectional areas (CSA) were measured off-line with IVUS at the minimal in-stent lumen area site. Respective lumen, BMS and DES CSAs were also measured in the postprocedural IVUS examinations. Lumen CSA was also assessed in references. Lumen CSA stenosis and indexes of BMS and DES expansions were calculated.

Results: Of all 32 ISR lesions, 15 were treated by means of DDES. Postprocedural IVUS was done in all 32 lesions, with serial IVUS examinations available in a subset of 20 lesions (11 treated with DDES). Preprocedural stented segment length was 21.95±9.34 mm and increased to 25.05±4.92 mm after the DES implantation.

Maximal balloon pressure applied during the procedure was the same in the DDES and PDES groups (18.07±2.15 vs. 18.29±2.95 atm., respectively). Detailed IVUS results are shown in the table. The postprocedural in-DES minimal lumen CSA was larger for lesions treated with PDES (7.4±1.6 vs. 6.1±2.0, p=0.054).

Conclusions: The strategy of balloon predilation before DES implantation for ISR treatment might result in a bigger acute in-stent dimension.

Table 1.

	DDES (n=15)	PDES (n=17)	*P*
Preprocedural (n=20)			
minimal lumen CSA (mm^2)	2.8±0.7	3.0±0.8	NS
bare stent CSA (mm^2)	6.9±2.4	6.4±1.9	NS
lumen CSA stenosis (%)	65.4±9.3	61.7±12.5	NS
bare stent expansion (%)	82.4±25.7	81.6±28.3	NS
mean reference lumen CSA (mm^2)	8.0±2.4	8.6±2.5	NS
Postprocedural (n=32)			
minimal in-DES lumen CSA (mm^2)	6.1±2.0	7.4±1.6	0.054
bare stent CSA (mm^2)	8.5±2.9	9.5±2.0	NS
in-DES lumen CSA stenosis (%)	21.21±18.48	8.54±21.18	0.092
DES expansion (%)	78.8±18.5	91.5±21.2	0.092
bare stent expansion (%)	108.6±26.0	118.7±27.5	NS

P-37

The "Primary PCI fast track" is a time and distance-saving alternative for patients with STEMI who would regularly present to non-PCI hospitals

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According to PRAGUE and DANAMI studies, primary PCI is the preferred reperfusion strategy also for patients with STEMI presenting to non-PCI hospitals. Unfortunately, interhospital time delays required for urgent transfer of patients for primary PCI are much larger than those reported in these randomized trials. In our 85 consecutive patients with STEMI transferred for primary PCI from 9 non-PCI hospitals in 2002, the median time delay from the first medical contact on the field to the first balloon inflation was 170 minutes (Table). To reduce such excessive time delays for patients presenting to non-PCI hospitals, we concomitantly introduced a "Primary PCI fast track" which consists of an immediate diagnosis of STEMI using 12-lead ECG on the field, immediate telephone cath lab alert and direct transport into a cath lab bypassing non-PCI hospitals as well as ER/CICU in the PCI hospital. From January 1, 2002, to December 31, 2004, 125 consecutive patients transferred from 23 different sites on the field underwent "Primary PCI fast track". The time delay from first medical contact to the first balloon inflation was reduced to 100 minutes and median emergency vehicle traveling distance to 42 km (table). There were no deaths during the transport from the field to the cath lab. The diagnosis of STEMI eligible for acute mechanical reperfusion was (based on patient history, 12-lead ECG and coronary angiography) ultimately confirmed in 111 of 125 patients (89%). Final TIMI 2/3 was obtained in 103 patients (93%). Hospital mortality was 3.6%. Accordingly, our preliminary experience indicates that the "Primary PCI fast track" provides an accurate diagnosis of STEMI eligible for acute reperfusion and is also a time/distance-saving alternative for patients who would regularly present to a non-PCI hospital.

Table 1.

	Via non-PCI hospital (n=85)	Primary PCI fast track (n=125)
first medical contact-door at non-PCI hospital	30 (15-65)	–
door at non-PCI hospital-door at PCI hospital	110 (90-145)	–
first medical contact-door at PCI hospital	–	65 (40-80)
door to balloon	30 (25-45)	35 (30-40)
first medical contact-first balloon inflation	170 (160-240)	100 (80-115)
distance traveled, km	61 (48-96)	42 (25-74)

**the median value and the 25th-75th percentiles are shown; all time values are in minutes*

P-38

No-option patients. The prognosis Of medium- and high-risk patients with multivessel coronary artery disease disqualified from surgical revascularization

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Background: The population of patients referred for coronary artery bypass graft (CABG) surgery has changed over the decades. Increasing age, disease severity and comorbidity of such patients make their preoperative status more complex. High-risk patients represent a substantial proportion of surgical candidates. Few reports have studied the prognosis of patients with a high postoperative mortality risk not qualified for surgical revascularization and treated medically. We aimed at assessing the prognosis of medium- and high-risk patients with multivessel coronary artery disease (CAD) disqualified from surgical revascularization.

Methods: A total of 102 consecutive surgical candidates were entered into the study between February 1999 and September 2002. The patients were admitted to the department with the diagnosis of stable CAD or acute coronary syndromes (ACS) and based on coronary angiography were presented to a cardiac surgeon and disqualified from surgical revascularization.

