ABSTRAKTER PRESENTERT I TRONDHEIM

Abstrakt 1 – vinner av prisen for beste forskningsbidrag

Levosimendan improves regional contractility in post-ischemic myocardium in patients with acute PCI- treated STEMI complicated by symptomatic heart failure

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Background: Reduced calcium sensitivity of the myofilaments is believed to be part of the injury seen after reperfusion of ischemic myocardium.

We hypothesised that the calcium sensitizer levosimendan will improve myocardial contractility without harmful side effects in acute PCI treated STEMI patients complicated by decompensated heart failure.

Method: A total of 61 patients developing clinical signs of heart failure within 48 hours after a primary PCI treated STEMI (including cardiogenic shock), with decreased wall-motion in ≥ 3 of 16 segments evaluated by echocardiography, were randomised double blind to a 25 hours levosimendan infusion or matching placebo. Primary endpoint was change in wall-motion score index (WMSI) from baseline to day 5.

Results: (mean ±SD): Age (64 ±13 years), peak TnT (13083 ± 6996 ng/l), BP (104/66 mmHg) and LVEF (42 ± 9 %) at inclusion, were not significantly different between groups. There was significantly larger improvement in WMSI (contractility) from baseline to day 5 in the levosimendan group compared to placebo (from 1.94 ± 0.20 to 1.66 ± 0.31 vs. 1.99 ± 0.20 to 1.83 ± 0.26 respectively, p=0.03). There were no significant between group differences in changes in NT-proBNP levels, a clinical composite score, frequency of atrial fibrillation or ventricular arrhythmias. There were significantly more episodes of hypotension during study drug infusion in the levosimendan group (63% vs. 36%, p=0.03), but no difference in blood pressure at the end of infusion or in use of vasopressors.

Conclusion: Levosimendan treatment improved contractility in post ischemic myocardium in patients with PCI treated STEMI complicated by heart failure. The treatment was well tolerated without any increase in arrhythmias.

Abstrakt 2

Pharmacological conversion of recent-onset atrial fibrillation. A critical and transparent appraisal of the literature

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Purpose: Recent-onset (≤1 week) atrial fibrillation (AF) has a high rate of spontaneous conversion to sinus rhythm (SR), yet antiarrhythmic drugs (AADs) are considered to achieve conversion. We assessed the effect of pharmacological conversion trials by reviewing the literature regarding conversion rates of available AADs in a critical, transparent manner.

Methods: PubMed searches were performed using the terms "drug name" for 23 AADs, "atrial fibrillation", and the limitations "clinical study/ RCT". A total of 1302 titles, including abstracts or complete papers when needed, were reviewed for recent-onset of AF, the use of a control group (placebo or comparator drug) , and the endpoint of SR within 24 hours. Post-operative and intensive care settings were excluded.

Results: For 11 drugs including seven betablocking agents no relevant papers were found. Digoxin (4 studies; 397 patients) clearly demonstrated lack of effect, and verapamil, diltiazem, and sotalol in smaller studies also suggested lack of effect. Five AADs were demonstrated to have an effect, see table.

	No of studies	No of patients	SR drug %	SR control %	Time to end point; hours
Vernakalant	4	700	51-61	4-5	0.5-1.5
Propafenone	13	1615	41-70	10-29	2-3
Flecainide	5	472	57-69	14-22	1-2
Amiodarone	13	1286	68-92	35-61	24
Ibutilide	1	74	46	2	1.5

Table, five drugs which demonstrated to have an effect in converting recent-onset AF to SR

Conclusions: No drug converts more than approximately 50 % above that of control, with no clear differences in the magnitude of effect between AADs. The time to conversion however differs markedly; vernakalant has a fast onset of effect, while amiodarone only converts after 24 hours. For Ibutilide the documentation is sparse, with a risk of torsade de pointes. Flecainide and propafenone can only be used in patients without structural heart disease. In summary, for a rapid response in a broad group of patients, vernakalant appears to be a reasonable choice.

