EP10

Telecardiology for CHF: The experience of 'SHL'-Telemedicine & Clalit Health Services Collaboration

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Background: Patients with chronic heart failure (CHD) characteristically have multiple hospital admissions for symptom control, deleteriously affecting their quality of life (QOL) and imposing a burden on national healthcare costs. The 'SHL-Telemedicine' transtelephonic monitoring and intervention program was implemented into Israel's largest HMO. We assessed its effect on hospital admission rate and length of stay, and on QOL domains of patients with chronic heart failure (CHF).
Methods: This prospective 1-year study was conducted on CHF patients of Clalit Health Services who were admitted to an internal medicine and/or cardiology department and/or intensive care unit at least once during the previous year. Their body weight measurements were now automatically transmitted, stored and updated daily in 'SHL'-Telemedicine's databank. They were engaged in 'SHL'-Telemedicine's interventions for increasing compliance and adherence to treatment, and for enhancing knowledge and awareness of disease characteristics. A 24-item questionnaire survey (Minnesota Questionnaire for Heart Failure) acquired self-rated assessments of their QOL.
Results: The study cohort included 380 patients, mean age 73 years, 52% males, II-IV class functional capacity. There was a 48% reduction in total hospitalization days, a 41% reduction in hospital admissions, and a 37% decline in emergency room visits. There was a significant improvement from study initiation to re-evaluation three months later in all 24 items of the questionnaire ($p<0.001$).
Conclusions: Implementation of a transtelephonic system into an HMO can significantly reduce hospitalization rate and length of stay and significantly enhance the QOL of CHF patients by allowing primary care at the patient's home.

EP10

Omega 3 (2-3 g/day) Reduces the Pain of Osteoarthritis and Lumbar Disc Disease in CHF Patients

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Fish, especially oily fish such as mackerel, trout, salmon, herring and sardines, are the major food source of the long chain n-3 polyunsaturated fatty acids Ecosapentanoic acid (EPA) and Docosahexanoic acid (DHA). There is a large body of evidence that EPA and DHA have useful cardiovascular effects including prevention and treatment of Congestive Heart Failure (CHF). Less well known is the profound effect of these agents in control of pain. In Rheumatoid Arthritis they cause a significant reduction in pain and swelling and allow the dose of NSAIDs to be reduced. Their use and safety in CHF for severe knee osteoarthritis or severe back pain due to disk disease has not been reported. We report on 10 patients with these conditions who had CHF (NYHA II-III) which was being maximally treated. None were on NSAIDs. They all had considerable pain despite 1-2 times daily paracetemol 500 mg, dipyrone 500 mg and Tramadol 100 mg. In addition 3 were on Fentanyl patches every 3 days. They were all given 3 capsules of omega 3 (each containing 950 mg of the combination of EPA and DHA) taken every morning before breakfast for 2 months. A Visual Analogue Scale (VAS) was used at every visit to assess the level of pain. The pain medication dosage was not changed.
Results: In 9 of the 10 patients there was a fall in the level of pain as judged by the VAS scale, the mean falling from 8.3 to 3.2 (with 10 being unbearable pain and 0 being no pain). In one there was no response. No side effects were seen and the heart rate, blood pressure, weight and NYHA were unchanged.
Conclusion: Omega 3 has a profound analgesic effect in CHF patients with severe resistant pain and appears safe in moderately high doses.

Effects of Exercise Training on Endothelial Progenitor Cells and Cardiac Remodeling in CHF Patients

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Background: Exercise training (ET) is a well-known complementary treatment for chronic heart failure (CHF). However, the effect of ET on endothelial progenitor cells (EPC) and the impact on cardiac remodeling is still debatable. The purpose of this study was to evaluate the effect of 3 months ET on exercise capacity, quality of life and cardiac remodeling in patients with CHF.
Methods: Patients with CHF were assigned to 12 weeks of ET. At the baseline and after 12 weeks, a six minute walk test (6MWT), Minnesota quality of life questioner (MQOL), and both LV and RV function assessment using standard echo, tissue Doppler imaging (TDI) and 2D strain techniques were evaluated. The number of circulating EPCs (CD34 + and CD34/KDR); and vascular endothelial growth factor (VEGF) serum levels were quantified.
Results: Sixteen patients (mean age 63±8 years, mean LVEF 30.9±4.0% and mean NYHA 2.8± 0.5) on maximal medical therapy were evaluated in this study. The comparison between pre- and post-ET is presented in the Table. An improvement in 6MWT (ρ=0.025), MQOL (ρ=0.014) was observed. Significant decrease in CD34 and CD34/KDR (ρ=0.01 and 0.001) was evident. There was a significant decrease in LV and RV early diastolic velocities (E') (=0.02 and 0.02) and an increase in systolic velocities of LV and RV (ρ=0.004 and 0.01). No changes in 2D longitudinal and circumferential strain were seen.