Results: The study group comprised 36 (35.3%) patients with stable CAD and 66 (64.7%) patients with ACS. The baseline characteristics of the patients: age: 65±9 y, males: 71.6%, diabetes: 37.2%, hypertension: 73.5%, smokers: 25.5%,

hyperlipidemia: 63.7%, previous myocardial infarction: 65.7%. The mean EuroSCORE was 5.3±3.1 points (8.2±2.6 for high-risk patients and 3.6±1.1 for medium risk patients). 23.5% of patients underwent a paliative percutaneous coronary intervention. The follow-up period was 21±11 months. The mean survival time of patients who died was 11±9 months. The total mortality rate was 12.7%: 8.3% for medium-risk patients and 19.0% for high-risk patients. The expected (based on EuroSCORE) postoperative mortality rates should be 4.7%, 3.1% and 11.2% respectively.

Conclusions: These results suggest that it is reasonable to consider surgical revascularization in high-risk patients despite the high postoperative mortality risk, because the medical therapy in this population is associated with even higher mortality.

P-39

Interventricular septum alcohol-induced ablation for the treatment of hypertrophic obstructive cardiomyopathy – method limitations

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Alcohol-induced ablation of the basal segment of the interventricular septum (IVS) for the treatment of hypertrophic obstructive cardiomyopathy (HOCM) has been in clinical use for ten years now. This method, utilizing the transcatheter percutaneous technique, may lead to septum thickness reduction and consequently — decreased outflow gradient. This is a result of obliterating the first septal perforating artery (FSPA) following an ethylic alcohol infusion. The ensuing septal myocardial infarction leads to the septal fibrosis and basal septum segment thickness reduction.

The anatomy of FSPA shows a great variation with respect to both, its size and LAD (left anterior descending branch) branching-off site. Anastomoses between FSPA and heart chambers have also been described.

Aim of study: Assessment of anatomical variants of the FSPA that make the patient ineligible for alcohol-induced septal ablation.

Methods: A group of 86 patients with HOCM referred for alcohol-induced septal ablation was analyzed. Pre-procedure, in the case of every patient, invasive outflow gradient assessment was performed (both resting and postextrasystolic). Next, the angiography of the FSPA is done, followed by myocardial contrast echocardiography (MCE). This precisely shows the area of IVS supplied by the septal branch in question.

Results: Anatomical variants of FSPA rendering patients procedure-ineligible were found in 12 out of 86 (14%) cases. The main types of findings were: (1) small diameter of the FSPA (inadequate for the introduction of a 1.5 mm balloon catheter) – 2 patients, (2) low or unusual LAD branching-off point resulting in blood supply to the septum outside the area of interest- 6 patients, (3) anastomoses between the FSPA and heart chambers – 4 patients.

Conclusions: (1) Anatomical variants of the FSPA rendering HOCM patients ineligible for the alcohol-induced IVS ablation occur rather frequently. (2) In some patients the FSPA supplies a segment of IVS outside the area of interest. (3) MCE greatly enhances the efficacy and safety of alcohol-induced septal ablation and should be adopted as a routine preliminary element of this procedure.

P-40

Primary coronary stenting with thrombectomy and adjunctive antiplatelet inh. GP 2b/3a therapy in the ST elevation infarction patients

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A goal of the reperfusion strategy for STEMI patients is to obtain TIMI-3 flow and good myocardial perfusion. Distal embolization during angioplasty may deteriorate the adequate tissue perfusion (di-

Table 1. (P-40)

group	age	pain onset	HR admission	SBP admission	Killip class >1	severe CHF	IABP	hospital stay (day)	cross-over	thr.-embolic compl.
TR	57.15± 13.16	4.45±2.32	84.2±15.2	143.2±21.8	1 (20)	2 (20)	0 (20)	7.1±2.3	1 (20)	1 (20)
TR+A	58.8±8.94	4.5±2.03	80.6±15.8	138.4±34.8	1 (20)	2 (20)	0 (20)	6.7±1.9	1 (20)	1 (20)
p	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Table 2. (P-40)

group	ST ratio 0'	ST ratio 60'	EF baseline	LVEDV baseline	WMSI baseline	CKMB Σ	TIMI after TR	MPG after TR	TIMI after PCI-final	MPG after PCI-final	EF 6 m	LVEDV 6 m	WMSI 6 m	MRIIA/RA baseline	MRIMA/RA baseline
TR	0.45	0.24	49.9	101	1.76	14702 ±7825	2.1	1.55	2.9	2.15	51.8	123	1.62	0.58±0.2	0.21±0.15
TR+A	0.28	0.14	52.5	94	1.66	9689 ±6761	2.15	1.6	3.0	2.05	50.0	116	1.5	0.56±0.15	0.22±0.18
p	0.15, ns	0.11, ns	0.45, ns	0.48, ns	0.48, ns	0.036	0.88, ns	0.9, ns	ns	0.72, ns	0.74, ns	0.66, ns	0.47, ns	0.7, ns	0.86, ns

ST ratio 0' – ST elevation before/after PCI; ST ratio 60' – ST elevation after PCI/ 60 min after PCI; IA – infarct area; RA – risk area; MA – microvascular area, obstruction area

stal embolization and microvascular occlusion). Therefore, much attention has been paid to the strategies to prevent distal embolization. The aim of this study was to evaluate the efficacy of adjunctive inh. GP 2b/3a therapy during thrombus extraction with thrombectomy devices (TR) and primary coronary angioplasty (PPCI).