Abstrakt 3

Transthoracic echocardiography for detection of coronary artery stenoses by use of coronary poststenotic diastolic to systolic velocity ratio in the left anterior descending and circumflex arteries. A comparison with quantitative coronary angiography and transthoracic coronary flow reserve

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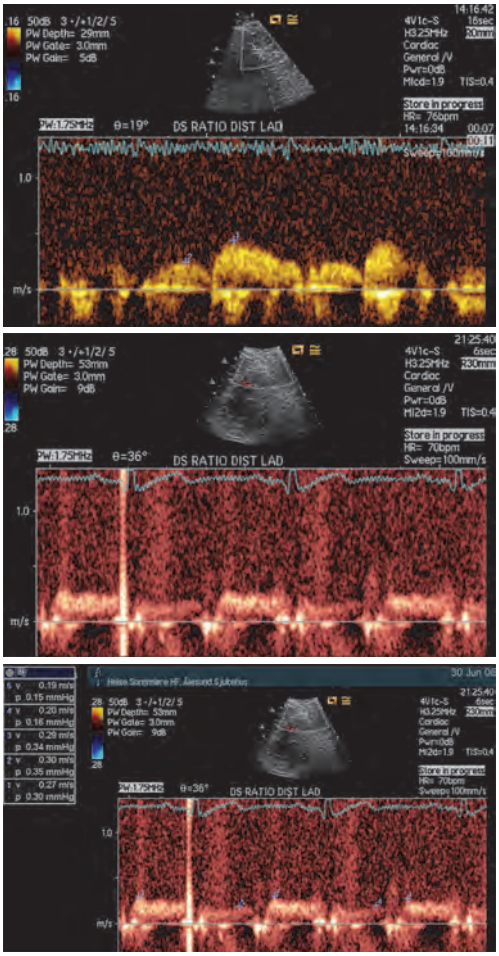
Purpose: Recent reports have indicated that use of the diastolic to systolic flow velocity ratio (DSVR) measured by transthoracic Doppler echocardiography (TTE) in the distal left anterior descending coronary artery (LAD) is a simple noninvasive method for detecting coronary stenoses located more proximally in the LAD, with significant reduction of the diastolic relative to the systolic flow component when measured poststenotically. However, various cut-off values for significant stenosis have been proposed, with peak DSVR (pDSVR) < 1.6 – 1.8 representing significant stenosis in different studies. To the best of our knowledge, there are no data on TTE DSVR measurements of the circumflex coronary artery (Cx). The purpose of this study was to evaluate by TTE the potential of DSVR measured in distal-to-mid LAD (dmLAD) and marginal branches of Cx (CxMb) for detecting coronary stenoses in the left main (LM), LAD and Cx arteries, compared with quantitative coronary angiography (QCA).

Methods: A total of 108 patients scheduled for coronary angiography because of chest pain or acute coronary syndrome were studied. When the relevant coronary segment was identified with antegrade flow, the pDSVR was measured in dmLAD and CxMb. Peak DSVR results were compared with results from QCA, with stenosis severity in the LM/LAD and LM/Cx divided into 2 groups: (1) diameter stenosis 0-49%; (2) diameter stenosis 50-100%. Each main coronary artery could have more than one stenosis, with the most tight stenosis defining the degree of stenosis.

Results: Peak DSVR was successfully measured in dmLAD and CxMb in 83% and 31% of patients, respectively. Among coronary arteries with DSVR measurements, QCA identified 34 group 2 stenoses in LAD and 5 group 2 stenoses in Cx. Peak DSVR was significantly different between the groups, with pDSVR 1.90 ± 0.31 in group 1 and 1.50 ± 0.16 in group 2 ($p < 0.001$). ROC analysis showed that a pDSVR cut-off value



of 1.68 had specificity of 90 % and sensitivity of 84 % for detection of group 2 stenoses. Excluding the Cx, the same pDSVR cut-off value had specificity of 91 % and sensitivity of 86 % for detection of group 2 stenoses in LAD.

