EP8

DPP4-Inhibitors are Associated with Lower Risk of in-Hospital Complications in Diabetic ACS Patients

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Background: We studied the association between treatment with oral hypoglycemic medications and the clinical presentation of diabetic patients with acute coronary syndromes (ACS).
Methods: Multivariate logistic regression analysis was used to evaluate the risk of in-hospital complications among 445 diabetic patients with ACS enrolled in the Acute Coronary Syndrome Israeli Survey (ACSIS) 2010. Patients were categorized into 3 groups according to hypoglycemic medications at time of admission: 1) DPP 4 inhibitors (DPP4i; as monotherapy or in combination, 2) Metformin (monotherapy or in combination, excluding DPP-4i) and 3) other oral hypoglycemics.
Results: Patients in the DPP4i group displayed similar baseline clinical characteristics to the other 2 groups, with the exception of a younger age and a lower frequency of prior CHD and CRF. Medical therapy with DPP4i was associated with a significantly lower rate of in-hospital complications and a shorter duration of in-hospital stay as compared with treatment with metformin or other oral antiglycemic drugs. Consistently, multivariate logistic regression modeling showed that treatment with DPP-4i was associated with a lower risk (OR=0.20; p=0.03) of in-hospital complications compared with Metformin (OR 0.60, p=0.13) and other oral hypoglycemic therapy.
Conclusions: Our data suggests that treatment with DPP4i may have cardioprotective effects in diabetic patients suffering from AMI.

	DPP4i (N=31)	Metformin (N=348)	Other oral (N=66)	p Value
Killip >1 (%)	9.7	16.4	34.8	<0.001
post MI angina (%)	0	2.6	7.6	0.06
Pulmonary edema (%)	0	6.3	15.2	0.01
Infections (%)	0	6.6	21.2	<0.001
Acute renal failure (%)	3.3	7.5	19.7	0.003
Length of stay (days)	5.4±3.8	5.6±5	7.5±6.5	0.03

The Impact of Persistent Atrial Fibrillation on Left Ventricular Outflow Tract Obstruction in HCOM

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Background: Persistent (chronic) atrial fibrillation (CAF) is the most common sustained arrhythmia in hypertrophic cardiomyopathy. It is well tolerated by about one third of patients but not uncommonly associated with adverse consequences, particularly when associated with left ventricular outflow tract (LVOT) obstruction.
Objective: To evaluate the effects of CAF on the severity of LVOT obstruction in patients with hypertrophic obstructive cardiomyopathy (HCOM).
Methods: Retrospective analysis of the echocardiographic examinations of all patients with HCOM who developed CAF during follow up at our cardiomyopathy clinic. LV end diastolic dimension (LVDD), LV end systolic dimension (LVSD), LV ejection fraction (EF) and the maximal LVOT gradient were measured in normal sinus rhythm and during CAF.
Results: Ninety nine patients with HCOM were followed in our cardiomyopathy clinic during 13.5±12 years, 11 of them developed CAF (11%). Ten patients were male, mean age 65+10 years. While on normal sinus rhythm LVDD was 47±4 mm, LVSD 26±3 mm and LVEF 63±7%. Maximal LVOT gradient 86+28 mmHg. While on CAF we found no changes on LVDD (46±4 mm), LVSD (26±4 mm) and on LVEF (63±4%). LVOT gradient significantly decreased to 30±24 mmHg (p=0.0003) and was completely abolished in 4 patients.
Conclusion: The presence of CAF is associated with a significant decrease on LVOT obstruction gradients in patients with HCOM without significant changes in LV dimensions or function. The mechanism responsible for this finding remains to be elucidated.

NT-proBNP Blood Levels after Axial Flow LVAD Implantation are Related to Pre-Implant Levels

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Background: Left ventricular assist devices (LVADs) reduce mortality and improve quality of life in appropriately selected patients. LVAD therapy decreases left ventricular wall stress and thus, its surrogate natriuretic peptide (NP) levels. Thus, one would anticipate that early post operative levels of NT-proBNP would decline in response to the reduced wall stress.
Methods: A retrospective analysis of the change in NT-proBNP (pg/ml) levels between admission and discharge after LVAD implant was conducted. Variables are described as medians and interquartile range (25%-75%).
Results: Of the 72 patients implanted with Heartmate II LVADs, 21 were to bridge to transplant. Baseline NT-proBNP levels were elevated at 5079 and highly variable (2232-12770). By discharge, NT-proBNP was markedly reduced at 3040 (2224-5563, p=0.0005) but was still 3.09 (1.73-5.33) times the calculated age based upper limit of normal. NT-proBNP at admission was correlated with NT-proBNP at discharge (Spearman correlation = 0.41, p=0.0004). Predictors of the change in NT-proBNP corrected for the admission value included pre-operative RV stroke work index (β=-0.22, p=0.035) and LVAD pulsatility index at discharge (β=31.70, p=0.026). Overall, baseline levels decreased at discharge by 26% (-68% to 42%).
Conclusion: NTproBNP levels are markedly reduced in response to LVAD implantation but are still markedly elevated. These elevated levels may represent a chronic adaptation related severe pre-operative heart failure. Given the variation in levels, it is the trend and not the absolute values that should be followed.