Methods: 40 acute myocardial infarction patients within 12 hours from the symptoms onset (mean 4.5 h) and TIMI 0-1 flow in the infarct related artery (IRA) were randomized to coronary thrombectomy followed by stenting (20 pts — TR group) or to thrombectomy with adjunctive GP 2b/3a inh. administration (abciximab) and stenting (20 pts — TR+A group). Thrombectomy was performed using the Rescue TM catheter (Scimed Boston). To evaluate efficacy of the therapy, we assessed TIMI flow grade, myocardial blush, ST-segment resolution, CKMB changes, echocardiographic and MRI parameters at baseline and after 6 months.

Results: There were no differences in the baseline characteristics of both groups, including ischaemic time and TIMI before PPCI. The analyzed parameters at baseline and follow-up are shown in the tables.

Conclusions: Thrombectomy during primary PCI are associated with efficient thrombus extraction, achieving an excellent angiographic and clinical result. In this group periprocedural adjunctive inhibitor GP 2b/3a therapy, is not significantly effective to prevent microembolization (MRI) and preserve the LV function (Echo) in the STEMI patients treated with successful thrombectomy.

P-41

Factors influencing the on the success-rate of treatment with percutaneous coronary angioplasty in the infarct related artery in diabetic patients

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Background: Diabetes mellitus (DM2) is a well known factor influencing negatively the outcome in diabetic patients with acute myocardial infarction (AMI).

Aim of the study: To characterize factors influencing the success-rate of percutaneous coronary angioplasty (PCI) in the infarct related artery (IRA) in DM2 patients (pts) with AMI.

Material and methods: 380 diabetic AMI pts, were selected among 1486 consecutive AMI pts treated with PCI in our hospital. We analyzed the relation between selected factors like demographic, clinical and inhospital course of treatment data and success-rate PCI in IRA in DM2 pts. the log-rank statistic was used to evaluate the influence of selected factors on the PCI insufficiency; the multivariate analysis was used to evaluate independent risk factors on the PCI success in this group.

Results: The univariate analysis evaluated that age (OR/unit 1.03, $p<0.05$), Killip class on admission (OR/unit 1.39, $p<0.05$), and the pre-PCI TIMI flow in IRA (OR/unit 0.52, $p<0.001$) are risk factors significantly related to PCI success. Multivariate analysis evaluated that those three risk factors are independent predictors of IRA PCI lack of success in DM2 pts (all $p<0.05$).

Results: Elderly age, advanced heart insufficiency on admission and the pre-PCI inappropriate flow in IRA are markers of PCI efficiency in IRA in DM2 pts with AMI.

P-42

The clinical application of Cardioseal/Starflex devices for closure of extra- and intracardiac shunts

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Background: Cardioseal/Starflex occluding devices (CS/SF) are double umbrella systems, which have several technical advantages such as: low profile, low nitinol content and relatively large covering surface. Our clinical experience with application of those devices is presented.

Material & methods: From 1999 till 2005 the transcatheter closure of undesirable shunts with CS or SF devices was performed in 44 patients (pts). They were divided into 3 groups:
- Atrial Septal Defect (ASD) – 31 pts aged 12.3 (from 4 to 27) years (y)
- Persistent Foramen Ovale (PFO) – 10 pts aged 31.7 (from 13 to 54) y
- Patent Ductus Arteriosus (PDA) – 3 pts aged 16.32 and 62 y.

Indications for CS/SF implantations were:
- in ASD: a small, centrally located defect or multifenestrated aneurysm of the interatrial septum (IAS),
- in PFO: history of cryptogenic transient ischemic attacks or stroke and the right to left shunt through short PFO tunnel (<8 mm) on the Valsalva maneuver,
- in PDA: a large, window type duct (according to Kirchenko- type B).

The standard transvenous technique of CS/SF implantation was applied in all pts.

Results: In all but 2 pts the procedures were completed successfully. The reason of 2 procedural failures during the ASD closure was the unsatisfactory umbrella position. The complete closure of undesirable communications was achieved in all but one pt with multiperforated aneurysm of IAS. In the latter the residual shunt was of no haemodynamic significance.

Conclusions: The transcatheter closure of some ASD, PDA and PFO with Cardioseal/Staflex umbrella can be the treatment of choice in a selected group of patients.

P-43

The transcatheter treatment of coarctation of the aorta with stent implantation

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Purpose: One center experience of stent implantation (SI) in coarctation of the aorta – native (CoA) and after previous surgical aortoplasty (ReCoA) is presented.

Material and methods: Between 1999 and 2005 there were 25 patients (pts) treated with SI: 17 with CoA and 8 with ReCoA. The indication for intervention were: upper limbs hypertension, significant gradient through the aortic isthmus and suitable anatomy of the lesion. Previous unsuccessful balloon angioplasty caused by "elastic recoil" was performed in 6 pts. The age of pts ranged from 7 to 55 (mean. 27) years. One child (with ReCoA) had paraplegia after previous surgical aortoplasty. Two pts with CoA

aged 52 and 55 years were in NYHA class IV and the procedure was performed on dopamine infusion. For dilation of the stent (Palmaz, Smart or Sinus Aorta) balloon catheters not larger than the diameter of aorta before the lesion were used. In 6 cases the procedure was performed in two sessions (redilatation of the stents after 5-13 months).

