

(n=199), 2-3 scores group (n=42) and >3 scores group (n=23). Kaplan-Meier analyses for each group and score were analyzed respectively. Discrimination and calibration of EAARN score system were evaluated through c-statistics and Hosmer-Lemeshow(H-L) goodness-of-fit test.

**RESULTS** At median 23 months follow-up, 33 patients died, 22 of 199 patients died in 0-1 score group, 5 of 42 died in 2-3 scores group, and 6 of 23 died in >3 scores group. There are no significantly difference among 3 groups (log-rank test,  $P=0.316$ ). Discrimination of EAARN was inadequate for the outcome( $AUC=0.559$ ). EAARN was a good fit of dead for all-cause mortality( $P=0.49$ ).

**CONCLUSIONS** The EAARN score system unsuccessfully stratifies HF patients with CRT.

#### GW27-e0340

##### Decreased cardiac autonomic nerve function in male patients with idiopathic hypogonadotropic hypogonadism

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**OBJECTIVES** Patients with idiopathic hypogonadotropic hypogonadism (IHH) is closely associated with increased cardiovascular events. However, the relationship between cardiac autonomic nerve function(CANF) and IHH is still unclear. We aimed to investigate the CANF in the male patients with IHH.

**METHODS** 15 male patients with IHH(IHH group) and 15 male normal volunteers(control group) in our hospital were enrolled. The Ewing tests were used to identify CAN. The parameters of Ewing tests were compared between the two groups. The possible association between levels of sex hormones and parameters of Ewing tests were also analyzed.

**RESULTS** Testosterone(T), Follicle-Stimulating Hormone (FSH), Luteinizing Hormone(LH) levels of IHH group were significantly lower than those of the control group( $P<0.01$ ). The parameters of Ewing tests(Valsalva ratio, E/I ratio, 30:15 test) of IHH group were significantly lower than those of the control group, while the orthostatic hypotension test was higher, but only the difference of Valsalva ratio was significant( $1.17\pm 0.19$  vs.  $1.45\pm 0.22$ ,  $P=0.003$ ) between groups. Valsalva ratio was positively related with T, FSH and LH by the Pearson correlation analysis( $r=0.64$ ,  $P=0.012$ ,  $r=0.45$ ,  $P=0.024$  and  $r=0.52$ ,  $P=0.02$ , respectively).

**CONCLUSIONS** The cardiac autonomic nerve function of IHH male patients was impaired. The sex hormones were associated with decreased cardiac autonomic nerve function in IHH male patients.

#### GW27-e0401

##### An ECG fuzzy classification method based on adaptive PSO-RBF algorithm

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**OBJECTIVES** The current expert system for the classification of electrocardiogram (ECG) doesn't have the ability of learning. Classification of ECG signals based on neural network cannot achieve accurate detection of ECG signals due to slow converge and uneasy approach of global optimal solution. In this study, a method of ECG signal classification based on fuzzy characteristics extraction and adaptive particle swarm optimization radial basis function (PSO-RBF) algorithm was proposed to solve the above two problems.

**METHODS** The ECG data of 1200 patients' records, which had 6 categories, such as normal sinus arrhythmia, sinus bradycardia, sinus tachycardia, sudden cardiac death, atrial fibrillation and congestive heart failure, were got from the PhysioBank database. Least mean square (LMS) adaptive filter was used to filter the noises of the ECG signals, such as power frequency interference, electromyography noise, electrode contact noise and respiratory amplitude interference. Then the wavelet multi-scale analysis was used to detect the P, QRS and T wave groups of the ECG signals and geometric parameters were

obtained, such as pStart (P wave start point value), pEnd(P wave end point value), pTop(The highest value of P),etc. The geometric parameters for each of the wave groups were normalized and fuzzed as notched P wave high P wave, low P wave, and normal P wave, etc. The fuzzed characteristics of the every patient's ECG signals was divided into training group and validation group. After the training group respectively carried out network training by the traditional RBF algorithm and adaptive PSO-RBF algorithm, the trained network was used to classify the ECG signals of the validation group into 6 categories mentioned above. At last, the accuracy of each categories was verified.

**RESULTS** The results of adaptive PSO-RBF algorithm showed that the discrimination rate of several typical cardiac rhythms were more than 90%, but the traditional RBF algorithm was less than 90%. For instance, the discrimination rate of normal sinus arrhythmia was 94.3%, sinus bradycardia 95.2%, sinus tachycardia was 95.7%, the discrimination rate of sudden cardiac death was 91.1%, the discrimination rate of atrial fibrillation was 92.7%, and the discrimination rate of congestive heart failure was 93.6%.

**CONCLUSIONS** The use of fuzzy characteristics extraction method improves the robustness of the system. Compared with the traditional RBF algorithm, adaptive PSO-RBF neural network can be more accurate on the classification of ECG, and it's far superior to general expert systems which base on logical reasoning and traditional RBF neural network.

#### GW27-e0443

##### Ethnic differences in clinical features and anticoagulation management of hospitalized patients with atrial fibrillation in northwest China

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**OBJECTIVES** Significant ethnic differences exist in the epidemiology of atrial fibrillation (AF). However, ethnic differences in hospitalized patients with AF are rarely reported, especially in Xinjiang. The purpose of this study was to investigate the demography profile of patients hospitalized with AF, and to compare the utilization of their maintenance antithrombotic treatment among Han and Uygur.

**METHODS** Used data from a retrospective descriptive study, all hospitalized patients from 13 hospitals since Jul 1, 2014 to Jun 31, 2015 in Xinjiang, China. Antithrombotic management was measured according to guideline-recommended risk scores.

**RESULTS** A total of 4 181 cases with AF were identified at 13 sites from Jul 1, 2014 to Jun 31, 2015. mean age  $69.46\pm 11.68$  years,41.4% females; 2990(71.5%) were Han and 1191 (28.5%) were Uygur. Han patients were older (mean age 71.3 vs 64.96,  $p<0.001$ ). The distribution of hospitalized patients with AF is shifted towards the older age groups. Both groups exist great differences in age distribution. Hans patients were higher among 65-74 years old and Uygur were higher among 75-84 years old. Compared with Han participants, Uygur patients had higher body mass index(BMI), were more often permanent AF, and had more stroke/TIA and chronic obstructive pulmonary disease(COPD) comorbidities. Han participants had more hypertension, diabetes mellitus.

Overall, 74.2% of Han and 47.2% of Uygur were managed with a rate control strategy( $p<0.001$ ); 28.0% of Han and 13.43% Uygur were accepted rhythm control therapy( $p<0.001$ ). Consistent with a rate and rhythm controlled strategy, Han patients underwent more prior cardioversions and prior interventional therapy for AF.

Among high risk population(CHADS2-scores  $\geq 2$ ), 49.5% of Han versus 70.2% Uygur were not receiving anticoagulation therapy( $p<0.001$ ). No significant differences in overtreated (44.4% vs 34.31%,  $p=0.25$ ). 43.1% of Han and 43.5% of Uygur at middle risk were untreated ( $p=1$ ), and 7.1% versus 4.5% were overtreated ( $p=0.40$ ). At low risk of stroke (CHA2DS2-VASc =0), 55.6% Han and 65.69% received anticoagulant therapy, while 44.4% and 34.31 respectively received possible overtreatment( $p=0.10$ ).

**CONCLUSIONS** This hospital-based study revealed most of all patients with AF were at high risk for stroke. Anticoagulation for AF is not prescribed in accordance with guideline recommendations. Improving better strategy to improve management of AF itself is needed.