

measured at 0.5, 1, 3, 6 and 12 hours after the start of study drug. The primary endpoint was PCWP at 1 h. Adverse events were monitored through study day 3, and mortality was assessed through a month.

**Results:** 93 patients were randomized to rhANP group and 28 to the placebo group at a ratio of 3:1 using block of size 4. Baseline characteristics were similar among patients in the study groups, and PCWP were  $23.71 \pm 7.0$  and  $25.66 \pm 8.78$  mmHg in rhANP and placebo group, respectively ( $P=0.226$ ). The mean reduction in PCWP was greater with rhANP ( $-5.45$  mmHg) than placebo ( $-2.03$  mmHg) at 30 minutes, and there was significant difference for the mean PCWP between groups ( $P=0.002$ ). The maximum decrease of PCWP in rhANP group was observed at 1 h ( $-7.74$  vs  $-1.82$  mmHg with placebo), and the mean PCWP of the two groups were significantly different ( $P<0.001$ ). At 3 h, PWCP was sustainedly lower in rhANP group ( $19.52 \pm 6.55$  mmHg) than in placebo group ( $24.79 \pm 8.42$  mmHg) ( $P<0.001$ ). However, no significant differences were found between the two groups for PCWP at 6 hours ( $21.43 \pm 6.51$  and  $24.79 \pm 10.64$  mmHg,  $P=0.125$ ). The rate of hypotension and other adverse event were even in the two groups ( $P=0.111$ ).

**Conclusions:** The short-term infusion of rhANP has prompt hemodynamic improvement in patients with congestive heart failure compared to placebo added to standard care.

#### GW25-e0246

##### Testosterone suppresses ventricular remodeling and improves left ventricular function in rats following myocardial infarction

Wang Xiaofei, Qu Xingqian, Zhang Tiantian, Zhang Junfeng  
Third People's Hospital, School of Medicine, Shanghai Jiao Tong University

**Objectives:** To investigate the effects of testosterone on heart function, cardiomyocyte apoptosis, and ventricular remodeling in male rats post-myocardial infarction.

**Methods:** Eighty-six male rats were randomly assigned to undergo ligation of the coronary artery ( $n=70$ ) or pseudo surgery (PS,  $n=16$ ). Six weeks later, a left ventricular ejection fraction (LVEF) of 45% or less was defined as a successful model of CHF. All model rats were randomly divided into 3 groups: low-dose testosterone (TU), high-dose TU, and placebo (PL) group. After treatment for 12 weeks, the expression of several mRNA transcripts in myocardial tissue was measured by real-time PCR. Immunofluorescence was used to measure myocardial caspase-3 expression.

**Results:** Compared with the PL group, TU treatment significantly improved the LVEF. Moreover, the mRNA expression of atrial natriuretic peptide (ANP), brain natriuretic peptide (BNP), matrix metalloproteinase-2 (MMP-2), and sarco/endoplasmic reticulum  $Ca^{2+}$ -ATPase 2a (SERCA2a) was significantly reduced, while the mRNA expression of glycogen synthase kinase 3 $\beta$  (GSK3 $\beta$ ) and tissue inhibitor of metalloproteinase-2 (TIMP-2) was markedly increased in the TU group. TU treatment also significantly reduced caspase-3 expression.

**Conclusions:** Different doses of testosterone suppressed ventricular remodeling and improved left ventricular function, reduced apoptosis, and prevented mortality in a CHF rat model.

#### GW25-e0292

##### Effectiveness and Safety of Digoxin on Chronic Heart Failure - Meta Analysis of Cohort Studies

Yao Jialu, Ya-Feng Zhou  
Department of Cardiology, the First Affiliated Hospital of Soochow University, Suzhou City, Jiangsu Province, 215006, P. R. China

**Objectives:** Digoxin has been used for more than 200 years to treat patients with heart failure (HF), however, there have been inconsistent findings on the association between digoxin use and risk of death and heart failure hospitalization. Therefore, we conduct a meta-analysis of cohort studies to assess the relationship between digoxin use and the risk of death and heart failure hospitalization.

**Methods:** We searched the MEDLINE, Embase, CNKI (Chinese National Knowledge Infrastructure) from January 1993 through October 2013 and reference lists of retrieved articles, with the use of a standardized protocol which was registered in the University of York Center for Reviews and Dissemination, the number is: CRD42013006258. Two authors performed independent article review and study quality assessment using the Newcastle-Ottawa Scale (NOS) checklist. A random-effects model was used to calculate the overall combined risk estimates.

**Results:** Nine cohort studies involving 84,692 participants were included in the meta-analysis. The overall combined hazard risks with digoxin use compared with the reference group were 1.149 (95% CI 1.043-1.266) for all-cause mortality, 1.059 (95% CI 0.784-1.431) for heart failure hospitalization, 0.988 (95% CI 0.720-1.354) for all-cause hospitalization. Sensitivity analysis of exclusion of any single study did not materially alter the overall result. A little evidence of publication bias was observed.

**Conclusions:** This meta-analysis of cohort studies suggests that digoxin use significantly increases the risk of all-cause mortality, and has no effect on heart failure hospitalization and all-cause hospitalization.