Results: The procedure was effective in 23 pts. After SI the pressure gradient diminished from mean 48 to 9 mmHg, and the size of the narrowing increased from 6 to 14 mm. In 2 cases of ReCoA a proper opening of the stent was not achieved ('resistant' lesion) despite the use of high pressure balloons. In 2 pts with CoA migration of stent occurred during redilatation of its end. During 0.1-6.5 (mean 1.9) years of follow-up there were no complications of the procedure observed.

Conclusion: Stent implantation in CoA and ReCoA is an interesting option of the treatment. Better results are achieved in cases of native CoA, but the risk of migration of the stent is higher in this group.

P-44

The transcatheter closure of secundum type atrial septal defects (ASD) with the Amplatzer occluder in children

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Purpose: Presentation of one center experience in the transcatheter closure of selected ASD in children with the Amplatzer septal occluder (ASO).

Material and methods: From 502 patients (pts) after the transcatheter closure of ASD with ASO the group of 256 children were distinguished. Their age ranged from 0.4 to 18 (mean 8.7) years and body weight – from 3.5-83 (mean 32.5) kg. The single ASD sized 5-22 (mean 10.6) mm was diagnosed in 202 pts, multiple defects in the rest of them. Coexistent congenital heart defects was observed in 12 pts: valvular pulmonary stenosis in 9, PDA in 1, CoA in 1 and stenosis of the left pulmonary artery in 1. In all of them the transcatheter treatment of the coexisting lesion was performed during the same session. All procedures were performed with the use of standard indication and methods.

Results: The procedure was finished successfully in 248 (97%) of pts – in 7 the proper position of ASO was not achieved and the procedure was abandoned, in 1 child the device embolized into the left atrium (during the subsequent surgery the ASO was removed and the ASD closed without complication). A complete closure of the shunt in the group of children with single ASD was achieved in 93% after 24 h, 95% after 1 months, 98% after 3 months and in all after 1 year. In pts with multiple ASD the respective percentages were lower, but the complete closure was observed in all after 4 years. Two pts needed treatment because of transient rhythm disturbances after the procedure, another one because of transient left ventricle failure. In 10% of children headache during the first months after the procedure was observed, which resolved spontaneously. No other complications of the procedure were encountered. The longest follow-up ranges now 8 years.

Conclusion: The transcatheter closure of selected ASD in children with the Amplatzer occluder is an effective and safe method of treatment.

P-45

The influence of inflammation on the results of elective percutaneous coronary revascularization in type 2 diabetic patients

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Objective: It is believed that inflammation is one of the major contributors to the development of restenosis and adverse cardiac events after percutaneous coronary intervention. We examined the association of inflammatory markers level with the clinical results of elective percutaneous coronary revascularization in type 2 diabetic patients (DM2).

Methods: We studied 82 DM2 patients aged 59±6.3 who underwent elective percutaneous coronary revascularization. During 9 months follow-up period all patients were monitored for the incidence of adverse cardiac events that is: target vessel revascularization, cardiovascular death, myocardial infarction and cardiac rehospitalization. The levels of C-reactive protein (high sensitivity), fibrinogen and tumor necrosis factor alfa (high sensitivity) were evaluated on the day of intervention and three months after the procedure. All patients were divided into two groups: adverse outcome group (26 patients) which consisted of patients who had an adverse cardiac event and event-free group (56 patients) which contained patients without specified, adverse cardiac events. The levels of C-reactive protein, fibrinogen and tumor necrosis factor alfa were compared between the groups.

Results: The level of C-reactive protein measured on the day of the procedure was significantly higher in the adverse outcome group (8.13±11.5 mg/L) than in the event-free group (4.55±4.29 mg/L) (p=0.049), but it was not statistically different three months after the intervention.

The groups were not statistically different with respect to the fibrinogen and tumor necrosis factor alfa levels measured on the day of intervention and three months after the procedure.

Conclusions: These preliminary data revealed that diabetic patients with an unfavorable clinical outcome after elective percutaneous coronary revascularization have an increased level of C-reactive protein on the day of the procedure. This association was not seen when the level of fibrinogen and tumor necrosis factor alfa were examined.

P-46

Pain-to-drug time influences long-term survival and left ventricle function recovery in patients subjected to facilitated percutaneous coronary intervention for acute myocardial infarction

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Background: Time to reperfusion influences the survival of patients (pts) with ST-segment elevation myocardial infarction (STEMI) subjected to the thrombolytic therapy or primary

percutaneous coronary intervention (PCI). The impact of time to reperfusion on outcomes after facilitated PCI (PCI following early combined fibrinolytic therapy) in STEMI is unknown.

