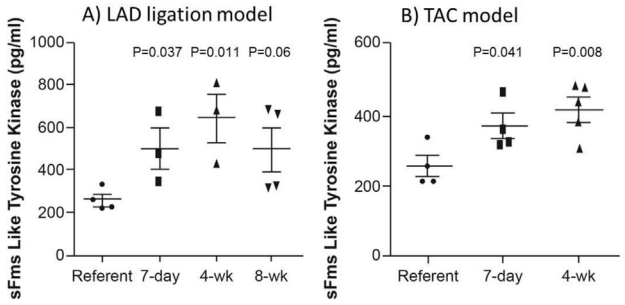

Figure 1.

weeks post-operatively from LAD mice (n= 3) and TAC mice (n=6). Plasma sFlt-1 was assayed using a mouse assay (Quantikine ELISA, R&D Systems, Minneapolis, MN). **Results:** Baseline level of sFlt-1 was 259.3 pg/mL in control group of animals (n=4). In comparison to the control groups, the myocardial infarction animal models of heart failure showed significant elevation in sFlt-1 levels after 4 and 8 weeks of LAD ligation (Figure 1A). Similar findings were found as well in TAC models on 4 and 8 weeks after model design (Figure 1B). **Conclusion:** Vascular stress and ischemia are triggers for sFlt-1 elevation in HF animal models. These findings and previously reported association of high sFlt-1 levels and adverse HF outcomes may in turn reflect the critical role of imbalance in myocardial angiogenesis and the ventricular-arterial relationship in patients with HF.

020

Longitudinal Red Cell Distribution Width Variation in African Americans with Acute Decompensated Heart Failure is Associated with Increased Readmissions

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Background: Heart failure represents a major cause of cardiovascular morbidity and mortality in African Americans (AA). Increased red cell distribution width (RDW) has been linked with worse outcomes in patients with acute decompensated heart failure (ADHF) in cross-sectional studies. The association and prognostic implications of longitudinal RDW variation (ΔRDW) in AA with ADHF have not been previously described. **Methods:** Retrospective review of 191 consecutive cases of AA with ADHF. Paired values of RDW between most recent discharge and subsequent readmissions were compared against selected outcomes, including length of stay

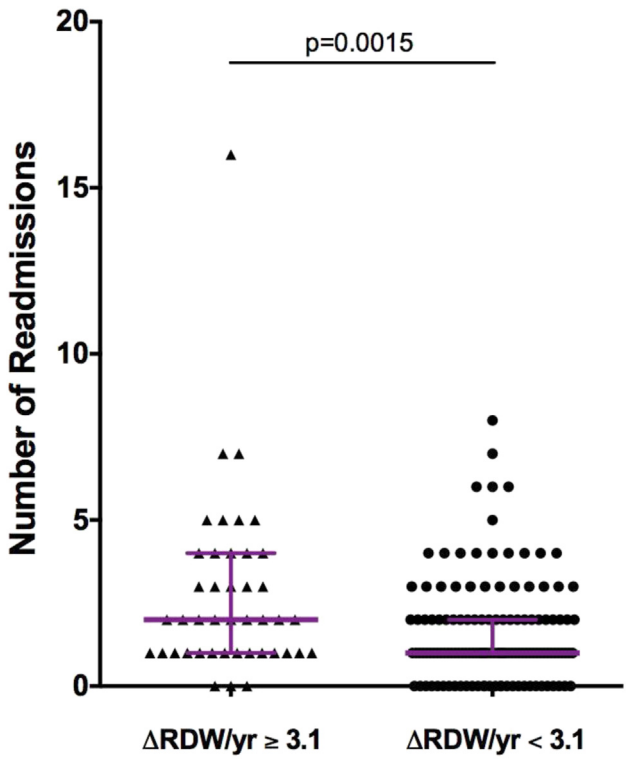

Figure 1.

(LOS), readmission rates and all-cause mortality. ΔRDW rate was calculated based on time-to-readmission. Increased ΔRDW rate was defined based on the upper quartile of distribution change in the study sample. Patients were followed up for a mean of 520 days. **Results:** In this cohort (mean age=65±15 years, male to female ratio=1.15:1, mean EF=33±18%) increased ΔRDW rate corresponded to an absolute increase of >3.1%/year from discharge to readmission (median time to readmission=80 days). Increased ΔRDW rate was associated with higher 30-day readmission (37.8 % vs. 25% p=0.00044 FET) and total readmission rates due to ADHF during the study period (p=0.0015, R2=0.053, slope =0.02, 95% CI 0.0079 - 0.0349). There were no significant associations between ΔRDW rate and all cause mortality in this cohort. **Conclusions:** Red cell distribution width variation in African Americans with acute decompensated heart failure is significantly associated with subsequent 30-day and total readmissions for ADHF.

