GW25-e315

Antithrombotic Therapy in Chinese Patients with Atrial Fibrillation: Results from a multicenter, prospective Registry

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Objectives: Aim of this study was to describe the use of antithrombotic therapy in Chinese patients with atrial fibrillation (AF) and identify factors associated with warfarin use at baseline and at 12-month follow-up.

Methods: Between November 2008 and October 2011, this prospective registry enrolled patients presenting to an emergency department (ED) with AF at 20 sites in China. 12-month follow-up was completed for all patients. Multivariate regression models were used to determine predictors of warfarin use, respectively.

Results: Among 319 patients with valvular AF, 132 at baseline and 111 at follow-up were on warfarin, while 43 (32.6%) and 64 (57.7%) have international normalized ratio (INR) levels between 2.0 to 3.0, respectively. In patients with non-valvular AF, 60 (65.5%) were on warfarin, and 40 (44.5%) were not (P = 0.05). The CAP and AI in dual-chamber pacing group was significantly higher than single-chamber pacing group (65.52% vs 100%, P = 0.01). (4) Tests during operation showed that the traditional right ventricular pacing group had the highest CHADS2 score (0.05). The CAP and AI in dual-chamber pacing group was significantly higher than the control group and single-chamber pacing group (P < 0.05). The CAP in control group was used and was higher than the CHADS2 score (P < 0.05).

Conclusions: Dual-chamber pacing could significantly enhance patients’ brachial blood pressure. Dual-chamber pacing may boost people’s CAP and AI, which could be attributed to one of the adverse effects on cardiovascular events and long-term prognosis in patient with right apex pacing.

GW25-e0800

Automatic home monitoring in patients with implantable cardioverter defibrillator or cardiac resynchronization therapy defibrillator

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Objectives: To evaluate the benefit of Home monitoring (HM) system in patients with implantable cardioverter defibrillator (ICD) or cardiac resynchronization therapy defibrillator (CRT-D).

Methods: Twenty-three patients undergoing implantation of ICD or CRT-D with HM in our hospital were enrolled from January 2011 to August 2013. Data of patients were transmitted from HM to the HM system. Data and history collected on a daily basis and alerts by HM were analyzed. Early detection and intervention effect of Home monitoring system included arrhythmias or heart failure to clinical events and system related events.

Results: The mean follow-up duration was 452.1±262.2 days, a total of 1991 remote transmissions were received. Among these transmissions, 1494 arrhythmic events were reported and 96.4% of events were clinical-related, and 1.5% were system-related, no transmissions by 2.1%. Most of the system-related events were abnormal sensing, and one loose electrode placement of left ventricular was detected. Clinical events included 84.7% arrhythmic events and 15.3% HF monitoring events. Alarms for HF monitoring including heart rate at rest were increasing and CRT pacing percentage was reduced. Through alerts of the HM, patients got physician advices by telephone in 65 times, parameters were optimized in 11 times, and treatment plan was adjusted in 18 times, four patients were hospitalized again.

Conclusions: Home monitoring is necessary and safe method which could early detect the abnormal events in the patients with ICD or CRT-D. This system is helpful in making earlier clinical intervention, and optimizing follow-up management, it may improve patients’ quality of life and safety.

GW25-e1403

Validation of CHADS2-VASc for predicting stroke and thromboembolism in atrial fibrillation patients with or without application of oral anticoagulant: a meta-analysis of cohort studies

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Objectives: CHADS2 and CHA2DS2-VASc have been validated as predictors of embolic risk, contributing to the optimization of antithrombotic prescribing practices in heterogeneous atrial fibrillation (AF) patients. However, independent validations have reported conflicting results. This meta-analysis therefore aimed to compare the diverse predictive values of these two methods for risk assessment in AF individuals with or without anticoagulation therapy based on previous studies.

Methods: The data were systematically retrieved by searching the Cochrane Library, PubMed and Embase databases reporting the diagnostic performance between CHADS2 and CHA2DS2-VASc. In addition, we reviewed references, major textbooks, and related articles. Pooled risk ratios were estimated by using a random-effect model. Defined endpoints were then compared between scores < 2 and ≥ 2, considering the presence or absence of anticoagulation therapy.