Methods and results: The study population consisted of 262 consecutive non shock pts with STEMI <12 hrs, aged <75 years transferred from remote hospitals to a cath lab >90 min after combined fibrinolytic therapy (alteplase in i.v. bolus 15 mg, i.v. infusion of 35 mg/60 min; abciximab in i.v. bolus 0.25 mg/kg, 12-hour i.v. infusion of 0.125 μg/kg/min; non-unfractionated heparin in i.v. bolus 60 U/kg (maximum 5000 U)). One hundred seventeen pts (44.7%) received the combined fibrinolytic therapy <3 hrs after pain onset, 101 pts (38.5%) at 3-6 hrs, 44 pts (16.8%) >6 hrs. The occluded IRA rates (TIMI 0+1) at initial angiography were similar in the study groups. PCI significantly improved the epicardial flow in all 3 groups. At 12-month follow-up mortality was the highest with the longest time to reperfusion (3.4% (<3 hrs), 4.0% (3-6 hrs), 13.6% (>6 hrs), p=0.027). At 6 months the left ventricular ejection fraction (LVEF) was significantly improved in two groups of patients with time to reperfusion <6 hrs after pain onset (see table). Importantly, the occluded IRA in the initial angiography, diabetes mellitus and time from chest pain onset to initiation of combined fibrinolytic therapy were the independent predictors of lack of LVEF recovery at 6 months.

Conclusions: Facilitated PCI in STEMI pts with time to reperfusion <6 hrs after pain onset is associated with low long-term mortality, and significant improvement of LVEF at 6 months.

Table 1.

	Total	<3 hrs	3-6 hrs	>6 hrs	p=
LVEF at 2-3 days [%]	55.0±9.0	54.5±8.3	55.2±9.7	56.2±10.6	NS
LVEF at 6 months [%]	57.5±11.3	58.6±10.8	58.2±11.2	52.0±12.0	NS
Change in LVEF [%]	2.5±9.0	4.1±8.8	3.0±8.4	– 4.2±8.7	0.006
p=	0.0008	0.0008	0.009	0.078	

P-47

Plasma Endothelin-1 levels in patients with the atrial septal defect – dynamic changes after the transcatheter closure

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The study aimed to assess the level of ET-1 in adult patients before and after the percutaneous closure of the secundum atrial septal defect (ASD) with the Amplatzer Septal Occluder (ASO).

Methods: 27 adult patients with the secundum ASD (20 F, 7 M) with a mean age of 41.1±13.3 (18-62) years – Group I and 10 healthy controls; 4 M, 6 F; mean age 43±12.6 (20-61) years – Group II were admitted into the study.

Blood samples were drawn from the peripheral vein and the artery in all patients. Plasma ET-1 levels were assayed by ELISA.

In Group I the percutaneous closure of ASD using the Amplatzer device was performed. Blood samples were drawn from the peripheral vein and the femoral artery 2 days, 6 and 12 months after the procedure.

The gradient in ET-1 across the pulmonary circulation was calculated as the difference between the femoral artery and the peripheral vein.

Results: Plasma ET-1 levels at the peripheral vein in Group I were significantly higher than those of Group II (6.21±0.812 fmol/ml vs. 0.085±0.034 fmol/ml; p<0.03), as well as at the peripheral artery (7.28±0.324 fmol/ml vs. 0.025±0.023 fmol/ml; p<0.01). There was no significant ET-1 gradient in Group II.

In Group II 2 days after the closure of ASD the gradient in ET-1 decreased from 2.313±1.91 fmol/ml to 1.114±0.142 fmol/ml (p=0,04).

In Group I after 12 months the peripheral ET-1 level decreased to the normal value – like in Group II, 1.001±0.02 fmol/ml vs. 0.085±0.034 fmol/ml; p=NS.

Conclusion: The plasma ET-1 concentration is significantly elevated in adult patients with the secundum ASD. After the percutaneous closure of the secundum ASD using the ASO device a significant reduction of the ET level was observed as early as after 2 days after the procedure. After one year the ET-1 level in the peripheral vein decreased to the normal value.

P-48

The Alcohol septal ablation in hypertrophic obstructive cardiomyopathy – acute complications and long-term results

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Background: The alcohol septal ablation (ASA) is getting established as a method of treatment in patients with hypertrophic obstructive cardiomyopathy (HOCM). The aim of this study was to analyze perioperative complications and long-term (2 years) results of the method.

Methods: Twenty eight patients [18M: 10F; age from 18 to 76 years, mean 49±16 years] with echocardiographically diagnosed HOCM were studied.

ASA was performed for 12 patients (6M:6F; age 52±15 years) with the left ventricular output tract gradient (LVOTG) by continuous wave Doppler echocardiography from 46 to 156 mmHg (mean 82.71±34.25 mmHg).

Table 1. (P-47)

	before	2 days	6 months	12 months	p value before vs 2 days	p value before vs 6 months	p value before vs 12 months
ET-1 level peripheral artery	7.28±0.324	4.02±0.94	1.003±0.71	1.001±0.61	<0.001	<0.0001	<0.0001
ET-1 level peripheral vein	6.21±0,812	4.21±0.482	1.03±0.012	1.001±0.02	<0.001	<0.0001	<0.0001

All the patients underwent the clinical evaluation, echocardiography and upright maximal cardiopulmonary exercise testing (UMCPET) before the procedure and 2 years after ASA.

The following parameters of UMCPET were analyzed: exercise duration, anaerobic threshold, peak oxygen consumption, peak exercise heart rate, carbon dioxide ventilating equivalent (VCO_2).

Results: There were 2 acute complications: 3rd degree AV block requiring peacemaker implantation and LVOTG increase with SAM exacerbation requiring an urgent cardiosurgical intervention.