<IMAGE02>

Conclusions: Our intermediate results demonstrate that ET improves not only functional capacity and quality of life, but also systolic and diastolic function of both ventricles by TDI in patients with CHF. A post-ET decrease in EPCs with no changes in VEGF may be explained either by attenuated effect of ET on recruitment of EPCs or enhanced differentiation of EPCs into mature endothelial cells caused by ET.

Sex Does Matter-Impact of Gender Matching on Early and Late Outcomes Following Heart Transplantation

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Background: The role of donor/recipient gender matching on heart transplantation (HT) outcomes is still controversial. This prospective study investigates the impact of gender matching on early and long term outcomes following HT.

Methods: Patients who underwent HT between 1991 and 2011, and are being followed at our HT clinic, were grouped as follows: male donor-male recipient (MD-MR, n=109); female donor-male recipient (FD-MR, n=36); male donor-female recipient (MD-FR, n=14), female donor-female recipient (FD-FR, n=7).Outcomes included mortality, need for ionotropic support, length of hospital stay, major perioperative and late non-fatal adverse events (AEs), rejections and cardiac allograft vasculopathy (CAV).

Results: Early mortality, need for ionotropic support, length of hospital stay and major perioperative AEs did not differ between the groups. FD-MR group was associated with significantly higher rates of early moderate/severe rejections per patient (FD-MR 1.2, MD-MR 0.4,MD-FR 0.3 FD-FR 0.3 p=0.008) and late moderate/severe rejections per patient (FD-MR 0.4, MD-FR 0.09, MD-MR 0.07, FD-FR 0 p=0.016). CAV was significantly higher among this group (FD-MR 43%, MD-MR 20%, FD-FR 17%, MD-FR 0%, p=0.016). Non fatal major AEs were significantly higher in the FD-MR group (FD-MR 61%, MD-MR 32%, MD-FR 29%, FD-FR 14%, p=0.007). Rates of heart failure (FD-MR 36%, MD-MR 11%, MD-FR 17% FD-FR 17%, p=0.038) and end stage renal failure (FD-MR 29%, MD-MR 5%, MD-FR 0 FD-FR 0, p=0.001) were significantly higher. A trend toward higher mortality was observed in FD-MR group.

Conclusions: Donor-recipient gender matching impacts outcomes of HT. Our study indicates that male recipients who receive female hearts have an increased risk of rejections, development of CAV, higher rates of late non fatal AEs, and a trend toward higher mortality. These results suggest that sex mismatching is a limiting factor in the prognosis of male HT recipients and needs to be avoided if possible.

Influence of Acute Rejection on Cardiac Allograft Vasculopathy Development in Transplanted Hearts

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Background: Cardiac allograft vasculopathy (CAV) is a progressive process affecting the transplanted heart causing severe long-term complications after heart transplantation and determining allograft function and patients' prognosis. The aim of this study was to analyze the relationship between the development of CAV and episodes of acute rejection.
Methods: A retrospective cohort analysis of 78 heart transplant patients followed up in our clinic was performed. Patients with hyperacute rejections were excluded from the study. The cohort was divided in two groups: those with and without CAV. The number of rejections occurring during the follow up period in each group was compared. Results: During median follow up of 6 years (IQR, 25th; 75th percentiles, 3 years; 10 years) 22 patients (28.2%) developed CAV in their transplanted heart. Rejection rate was higher in the group with CAV than in the group with normal coronary arteries (31.8% vs. 23.3%) but the difference did not reach statistical significance (p=0.4). Patients with CAV had a trend towards higher rates of dyslipidemia compared to patients with no CAV (86.4% vs. 66.1%, p=0.09). Ischemic cardiomyopathy wasmore frequently the cause of heart failure leading to heart transplantation in the group with CAV compared with the group with no CAV (72.7% vs. 44.6, p=0.03).
Conclusions: A trend towards higher rejection rate among the group of patients with CAV was observed although the results did not reach statistical significance probably due to the small sample size. CAV was observed more frequently in patients that were transplanted due to ischemic cardiomyopathy.

