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Total unloading of the Left Ventricle by circulatory Assist Device (LVAD) strikingly reduces the infract size in ischemia-reperfusion injury
K. Saku, T. Kakino, K. Sakamoto, T. Sakamoto, T. Akashi, Y. Hata, T. Kishi, T. Ide, K. Suragawa. Kyushu University, Graduate School of Medical Sciences, Department of Cardiovascular Medicine, Fukuoka, Japan

Purpose: The pressure-volume area (PVA) of the left ventricle (LV) is tightly coupled with myocardial oxygen consumption/demand (MVO2). Theoretical analysis indicates that, the partial LV support (PARTIAL) where LV remains ejecting, reduces LV preload while increases afterload, and thus does not decrease much the pressure-volume area (PVA) or MVO2. In contrast, the total LVAD support (TOTAL) where LV no longer ejects, markedly decreases LV volume, thereby MVO2. We hypothesized PARTIAL and TOTAL unloading would have major differences in the infract size in ischemia-reperfusion injury.

Methods: We created ischemia by occluding major branches of the left anterior descending coronary artery for 90 min, reperfused for the following 30 min and assessed the infract size (normalized by the risk area). We allocated 12 anesthetized dogs into 3 groups, no support (CONT), PARTIAL (LV output=LVAD flow) and TOTAL (no LV output). We assessed the infract size by MRI with 4 T. Usability of the apparatus was confirmed.

Results: Mean arterial pressure (MAP) did not differ among 3 groups (CONT: 97±11, PARTIAL: 96±2.6 and TOTAL: 101±7.1 mmHg). In TOTAL, LV peak-systolic pressure (42±11 mmHg) was much lower than that of MAP confirming LV unloading. LVAD significantly reduced the infarct size (CONT: 40±3.2, PARTIAL: 27±6.5, and TOTAL: 5±0.16%, p<0.0005). However, the reduction was by far larger in TOTAL than in PARTIAL (p<0.05). The reduction in infarct size relative to CONT was 91% for PARTIAL and 88% for TOTAL (Fig. 1). Changes in the serum level of creatine kinase MB (300 min after reperfusion) resembled that in the infarct size (p=0.0375) (Fig. 2).

Conclusions: The fact that the infarct size is strikingly reduced by TOTAL whereas moderately reduced by PARTIAL indicates that total unloading and minilization of metabolic demand are essential in order to maximize the beneficial impact of LVAD on the infarct size.

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TNFα-induced cardiomyocyte apoptosis was associated with mitochondrial membrane potential
Z.W. Chen, J.Y. Chiu, J.Y. Ma, S.F. Chang, A.J. Sun, Y.Z. Zou, J.B. Ge. Zhongshan Hospital of Fudan University, Department of Cardiology, Shanghai, China, People’s Republic of

Backgrounds: This experimental study was designed to clarify the occurrence of cardiomyocyte apoptosis and its relation with Tumor Necrosis Factor-alpha (TNF-α) expression and cardiac function after Coronary Microembolization (CME).

Purpose: Myocardial healing after infarction is hampered by reperfusion in-}

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Impact of a budget-restrictive (Germany) versus an incentive-driven (UK) reimbursement system on LDL-goal achievement in statin-treated patients for secondary prevention: results of DYYSIS
A.K. Gislén1, C. Juenger2, S. Smolka3, D. Wood4, J. Kastelein5 on behalf of DYYSIS Study Group. 1Herzzentrum Ludwigshafen, Med. Klinik B, Kardiologie + Institut f. Herzinfarktforschung Ludwigshafen, Ludwigshafen am Rhein, Germany; 2Institut f. Herzinfarktforschung Ludwigshafen, Ludwigshafen am Rhein, Germany; 3Medizinische Hochschule, Hannover, Germany; 4MSD, Munich, Germany; 5Imperial College London, London, United Kingdom; 6Department of Cardiology, Academic Medical Center Amsterdam, Amsterdam, Netherlands

Background: Statin treatment is widespread used for secondary prevention in Europe. However, there are large differences in LDL-Cholesterol (LDL-C) target achievement between European countries. Little is known about the impact of different reimbursement systems on achievement of lipid targets in clinical practice.

Methods: Between June 2008 and February 2009, 22,063 consecutive statin-treated outpatients were enrolled in 11 European countries and Canada (DYYSIS = Dyslipidemia International Study) to assess LDL-C target achievement for secondary prevention. In outpatient treatment in Germany chronic medical treatment is restricted by budget constraints (restrictive system) whereas in the UK the reimbursement is linked to treatment goal achievements (incentive system). We compared the level of LDL-C goal achievement in patients enrolled in Germany versus the UK.

Results: A total of 4,260 patients were enrolled in Germany. 540 patients in the UK. Patients in Germany were older, more often female, more often had diabetes, less often were obese and less often reported sedentary lifestyle. They had a higher prevalence of cerebrovascular and peripheral artery disease but less often ischemic heart disease as compared to the patients in the UK.

Patients in Germany (with a restrictive reimbursement system) less often received potent statins such as atorvastatin or rosuvastatin as compared to patients in the UK. Independent of the statin used, daily dosages were significantly lower in Germany than in the UK. As a result, significantly less patients in Germany did reach the recommended treatment goal of LDL-C <100mg/dl as compared to the UK (62.0% in Germany versus 79.8% in the UK).

Conclusions: In Germany, patients treated with statins for secondary prevention reported different statins and lower dosages as compared to the UK probably due to differences in reimbursement systems (restrictive versus incentive). This led to a much wider LDL-C goal achievement in Germany as compared to the UK.

Rapid Fire – Full speed ahead in extending prevention / Rapid Fire – Treating ischaemia and infarction: where next?

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