Results: Twelve cohort studies were identified in the meta-analysis. With regard to the occurrence of outcomes individually, patients with CHA2DS2-VASc score ≥ 2 showed a greater risk for stroke (RR 5.31, CI 3.697-6.72; P < 0.0001) and thromboembolism (RR 5.94, CI 5.48-6.43; P < 0.0001) (I2 = 0.55), regardless of the presence or absence of anticoagulation therapy (RR 5.43, CI 4.92-6.00; P < 0.0001 and RR 5.92, CI 5.26-6.67; P < 0.0001, respectively) (I2 = 0.57). A chi-squared test to evaluate trends also confirmed an increased risk of events in patients receiving anticoagulants (both p < 0.001).

Conclusions: Our results showed better diagnostic performance for CHA2DS2-VASc over CHADS2 for the distribution of greater numbers of patients and a greater incidence and endpoints in high-risk stratification, as well as the identification of patients with atrial fibrillation who are at substantial risk of endpoint events with or without optimal anticoagulant therapy.

GW25-e1460

A study on the methodology and safety of CS ventricular pacing substituting the traditional right ventricular pacing

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Objectives: By trying implanting a ventricular electrode through the coronary sinus (CS) approach to achieve the conventional cardiac pacing, this study was designed to overcome the potential risk of the traditional right ventricular endocardial pacing through the tricuspid valve approach.

Methods: 65 patients in line with ordinary cardiac pacing were continually accepted an insertion of a mapping electrode or conventional right ventricular electrode. For the traditional right ventricular pacing group, a pushing sheath or a conventional right ventricular electrode was planted into a corresponding targeted vein. For the traditional right ventricular pacing (CS) approach to achieve the conventional cardiac pacing, this study was designed to overcome the potential risk of the traditional right ventricular endocardial pacing through the tricuspid valve approach. (3) Indexes such as the X-ray exposure time of ventricular electrode implantation, the success rate, the operation complications, the pacing parameters were collected. (4) The SPSS 17.0 statistical software package was used for data processing, and there was a significant difference in P < 0.05.

Results: The success rate of the study group lower than the traditional right ventricular pacing group (65.52% vs 100%, P = 0.001). In the study group the success rate of CRT-D dedicated left ventricular electrodes and delivery sheathes was higher than that of conventional right ventricular electrodes (80.95% vs 25%, P = 0.009). (2) There was no significant difference of the severe pacing-related complications rates (10.34% vs 0%, P = 0.203) between the two groups and the traditional group, and all 61 patients survived. (3) The X-ray exposure time of the study group was longer (3.85 ± 2.21 min vs 7.45 ± 3.56 min, P 0.01). (4) Tests during operation showed that...
threshold of the study group was slightly higher than that of the traditional right ventricular pacing group (1.43±0.105 V vs 0.66±0.135 V, P=0.0099). There was no significant difference of sensitivity (10.77±4.96 mV vs 9.66±2.93 mV, P=0.367). Impedance of the study group was slightly higher than that of the traditional right ventricular group (884.35±74.62 Ω vs 615.48±214.89 Ω, P=0.010).

Conclusions: (1) Among patients with conventional cardiac pacing, the replacement of the classical right ventricular endocardial pacing through the tricuspid valve approach with CS ventricular pacing is feasible, simple, and repeatable, and it is worthy of further explorations. (2) The success rate of CS ventricular pacing with conventional right ventricular electrodes implanted is rather low, while that with CRT-dedicated electrodes implanted significantly improves. (3) Complications such as coronary sinus dissection, pericardial effusion, diaphragmatic stimulation and so on may emerge during and after the operation of CS ventricular pacing, but that rate is no higher than the traditional right ventricular pacing, and the pacing parameters are not different from the traditional right ventricular pacing. (4) CS ventricular pacing can obtain more central ventricular activations’ QRS wave forms, make the pacing therapy more physiological. (5) For patients with the contradiction of pacing through the tricuspid valve approach, failing to implement CRT, and with complete left bundle branch block, CS ventricular pacing can be a replacement of the traditional right ventricular pacing.