Red Cell Distribution Width Changes Influence Clinical Outcomes of Acute Decompensated Heart Failure

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Background: Increased red blood cell distribution (RDW) has been associated with adverse outcomes in patients with heart failure. We studied the association between baseline RDW and changes in RDW during hospital course with clinical outcomes in acute decompensated heart failure (ADHF) patients.
Methods and results: We prospectively studied 614 patients with ADHF. Baseline RDW and RDW change during hospital course were determined. The relationship between RDW and clinical outcomes after hospital discharge was tested using Cox regression models, adjusting for clinical characteristics, echocardiography findings and brain natriuretic peptide levels. During the follow up, 286 patients (46.6%) died and 84 were readmitted for ADHF (13.7%). Median RDW was significantly higher among patients who died compared to patients who survived (15.6% interquartile range [14.5 to 17.1] vs. 14.9% mg/L interquartile range [14.1 to 16.1], P < 0.0001). Compared with patients in the 1st RDW quartile, the adjusted hazard ratio [HR] for death or rehospitalization was 1.9 [95% CI 1.3-2.6] in patients in the 4th quartile. Changes in RDW during hospitalization were strongly associated with changes in mortality risk. Compared with patients with persistent normal RDW <14.5%), the adjusted HR for mortality was 2.0 [95% CI 1.2-3.3] for patients in whom RDW increased above 14.5 during hospital course, similar to patients with persistent elevation of RDW (HR was 1.7, 95% CI 1.2-2.3).
Conclusion: In patients hospitalized with ADHF, RDW is a strong independent predictor of greater morbidity and mortality. An increase in RDW during hospitalization also portends adverse clinical outcome.

Predictive Value BNP Measurements in the Course of BNP-Guided Treatment of CHF Patients

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Prevention of decompensation in chronic heart failure (CHF) patients is a difficult task.
Aim: We evaluated the positive and negative predictive value (PPV and NPV) of NT-proBNP changes as a test to predict hospitalizations for acute heart failure (AHF).
Methods Patients: were clinically evaluated. Their NT-proBNP measured at clinic visits (40±19 days). Half of the patients were treated by clinical assessment (group 1) while the others were treated according to NT-proBNP as well (group 2). If measured NT-proBNP was higher than its level on the previous visit by more than 30% the patient was considered at high risk to decompensate and treatment was immediately intensified.
Results: 120 patients with CHF and at NYHA II/III/IV (49/55/16) were followed for 12.1±9.9 months in an outpatient clinic. Group 1 (60 patients treated by clinical assessment) and Group 2 (60 patients treated according to NT-proBNP) were well matched (age 69.4±10.5 versus 70.2±11 years, and LVEF and NT-proBNP at the beginning 23±7%, 5820±2434 pg/ml, versus 23±6% and 5868±2532 pg/ml, respectively [p=NS]). During the study period 1008 NT-proBNP measurements were recorded (8.5±7.1 per patient). There were 65 and 56 hospitalizations for AHF in Groups 1 and 2, respectively (p=NS). PPV values for a 30% increase in NT-proBNP level as a predictor of hospitalization were 17% and 21% in Groups 1 and 2, respectively (p=NS). NPV for hospitalization for AHF in the absence of NT-proBNP increase was 95% and 97% in group 1 and 2, respectively (p=NS).
Conclusions: Increase in NT-proBNP level during an outpatient clinic follow up visit by more than 30% in comparison with level measured on previous visit had a low PPV for evolution of AHF during the next following 30 days in CHF patients. In contrast, the absence of NT-proBNP level increase during any outpatient clinic visit in comparison with level measured during previous visit has a very high NPV for hospitalizations for AHF during the next 30 days in patients with CHF.

The Relationship Between Illness Prception and Health Related Quality of Life in Heart Failure

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Background: Heart failure (HF) has a profound impact on patients' Health Related Quality Of Life (HR-QOL). Studies have shown that beyond the variables that examine the severity of the disease, there is a correlation between patient's illness perception and his HR-QOL.
Aims: The purpose of the present study was to examine illness perception in patients with HF, by using the Common-Sense Model of Illness Representation, and it's relation to HR-QOL.
Methods: The study group consisted of 78 patients with advanced heart failure regularly attending a dedicated HF clinic in a tertiary hospital. In order to measure illness perception and HR-QOL, subjects were asked to answer the "Minnesota Living with Heart Failure Questionnaire" and then the "Illness Perception Questionnaire-revised". Subjects were also asked to specify their age, sex, marital status, educational level and employment status. Information concerning the severity of their disease was taken from subjects' medical file. Functional capacity, disease duration, comorbidities,latest results of the six minutes' walk test and echocardiographic parameters were recorded.
Results: Stepwise regression analysis showed that three of the illness perception dimensions: emotional representations, consequences and identity, explained 62.5% ($p<.001$) of the variance in the Health Related Quality Of Life parameters.
Conclusions: Our findings suggest that patients' illness perception is related to HR-QOL. Psychological intervention targeting at modifying illness perception, can improve HR-QOL parameters and should be an integral part of every comprehensive therapeutic program of patients with heart failure.