#### GW25-e0879

##### Left atrial ejection force is independent of left atrial volume in heart failure patients

Lauren S. Valera, Marcellus Francis Ramirez, Crismelita Banez  
University of Santo Tomas Hospital

**Objectives:** This study aimed at determining the correlation of left atrial ejection force (LAEF) and left atrial volume in patients with heart failure.

**Methods:** This was a prospective cross sectional study done at the University of Santo Tomas Hospital from October-December 2013. LAEF was computed using the modified Manning's Method. The left atrial volume was measured using the bi-plane method. Correlation between the variables were analysed using the Pearson's R.

**Results:** Thirty six patients were enrolled (22 males, 14 females). Mean age was  $64.36 \pm 13.23$ . The mean computed LAEF was increased at  $16.66 \pm 11.6$  kdynes. The mean age corrected LAEF was increased at  $287.83 \pm 197$  kdynes. Age and left atrial volume were not significantly correlated with computed LAEF and age corrected LAEF ( $P$  value 0.121, 0.367, 0.187, 0.661). Only peak A velocity was found to be significantly correlated with computed (value 0.001) and age corrected LAEF (value 0.001).

**Conclusions:** LAEF was increased in patients with heart failure. Peak A velocity was correlated with computed and age corrected LAEF. Hence, Peak A velocity maybe used as a marker of overall left atrial function.

#### GW25-e1404

##### Clinical significance of red blood cell distribution width in patients with heart failure

Xu Haikun, Yang Ping  
China-Japan Union Hospital of Jilin University

**Objectives:** Heart failure (HF) is one of the global public health problems which have important influence on human health. Red blood cell distribution width (RDW) is a measure of the variability in the size of circulating erythrocytes. In recent years, more and more studies have shown that RDW is a risk stratification and powerful prognostic indicator for patients with heart failure. In this study, we compared the RDW with the already known heart failure marker to analysis the important value of RDW in heart failure severity and prognosis.

**Methods:** We retrospectively investigated consecutive patients who visited the cardiology department of China-Japan Union Hospital from January to June in 2013. According to the inclusion and exclusion criteria, a total of 240 heart failure patients were enrolled in the case group. There are each 80 patients in the NYHA II, NYHA III and NYHA IV group. We selected 200 patients without heart failure as the control group. For each patient, detailed records of the patient's information. And fasting blood taken after admission of all enrolled patients to measured serum creatinine, blood urea nitrogen, brain natriuretic peptide, and left ventricular ejection fraction (LVEF) was measured with echocardiography.

**Results:** Compared with the control group, RDW level was significantly higher in the heart failure group ( $P<0.001$ ). The RDW level was increased as the NYHA classification grade. There is a correlation between RDW and LVEF as well as log [NT-proBNP], the RDW was significantly positive correlated with LVEF ( $r=-0.481$ ,  $P<0.05$ ) and negative correlated with log [NT-proBNP] ( $r=0.0637$ ,  $P<0.001$ ). The RDW level, LVEF, eGFR and log [NT-proBNP] was significantly different between the cardiovascular events group and non-events group, and the COX regression analysis showed that RDW and Log [NT-BNP] are independent factors affecting the cardiovascular events. ROC analysis showed that there is no significant difference between the RDW and Log [NT-proBNP] when using the Z test to measure the area under the curve ( $P>0.05$ ). While when using the Kaplan-Meier survival curve analysis, select RDW 13.85% as cutoff to compare for the survival time of readmission, the incidence of cardiovascular events. Significant differences was found between all these groups ( $P<0.001$ ); RDW quartile grouped by comparing survival time increased with RDW, gradually shortened survival time, a significant difference ( $P<0.001$ ) between the survival curves.

When using quartile grouped methods to compare the cardiovascular events in each group, we found that at the Q2 stage the RDW is more effective to predict all the cardiovascular events compared with log [NT-proBNP].

**Conclusions:** RDW is significantly higher in patients with heart failure, and is significantly elevated with NYHA class severity. RDW is negatively correlated with LVEF, and is positively correlated with log [NT-proBNP]. Therefore, RDW may act as an important indicator to determine the severity of the patient and as a powerful prognostic marker to evaluate the cardiovascular events in heart failure patients.

#### GW25-e1523

##### Effect of Levosimendan on patients with decompensated heart failure

Ma Xiaoju, Yu Shujie, Song Zhiming  
Department of Cardiology, The Third Affiliated Hospital, Sun Yat-sen University, Guangzhou 510630, China

**Objectives:** To explore the effect of levosimendan on patients with decompensated heart failure (DHF) and summarize the key points of nursing.

**Methods:** Eighty-six patients with DHF were randomly divided into levosimendan group ( $n=43$ ) and control group ( $n=43$ ). Patients in control group received the conventional treatment including diuretics, ACE inhibitors, beta-blockers, aldosterone antagonists and digitalis, while patients in levosimendan group received an extra intravenous administration of levosimendan for 24 hours. Echocardiography, level of amino-terminal pro-brain natriuretic peptide (NT-pro BNP), blood pressure (BP), heart rate (HR) and blood electrolytes were detected and compared. The changes of symptoms including dyspnea and leg swelling, and adverse events were recorded.

**Results:** Compared with control group, there were a significant increase in SV [ $(62.72 \pm 23.21)$  ml vs  $(71.12 \pm 23.76)$  ml] and a significant decrease in NT-pro BNP