GW25-c1480
Impact of idiopathic premature ventricular contraction on the left ventricular function
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Objectives: We investigated the impact of clinical characteristics of premature ventricular contraction (the PVC burden, the electrocardiography characteristics of PVCs, the site of origin of PVC, the duration of symptoms) on the Left Ventricular ejection fraction in patients without underlying structural heart disease, so that we can make a suitable treatment for these PVC patients to prevent them from PVC-induced cardiomyopathy.

Methods: We retrospectively studied 103 consecutive patients (mean age 37±18 years, 69 female) with no other cause of cardiomyopathy who had accepted ablation of PVCs at the 2nd Hospital of Jilin University from January, 2010 to October, 2013. We analyzed the association of a reduced LVEF, defined by LVEF <50% on echocardiography, with features of PVCs obtained from electrocardiography, 24- or 48-hour Holter monitor and electrophysiology study.

Results: Patients with reduced LVEF (n=35) as compared to normal LVEF (n=68) had an increased burden of PVCs (30.3±13.6% vs 17.7±13.0%, P=0.007), higher prevalence of nonsustained ventricular tachycardia (VT) (28% vs 27% (P=0.045), longer QRS duration (155.3±22.5 ms vs 146.6±21.8 ms, P=0.03) and longer duration of symptoms (4.9±1.7 yr vs 2.0±0.3 yr, P=0.01). There was no significant difference in age, sex, PVC coupling interval. Patients with fascicular PVCs (n=7) had higher mean LVEF compared to others (69.2±4.0% vs 57.0±10.0%, P=0.0004).

There was no association of LVEF with the origin of PVC.

Conclusions: In addition to the PVC burden, other characteristics like a longer QRS duration and presence of non-sustained VT and duration of symptoms might be associated with cardiomyopathy.

GW25-c2221
Impact of left atrial epicardial adiposity on recurrence of atrial fibrillation after catheter ablation
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Objectives: To investigate the impact of left atrial epicardial adiposity on recurrence of atrial fibrillation (AF) after catheter ablation.

Methods: From 2009 to 2010, consecutive patients with AF who underwent circumferential pulmonary vein ablation guided by 3-D mapping system were enrolled in the retrospective study. Left atrial (LA) epicardial fat pad thickness was measured in consecutive cardiac CT angiograms performed for AF. Patients were grouped by AF burden: paroxysmal (n=100), or persistent (n=49) AF. The short-axis view was reconstructed as a plane perpendicular to the long axis of these 2 views at the level of the mid LA. In this short-axis view, the pericardial epicardial fat thickness was measured (in cm) as the shortest distance between the mid left atrium (LA) wall and 3 anatomic landmarks: esophagus (LA-ESO), main pulmonary artery (LA-PA), and descending thoracic aorta (LA-TA). In a short-axis view at the mid LA, pericardial epicardial fat thickness was measured at the esophagus (LA-ESO), main pulmonary artery, and thoracic aorta. The recurrence was defined as atrial tachyarrhythmia lasting more than 30 seconds beyond one month washout period.

Results: In this study population, 100 had paroxysmal AF, and 49 had persistent AF; 49 patients were female. The association between AF burden by grade (paroxysmal 1, persistent 2) and Differences in gender, age, LVEF, and comorbid factors were not statistically significant. Pericardial LA-ESO fat thickness was assessed by ordinal logistic regression. Univariate, LA-ESO, LA-TA, LA-PA, and LAD were significant predictor of AF burden. After adjusting for age, BMI, LA-ESO, LA-PA and LAD, the long-axis of the atrium was significant (OR 3.407; 95% CI 1.046-10.73; P=0.00046).There was no loss to follow-up after 12 months. Of 149 patients, 98 (65.8%) remained free of recurrence after a single ablation procedure. The recurrence patients had a significantly thicker LA-ESO fat pad than the normal patients after ablation. By logistic regression modeling, after adjusting for AF burden, LAD, age, and comorbid factors, LA-ESO fat depots were individually predictive of the recurrence of AF (P=0.002, OR=4.444, 95% CI 2.680-7.343).

Conclusions: Left atrial epicardial adiposity is associated with the burden of AF, and poorer outcomes after AF ablation. LA-ESO fat depots were individually predictive of the recurrence of AF.