021

Significant Enhancement of ATP-Synthesis in Cardiomyocytes By Electric Microcurrent

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Objective: The cardiomyocytes of failing hearts show a significant reduced ability to synthesize ATP. On the one hand, the ATP synthesis depends on the level of the H+ based mitochondrial membrane potential which is impaired in heart failure and which in turn correlates to the electron transfer rate of the respiratory chain of the mitochondria. On the other hand, the electron transfer rate can be changed by external electric fields. We thought to examine the effect of electric fields concomitant with low and high electric microcurrent on the capability of mitochondria of cultured cardiomyocytes from spontaneous hypertensive rates to synthesize ATP. **Methods:** Cardiomyocytes of the myocardium of spontaneous hypertensive rats (N=5; 11 weeks old) were stimulated electrically by use of a direct current (dc) power generator via two electrodes under cultured conditions. Of each SHR myocardium, five times three specimens of myocytes were taken, cultured and exposed to the dc with the intensity zero (control), 10 (low) or 100 (high) µA over a period of 72h. Mitochondrial respiration of dc treated cells was measured via the Oxygraph 2K (Oroboros, Innsbruck, Austria). This instrument allows the continuous measurement of oxygen consumption of intact cells. A sequence of the inhibitors oligomycin, carbonyl cyanide-4-(trifluoromethoxy)phenylhydrazone and rotenone was added to analyze the impact of different mitochondrial complexes on respiration. ATP of microcurrent treated SHR cardiomyocytes was isolated by an ATP-assay (Abcam, ab83355) and quantified fluorometrically. **Results:** Our data shows that there is small up-regulation of mitochondrial respiration in low (+28.6% +/- 3.5%, p=0.093) and a significant up-regulation in high (+45.4% +/- 5.7%, p=0.045) microcurrent treated cells as compared to the control group. A slight up-regulation of ATPase efficiency was observed with low (+8.5% +/- 2.0%, p=0.750) and high (+16.7% +/- 1.9%, p=0.474) microcurrent stimulation as well. The result of ATP analysis indicates a significantly increase in ATP by 98.4% +/- 26.7%, (p=0.036) in low microcurrent and 172.3% +/- 41.7% (p=0.047) in high microcurrent treated cells compared to the control group. **Conclusion:** The data obtained in this experiment suggests that microcurrent application increases cell respiration and ATP-synthesis. This may be potentially relevant to the treatment of heart failure.

022

Features of Transthyretin Cardiomyopathy Patients With 6 Specific Cardiac Genotypes in the THAOS Registry.

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Introduction: The Transthyretin Amyloidosis Outcomes Survey (THAOS) is the largest, international, observational disease registry of transthyretin (TTR) amyloidosis patients and asymptomatic gene carriers. Cardiac deposition of misfolded TTR amyloid fibrils causing cardiomyopathy and heart failure is associated with certain TTR mutations and non-hereditary wild-type (WT)/Senile Systemic Amyloidosis TTR deposition. This analysis describes the characteristics of a sub-set of patients with the 6 most prevalent cardiac specific TTR genotypes. **Methods:** Patients (n=452) with the following six cardiac genotypes were retrospectively analyzed, WT (n=269), Val122Ile (n=89), Thr60Ala (n=36), Glu89Gln (n=25), Ile68Leu (n=22), and Leu111Met (n=11). Basic demographics, age of first cardiac symptom, duration of disease, ECG and ECHO parameters at enrollment were assessed. Descriptive statistics were generated for each of these variables across the 6 cardiac specific genotypes. **Results:** *Demographics*: the mean age (SD) of patients at enrollment ranged from 47.6 (7.4) years to 75.4 (7.0) years. The % males in each genotype were WT (95.9%), Val122Ile (80.9%), Thr60Ala (63.9%), Glu89Gln (44%), Ile68-Leu (72.7%), and Leu111Met (63.6%). *Disease characteristics:* the mean age (SD) at onset of first cardiac symptom ranged between 46.5 (5.1) (Leu111Met) to 72.1 (7.9) (WT) years. The mean duration of disease (SD) at last follow-up was between 6.7 (4.3) years (Glu89Gln) to 12.1 (7.8) years (Leu111Met) with the mean follow up time ranging from 0.94 (1.3) years (WT) to 4.2 (1.5) years (Leu111Met). *ECG and ECHO Parameters:* ECG analysis at enrollment revealed conduction abnormalities with low voltage observed in the following % of patients by genotype: 27.3% WT, 44% Val122Ile, 38.9% Thr60Ala, 60% Glu89Gln, and 42.1% Ile68Leu. The % of patients with PR intervals >200ms were 48.7% (WT), 39.2% (Val122Ile), 33.3%