During 2-year-follow-up 1 event of death (8%) and 1 event of cerebral stroke (8%) occurred.

ASA resulted in a significant LVOTG reduction at rest (from 82.71±34.25 to 20.86±20.4 mmHg (p=0.005)) and a significant increase in: exercise duration (from 446.28±245.49 to 730.0±338.72 s (p=0.0018)), anaerobic threshold (from 34.57±7.04 to 46.57±9.59% (p=0.014)), peak oxygen consumption (from 18.11±6.62 to 27.11±10.92 ml/kg/min (p=0.011)), peak heart rate (from 67.86±7.6 to 84.14±13.28% max (p=0.016)), and reduction in the carbon dioxide ventilating equivalent VCO_2 (from 34.0±5.1 to 28.0±5.1 (p=0.03)).

Conclusions: ASA may be associated with rare but severe postprocedural complications requiring further invasive interventions. In patients with HOCM who underwent ASA at 2-year-follow-up significant LVOTG reduction was noted. Moreover, ASA has been shown to be potent in the objective improvement in effort tolerance estimated by UMCPET.

P-49

Predictive factors of the myocardial reperfusion in patients with the anterior wall acute myocardial infarction

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Background: The no-reflow phenomenon due to the microvasculature damage is observed in some patients, despite patency of the infarct-related artery. The study aimed to assess the predictive value of clinical, hemodynamic and electrocardiographic parameters for development of the no-reflow phenomenon in patients after successful coronary reperfusion.

Methods: Eighty-six patients, mean age 58.4±11.2, underwent the primary percutaneous coronary angioplasty (PCI) for acute anterior myocardial infarction. Angiographic parameters, i.e. TIMI grade flow, cTFC, TMPG, wall motion score index (WMSI), ST-segment resolution and segmental perfusion were estimated by the myocardial contrast echocardiography (MCE).

Results: As evidenced by MCE, 54 patients were classified as the reflow ones and 32 as the no-reflow. Patients from the no-reflow group showed a higher creatine kinase peak (p= 0.0034), higher kinase-MB (p=0.0033) and higher troponine level (p=0.0629), longer time span between the onset of pain and reperfusion (p=0.003), worse baseline WMSI (p=0.0022), inferior flow in the infarct-related artery and ST-segment resolution. Univariate analysis revealed that age, time span between the onset of chest pain to PCI, all angiographic parameters, WMSI and ST-segment resolution were related to the no-reflow phenomenon. The multivariate logistic regression analysis revealed that the flow in the infarct-related before PCI and worse baseline WMSI were independent predictive factors of the no-reflow phenomenon.

Conclusions: MCE yields vital information about an outcome of the coronary intervention in patients with AMI. Development of the no-reflow phenomenon is correlated with the severity of myocardial damage (higher level of myocardial necrotic markers, longer duration of ischaemia) and poor flow through the infarct-related artery before PCI.

P-50

What is the best approach to the patients with acute myocardial infarction and multivessel disease? The acute and long-term results of invasive treatment. The comparison of single – and multiple-vessel angioplasty in patients with acute myocardial infarction and multivessel disease

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Background: In recent years primary angioplasty has become a method of choice for reperfusion in acute myocardial infarction (AMI). Although the multivessel disease occurs in about half of the AMI patients there is a widely accepted opinion that in most of the cases angioplasty should be limited only to the infarct-related artery (IRA).

The purpose of this study was to determine the influence of multiple-vessel angioplasty in AMI patients on the short and long-term prognosis.

Methods: A total of 540 patients with primary angioplasty for AMI and diagnosis of the multivessel disease were divided into two groups on the basis of the revascularization strategy. The SV group consisted of 469 patients with the IRA-only procedure, and the MV group comprised 71 patients in whom multivessel revascularization was performed. The in-hospital, 30-day, and 1-year outcome was determined.

Results: At presentation, the MV group compared with the SV group had a significantly higher occurrence of the anterior wall myocardial infarction (74.6% vs. 42.2%, p<0.001) and a tendency towards a higher incidence of the cardiogenic shock (12.7% vs. 7.7%, p=0.2). The in-hospital composite endpoint of death and myocardial infarction was significantly higher in the MV group (15.5% vs. 7.7%, p=0.04) In a 30-day, as well as one-year follow-up a tendency towards higher incidence of death and non-fatal myocardial infarction was observed in this group (respectively for 30-day 15.5% vs. 8.7%, p=0.08, and for a 12-month follow-up 22.5% vs. 15.5%, p=0.1). In a long-term follow-up the patients from the SV group had a higher incidence of repeat PCI procedures mainly because of incomplete revascularization during the primary angioplasty (the SV group 31.6% and the MV group 8.4% respectively, p<0.0001).

Conclusion: In the setting of acute MI multiple-vessel angioplasty does not reduce the risk of death and myocardial infarction. Patients with the IRA-only procedure had a higher incidence of repeat revascularization, mainly due to angioplasty of the non-IRA vessels.

P-51

The bifurcation lesion registry – mid-term results. The Latvian Centre of Cardiology experience

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Background: Despite a high rate of technical success, stenting in bifurcation lesions is associated with unsatisfactory acute and mid-term results. Treatment strategies may differ in respect to the rate of rise in biochemical markers and the clinical outcome.