Conclusions: DSVR measurements in dmLAD were feasible in the majority of patients and in CxMb in 1/3 of patients. The ROC analysis showed that a pDSVR cut-off value of 1.68 had high precision for identifying significant stenoses in LAD and Cx, defined as diameter stenosis 50-100%. (ClinicalTrials.gov number NTC00281346.)

Abstrakt 4

Myocardial infarct size is the major determinant of progressive long-term left ventricular remodelling following myocardial infarction

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Background: There is limited information on time-dependency between infarct size and left ventricular (LV) remodelling following myocardial infarction (MI). The aim of this study was to compare the relationship between MI size, LV volumes and LV ejection fraction (LVEF) at different time points in long-term survivors following MI.

Methods: A total of 100 patients with healed MI, treated with comprehensive anti-remodelling therapy, were included. Group 1: 43 patients with acute MI were prospectively examined by cardiac MRI (CMR) at 2 days, 1 week, 2 months and 1 year following MI. Group 2: 57 patients were assessed by CMR at a mean of 4.4 years following MI. MI size, LV end systolic- and diastolic volumes (ESVi, EDVi) and LVEF were assessed by cardiac MR (CMR). All patients were followed for 4 years after the final CMR examination, and all cardiovascular (CV) hospitalizations and deaths were recorded.

Results: In multivariate regression models, infarct size was the major determinant of ESVi, EDVi and LVEF ($p < 0.001$) at all time points. Mixed effects models revealed a strong relationship ($p<0.001$) between infarct size and increasing LV volumes over time (Figure). In multivariate models correcting for baseline and CMR variables, infarct size ($p=0.018$) and ESVi ($p<0.001$) were the only predictors of adverse CV events.

Conclusion: Following MI there is a progressive LV dilatation that is strongly dependent upon MI size and time elapsed since MI. In patients with the largest MIs, there is a progressive LV remodelling that ultimately leads to CV events in spite of comprehensive anti-remodelling therapy.

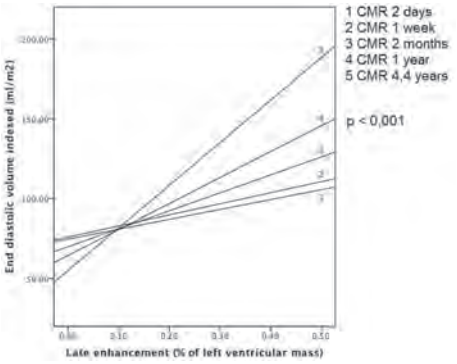

Figure: Regression lines between myocardial infarct size assessed by late enhancement and end diastolic volume index (EDVi) at the different CMR time points following MI, demonstrating the time-dependent increase in EDVi.

Abstrakt 5

Kardiovaskulær sikkerhet på norske treningssentra

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Innledning: Mange trener på treningssentra. Flere og ikke minst eldre og personer med hjertesykdom anbefales også å trene. Formålet med denne studien er derfor å beskrive kardiovaskulær sikkerhet på treningssentra.

Metode: Denne spørreundersøkelsen utført i 2012 kartlegger forekomst av akutte kardiovaskulære hendelser og akuttmedisinsk beredskap på norske treningssentra. Studien er del av en større europeisk studie i regi av Section of Sports Cardiology, Eur. Ass. for Cardiovasc. Prev. & Rehab. Virke Trening sendte ut norsk versjon av skjemaet, med i alt 20 spørsmål, elektronisk til treningssentrene.