The Acute Hemodynamic Effects of Pneumatic Compression Device in Patients with Chronic CHF

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Background: The use of intermittent sequential pneumatic compression device (PS) to improve the adverse cardiovascular effects induced by positive pressure pneumoperitoneum during laparoscopic surgery is well known. PS is also extensively in use following prolonged operations, to prevent venous stasis. Its use in healthy volunteers led to improved cardiac function. Our aim was to evaluate the effects and safety of PS in adult patients with chronic congestive heart failure (CHF).
Methods: We studied 20 patients with chronic CHF, according to clinical and echocardiographic well-established criteria. Patients were connected to PS, each includes 10 air cells, operated by a computerized compressor that exerts 2 cycles of sequential compression per minute, to a maximum pressure of 50 mmHg. Hemodynamic and echocardiographic parameters were measured before and after sleeve activation (5 and 15 minutes after termination of the previous examination).
Results: Mean age was 68±11 years. Baseline LVEF 28.8±9.3%, systolic pulmonary artery pressure 49.8±9.7 mmHg, LV end-diastolic diameter 55.5±0.9 mm. Cardiac output (4.2 to 4.77 l/min, p=0.014) and stroke volume (56.7 to 64.4 ml, p=0.025) increased significantly following PS activation, without reciprocal increase in heart rate, and gradually descended the study, after 10 minutes. There was no significant change in diastolic function parameters. Central venous pressure remained high during PS activation. Systemic vascular resistance decreased significantly (1517 to 1205 dyn X s/cm5, p=0.002), and remained lower than basal level in spite of an increment during the study. We did not observe cardiac deterioration (clinical or functional) following the study, albeit increased pulmonary venous return.
Conclusions: The use of PS is safe for patients with CHF. Its use may even improve cardiac function, as manifested by a significant changes in both preload and afterload parameters.

Vitamin D Deficiency is a Predictor of Outcome in Heart Failure; Supplementation Improves Outcome

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Aims: Vitamin D deficiency is a highly prevalent, global phenomenon. The prevalence in heart failure patients and its effect on outcome is less clear. We evaluated vitamin D levels and vitamin D supplementation in patients with HF and its effect on mortality.
Methods and Results: 25(OH)D levels were evaluated in HF patients from a health maintenance organization (HMO), and compared to the rest of the members of the HMO. Patients with HF (N=3,009) had a lower median 25(OH)D level compared to the control group (N=46,825): 36.9nmol/L (interquartile range 23.2-55.9) versus 40.7nmol/L (26.7-56.9) respectively, P<0.00001. The percentage of patients with vitamin D deficiency (25(OH)D<25nmol/L) was higher in patients with HF compared to the control group (28% versus 22%, P<0.00001). Only 8.8% of the HF patients had optimal 25(OH)D levels (≥75nmol/L). Median clinical follow-up was 518 days. Cox regression analysis demonstrated that vitamin D deficiency was an independent predictor of increased mortality in patients with HF (hazard ratio (HR) 1.52, 95% confidence interval (CI) 1.21-1.92, P<0.001) and in the control group (HR 1.91, 95% CI 1.48-2.46, P<0.00001). Vitamin D supplementation was independently associated with reduced mortality in HF patients (HR 0.68, 95% CI 0.54-0.85, P<0.0001). Parameters associated with vitamin D deficiency in HF patients were decreased previous solar radiation exposure, body mass index, diabetes, female gender, pulse, decreased calcium and hemoglobin levels.
Conclusions: Vitamin D deficiency is highly prevalent in HF patients and is a significant predictor of reduced survival. Vitamin D supplementation was associated with improved outcome.

Sleep Disturbance Predicts Increased Hospitalization and Mortality in Patients with Heart Failure

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Background: Sleep disturbance is highly prevalent in patients with heart failure (HF). We sought to prospectively explore the prognostic significance of sleep disturbance on hospitalizations and mortality in patients with HF.

Methods: Patients were recruited from a HF clinic and and HF day treatment program. Clinical information was gathered by interview and chart review. Sleep quality was assessed by the Pittsburgh Sleep Quality Index (PSQI). Patients were followed for 18 months. Hospitalizations were analyzed from the hospital data base, and mortality information was obtained from the National Census Bureau.

Results: Sleep disturbance (as defined by PSQI >5) was associated with a significant increase in death or hospitalization over the study period (R=4.545, p= .033). This effect was consistent when controlled for gender, NYHA class, ejection fraction, atrial fibrillation, PA pressure, creatinine, diabetes, COPD, smoking, depression, total daily dose of furosemide, other medications, heart failure etiology, and BMI. Of note, the major effect was seen in patients with NYHA 2 and 3, whereas the mortality/hospitalizations in patients with NYHA 4 was not affected by sleep disturbance. Less than 5 hours of sleep was not associated with an increase in mortality and hospitalizations (Ñ =.076, p = .782). Higher scores on the PSQI were not associated with a further increase in mortality.

Conclusions: Self-reported sleep disturbance is associated with an increase in hospitalization or death in HF patients who are NYHA 2-3.