Purpose:

- This study was performed to evaluate the acute and mid-term results of PCI for bifurcation lesions.
- To test the hypothesis that plaque pre-treatment with cutting balloon (CB) could reduce plaque shifting and helps to avoid the side branch stenting.

Methods: We investigated the clinical results in a series of 163 consecutive patients form the on going bifurcation registry. The lesions were located as follows: 123 on the LAD – diagonal, 23 on the LCX-marginal, 10 on the RCA, 7 on the LM bifurcation.

Only the main branch (MB) stenting was performed in 162 cases, the MB and side branch (SB) stenting in 45 cases. Seventy-five % of the MB stents 89% of the SB stents were DES. Lesion pre-treatment with CB was performed in 74 (45%), but IVUS guidance used in 6 (4%) cases at the operators discretion. In lesions where pretreatment with CB was done the need for side branch stenting was found only in 10 (6%) cases. The final 'kissing' balloon postdilatation was prformed in 87 (53%) cases.

All the patients were scheduled for a 9 months clinical, angiographic and IVUS follow-up.

Results: The procedural success rate was 100%. A significant elevation (3 – fold post-procedure) was detected in 18 (11%) cases, 7 of them if only the MB stented, 11 if the MB+SB stented.

One acute stent thrombosis occurred during the intra-hospital period. Subacute stent thrombosis occurred in 5 cases, two of them resulted in death. The nine months angiographic and IVUS follow-up is already performed for 20% patients. Angiographic binary restenosis was obtained in 1, TLR in 2 and TVR in 2 cases.

Conclusions: The bifurcation lesion PCI is safe and provides an excellent angiographic result. Two branch stenting associates with a more frequent elevation of the cardiac damage biomarker elevation. CB pretreatment may be an effective strategy to obtain a better acute and mid-term result. The whole nine months angiographic and IVUS data will be available for presentation soon.

P-52

Complementarity of angioplasty and by-pass for complete coronary revascularization in acute coronary syndromes without ST elevation

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The relative contribution of coronary angioplasty (PTCA) and coronary by-pass (CABG) for obtaining the highest degree, eventually a complete coronary revascularization, was investigated in 102 patients (p) with acute coronary syndromes without ST elevation and having an indication for coronary angiography.

Angiography revealed the coronary arteries without significant lesions or with lesions without an indication for revascularization in 21 p (20.5%). On the other hand, 16 p (15.6%) presented severe coronary lesions, without opportunities for interventional or surgical revascularization, or with coexistent illnesses contraindicating surgery. All the above-mentioned 37 p (36.2%) remained on medical treatment.

Myocardial revascularization, with the intention to be as complete as possible, was performed in 65 p (63.7%), by PTCA in 44 p (41.3%) and, respectively, by CABG in 21 p (20.5%). Revascularization was more often performed by PTCA, in about 2/3 of the p (67.6%), while CABG was needed in only about 1/3 of the p (32.3%).

Revascularization was complete in 63 of the 65 p (96.9%), performed by PTCA in 43 p and, respectively, by CABG in 20 p. Coronary anatomy led to an incomplete revascularization in only 2 p (3%), with one p treated by PTCA and CABG, respectively.

PTCA was more often performed on a single vessel (40 p), less often on 2 vessels (3 p) or 3 vessels (2 p). The only p with failure of PTCA (a proximal LAD occlusion) was sent for CABG. On average, PTCA was performed on 1.18 vessels/p.

CABG was performed mainly in the multi-vessel disease p, on 4 vessels in 4 p, on 3 vessels in 7 p, on 2 vessels in 4 p and, respectively, on a single vessel in 5 p (high risk LAD stenosis). On average, there were 2.5 by-passes/p.

In conclusion, most of the p with acute coronary syndromes without ST elevation (84.4%) either had revascularization (63.7%) or had non-significant coronary lesions or lesions without an indication for revascularization (20.5%). Revascularization is often complete (96.9%), PTCA and CABG having a similarly high efficacy. Coronary anatomy often allows revascularization by PTCA (2/3 of the p), mainly on the single-vessel disease p, less often on two- or three-vessel disease p, while CABG is necessary for the other 1/3 of the revascularised p, mainly for those with the multi-vessel disease. Only 15.6% of the p with acute coronary syndromes without ST elevation were not suitable for revascularization, due to poor coronary anatomy or to systemic associated diseases.

P-53

Direct stenting: our experience using Lekton Motion stents

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The results of a strategy aimed to use direct stenting as often as possible was retrospectively analyzed. Direct stenting was performed on the coronary stenosis with a high risk for complications or when they were on large vessels, supplying large myocardial areas. When the stenosis morphology did not fit with direct stenting, balloon predilatation was used.

We included 100 consecutive patients, with 136 coronary lesions submitted to coronary angioplasty (1.36 lesions/patient). The majority of patients, either with direct stenting or conventional stenting, had non-ST elevation acute coronary

syndromes (88.9% vs 81%); the others had stable angina. Lekton Motion stents, from Biotronik, were used.

The success rate, defined as a residual stenosis <30% without MACE, was 95.6%, with a stenting rate of 88.2% (120/136 lesions). Stented lesions were divided in two groups: direct stenting and conventional stenting.