Resultater: 88 (38 % responsrate) treningssentra besvarte skjemaet. Fem (8 %) sentra hadde noen gang brukt hjertestarter, og i alle tilfellene overlevde klienten. To (2 %) treningssentra rapporterte om hjertestans hos 30-50 åringer ila siste år. 66 (75 %) hadde automatisk hjertestarter. 70 (80 %) sentra holdt årlig HLR-kurs for ansatte.

Diskusjon: Hjertestans hos personer i ulike aldre er rapportert, men skjer svært sjelden på norske treningssentra. Bruk av hjertestarter på sentrene er sammenlignbare med amerikanske data. Akuttmedisinsk beredskap på norske treningssentra synes relativt god. Personell er rimelig trenet i HLR og de fleste har automatiske hjertestartere. Økt kartlegging av kardiovaskulær risiko hos medlemmer vil sannsynligvis kunne redusere sannsynlighet for hjerterelaterte hendelser.

* Undersøkelsen er utført i samarbeid med Virke Trening som omfatter ca. 230 treningssentra med til sammen ca. 450.000 medlemmer; omlag 2/3 av alle treningssentre i Norge. Studien sier ikke noe om resultatene er representative for norske treningssentra.

Abstrakt 6

LDL goal achievement in 564 consecutive, unselected coronary heart disease patients, results of a structured follow-up program in out of hospital cardiology practice, and a comparison with conventional follow-up.

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Purpose: LDL goal achievement by Guidelines (LDL≤2.5 mmol/L or ≤2.0 "if feasible") is generally as low as 1/3 in patients with high risk, including those with angiographically documented coronary heart disease (CHD), attributed to insufficient effect of drugs and side effects. We evaluated the effect of a structured follow-up (FU) program, compared to conventional follow-up after one cardiologist consultation (CFU), in consecutive, unselected CHD patients remitted from primary care to a cardiology practice outside hospital.

Methods: All patients with CHD (ICD-10 i25.1) from 2010(CFU) were retrospectively reviewed, and all patients from 2011 were prospectively followed until LDL goals were achieved, or further trials considered futile for lack of effect, side effects or administrative reasons. As needed, statins were started, dosages increased, more potent statins prescribed and ezetimib added. In case of side effects, statins were changed.

Results: Only 1/3 of patients had LDL levels according to guidelines when remitted, after the FU program this increased to 89 %, compared to only 59% after CFU, between-group differences for improvement in all lipid variables p<0.001. LDL goals were not reached for insufficient drug effects (n-7), side effects or contraindications (n-9), administrative reasons (n-8), and still being in FU (n-4).

Conclusions: The lack of reaching LDL goals cannot be attributed to side effects or insufficient drug effect. In unselected, consecutive patients with CHD, a simple, structured FU program, using only three different statins with the addition of ezetimib when needed, can bring as many as 89% to reach this level .

Abstrakt 7

Madssen et al, ønsker ikke abstrakt publisert i Hjerteforum, artikkel under arbeid.

	2010 n-302			2011 n-262			Between group difference
	Baseline	Follow-up	Difference	Baseline	Follow-up	Difference	
LDL	2.4-0.9	2.2-0.8	0.2-0.6	2.5-0.9	1.8-1.2	0.7-0.8	P<0.001
Chol	4.3-0-9	4.0-1-0	0.3.0.7	4.2-1.2	3.4-1.2	0.8-0.9	P<0.001
LDL ≤2	36 %	59 %	23 %	34 %	89 %	56 %	P<0.001
Chol ≤4	45 %	63 %	19 %	49 %	88 %	40 %	P<0.001
Simvastatin	57 %			51 %	21 %		
Atorvastatin	33 %			36 %	63 %		
Rosuvastatin	0.3 %			1 %	12 %		
Ezetimib	10 %			13 %	58 %		

Table: Mean –SD values for LDL and total cholesterol in mmol/L, at baseline and at follow-up in the 2010 cohort (retrospective study) and 2011 cohort (prospective study). Percentage of patients at target lipid levels at baseline and at follow-up, within-group differences were all significant at p<0.001.