GW25-e2262
Could the antegrade conduction of accessory pathway shorten PI interval in pre-excitation syndrome?
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Objectives: The pre-excitation syndrome could not prolong PI interval. So, the differential diagnosis between pre-excitation syndrome and bundle branch block (BBB) could be made based on the prolonged PI interval. Could the antegrade conduction of accessory pathway (AP) shorten the PI interval? In order to explore the effects of pre-excitation on PI interval, we studied patients with a single anterogradely conducting AP who underwent successful ablation, compared the ECG pre and post ablation. Furthermore, we further analyzed the association and clinical significance of prolonged PI interval in pre-excitation syndrome.

Methods: In the study, 162 cases with a single anterogradely conducting AP who underwent successful radiofrequency ablation were included. Patients were divided into PI interval according to the PI interval post ablation. Among them, 54 cases were included (who were divided into 10 subgroups according to AP location). In prolonged group, 12 cases were included (were 4 first degree ativoventricular block, 8 were BBB). (1) Normal group: comparison of 12-lead ECG during sinus rhythm pre and post ablation was made, PR interval, QRS duration, and PI interval were recorded respectively. Furthermore, the delta wave duration, ativoventricular (AV) conduction time via AV nodal pathway (normal pathway) pre ablation (sum of the PR interval and delta wave duration equivalent), and the total time of ventricular depolarization via normal pathway pre ablation (subtraction of the QRS interval and delta wave duration equivalent) were measured. (2) Prolonged group: besides the indices which measured in normal group, the region of heart block, AP location, and QRS morphology during AV reentrant tachycardia (AVRT) pre ablation were analyzed.

Results: (1) Normal group. The PI interval was not prolonged in all subgroups compared with ECG post ablation. Furthermore, it was significantly shortened in right posterior (RP) AP (226±18 VS 236±19 ms; P<0.05) and right posteroseptal (RPS) AP (221±18 VS 238±31 ms; P<0.05) with ECG post ablation. Accordingly, the total ventricular activation time via normal pathway was shortened in RP AP (79±12 VS 87±9 ms; P<0.05) and RPS AP (70±13 VS 86±19 ms; P<0.05). (2) Prolonged group: the prolonged extent of PI interval pre ablation was smaller compared with ECG post ablation. In 4 cases with first degree AVB, although the PI interval pre ablation was shortened compared with ECG post ablation, the PI interval was still longer than normal limits (0.26s). QRS was normal during AVRT. Out of 8 cases with BBB 6 had normal PI interval pre ablation and 2 (AP was on the opposite side as the ventricle having BBB) had prolonged PI interval pre ablation. QRS was BBB pattern during AVRT.

Conclusions: (1) Pre-excitation syndrome could not prolong the PI interval, and may even shorten it. When the AP was on the same side as the ventricle having BBB, the PI interval could be shortened to normal range. Normal PI interval could not rule out the presence of BBB, especially when the QRS is isoplalite BBB pattern of AP during AVRT. (2) The mechanism of shortened PI interval is related to the prolongation of ventricular depolarization time and AV conduction time (first degree AVB) via normal pathway. (3) A prolonged PI interval could serve as a marker of preexistent AV or interventricular conduction disturbance in pre-excitation. Measurement of the PI interval should be recommended in case with pre-excitation pre ablation of AP.

GW25-c3105
Verapamil: an appropriate pharmaceuticaltherapeutical alternative in management of type 2 long QT syndrome
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Objectives: Type 2 long QT syndrome (LQT2) is caused by loss-of-function mutations in KCNH2 gene (hERG) which encodes the pore-forming subunit of a rapidly activating delayed rectifier potassium channel. Therapy with β-blocker remains the first choice for LQT2, however, almost a quarter of patients still develop cardiac death (9%) despite taking equivalent β-blocker therapy. This study aimed to investigate the efficacy and mechanism of a calcium channel blocker, verapamil, to improve clinical presentations in LQT2.

Methods: A 42-year-old woman who presented with marked QT prolongation and unexplained syncope was selected as candidate gene screening. The therapeutic effects of verapamil were evaluated by QT-interval measurement and ICD shock count. The electrophysiological effect of verapamil was evaluated in a LQT2 model using rabbit left ventricular myocardial wedge preparations.