Direct stenting was used in the vast majority of lesions (82.5%). The direct stenting group included 99 lesions from 85 patients. Direct stented lesions were short (12.8±3.6 mm), disposed on the large vessels (3.3±0.4 mm). Of the 99 lesions with direct stenting, as many as 16 (16.2%) were the A type, 25 (25.2%) the B type, the other 58 lesions (57.6%) being C type. The in-hospital major cardiovascular events rate was 6.6%.

Balloon angioplasty was necessary for 21 of the 120 stented lesions (17.5%). The vessels submitted to balloon predilatation had a diameter of 3.09±0.3 mm, smaller than that of the direct stented coronary vessels (p=NS) and the lesions were longer (15.4±6.7 mm) (p=NS). Their morphology was the A type in 2 lesions (9.6%), the B type in a single lesion (4.7%) and the C type in 18 lesions (85.7%). The in-hospital MACE rate was 10.5%, higher than direct stenting, but without reaching the statistical relevance (p=0.43).

Conclusion: Direct stenting was used with a high prevalence rate and good in-hospital event-free survival rate, in a large variety of coronary lesions, including complex, high risk lesions, in patients with acute coronary syndromes without ST elevation.

P-54

Interventional Treatment in Iliac Occlusive Diseases -angioplasty, stenting and laser-experience of the Clinic of Cardiology Targu-Mures, Romania

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Introduction: In the last years the interventional procedures have become one of the most important therapeutic choices in the management of Peripheral Arterial Obstructive Diseases (PAOD). Association between these procedures, currently applied in our practice, with laser angioplasty, could represent an alternative for surgery in our experience.

Material and method: 106 consecutive primary iliac interventions were performed by a single operator, on 88 patients with iliac or aortoiliac obstructive diseases, in the period of September 2001 – October 2005, at the University of Medicine and Pharmacy of Targu-Mures, Romania, Clinic of Cardiology. The mean age of the population was 58 years, range 43-79 years. 81 of the patients (92%) were males and 7 (8%) females. 49 lesions (n=32 patients) were selected for PTA, 43 lesions (n=43 patients) for PTA and stenting and 14 lesions (n=13 patients) for laser angioplasty associated to the above. All laser cases were followed by stent implantation. The lesions treated were classified, according to TASC, in: type A: 19 lesions (21.6%), type B 15 (17.04%), type C 12 (13.64%) and type D 42 (47.72%). The average length was 2.46±0.57 mm for type A, 6.36±1.19 mm for type B, 7.77±2.07 for type C and 13.83±2.77 for type D, with an overall average length of 9.39±4.86 mm. The lesions were located: 4 (4.54%) at the level of the aortoiliac bifurcation, 21 (23.86%) on the common iliac artery 25 (28.4%) on the external iliac artery, and in 38 (43.2%) cases both the common and external iliac artery were involved. 43 iliac lesions (48.86%) were associated with femuropopliteal and/or infrapopliteal disease.

Results: The technical success was achieved in 86 cases. We recorded a clinical improvement in all cases manifested by an increase of the claudication distance. Doppler index increased on average from 0.4 to 0.95. We recorded 5 cases of iliac perforation, 4 treated with stent-graft implantation and 1 referred for surgery. No other complications were recorded during or after the procedure. The 6 months follow-up showed in 71 of the 72 cases (98.6%) cases maintaining of the arterial patency. The 1 year follow-up showed 2 cases of reocclusion from the 52 examined, and one case of restenosis, with a primary patency rate of 94.23%, a secondary patency rate of 96% and an assisted patency rate of 96%. The 2 year follow-up showed in 2 cases (4.8%) in stent restenosis and maintaining of the arterial patency in all cases.

Conclusions: In our casuistry we recorded very good results regarding repermeabilisation of the arterial lumen in aortoiliac diseases. Laser angioplasty is extremely useful in these cases, which could be complementary to other interventional methods improving the long-term results in PAOD. According to our experience, interventional treatment could represent an alternative for surgery in iliac diseases.

P-55

The laser coronary angioplasty in acute coronary syndromes – experience of the Clinic of Cardiology Targu-Mures, Romania

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Introduction: In Acute Coronary Syndromes (ACS), different methods have been suggested for intracoronary thrombus elimination. One of these options, recently introduced in current practice in our clinic, is the laser angioplasty.

Material and method: 541 patients with ACS were admitted in the Clinic of Cardiology (404 unstable anginas, 137 acute myocardial infarctions). In 137 cases the interventional treatment was performed – PTCA and stenting, in 30 cases associated with laser PTCA.

Results: Treatment options were: 7% CABG, 67% conservative, and 26% interventional. Laser PTCA was performed in left anterior descendent artery lesions in 20 cases, in the circumflex lesions in 3 cases and in the right coronary artery in 7 cases. Laser PTCA was associated with balloon angioplasty in all cases, balloon inflation being performed after the lesion was crossed with laser. In 22 cases the stent implant was associated. The control coronarography showed in all cases complete repermeabilisation without residual stenosis. The echocardiographic follow-up showed myocardial viability in all laser cases with an average increase of ejection fraction from 45% up to 53%.

Conclusion: Laser PTCA is a recently introduced and useful therapeutic option in the treatment of ACS, with very good results in our casuistry when associated with other interventional techniques.