Methods: Sequentially enrolled 257 patients that diagnosed with atrial fibrillation in the West Affiliated Hospital of Dalian Medical University from March 2011 to September 2013, and score to each patient according to the standard of CHADS2 and CHA2DS2-VASc scoring system. CHADS2 scoring system: C: congestive heart failure, 1 point; H: hypertension, 1 point; A: age>=75 years, 1 point; D: diabetes, 1 point; S: stroke or transient ischemic attack history, 2 points, 6 points in all. CHA2DS2-VASc scoring system: C: congestive heart failure, 1 point; H: hypertension, 1 point; A: age between 65-74 years, 1 point; D: diabetes, 1 point; S: stroke or transient ischemic attack history, 2 points; V: vascular disease, 1 point; A: age>75 years, 2 points; S: female, 1 point, 9 points in all. Patients were divided into low, medium, and high-risk groups according to the score. 0 and 1 points were assigned to the score 0, 1 and 2 points. After admission, each patient underwent transesophageal echocardiography examination. Pulmonary venous flow (S peak, D peak, A peak), the maximum speed of the left atrial appendage (LAA) emptying velocity, LAA entrance width, LAA depth, and the ratio of anteroposterior (AP) to lateral (L) were measured. The correlation of CHADS2 and CHA2DS2-VASc score with vein puncture, and time of X-ray exposure all were similar to the other two groups. The success ratio of the way with directly bony landmarks to locate and implant electrodes wire implanted. Ten cases were divided into 9 subgroups based on AP location (32 were left anterior AP, 35 were left lateral AP, 23 were left posterior AP, 7 were right anterior AP, 12 were right lateral AP, 18 were right posterior AP, 5 were right anterosuperial AP, 8 were right midseptal AP, 12 were right posteroseptal AP). In latent group, 8 cases (delta wave was not visible on the resting ECG, but it was detected during transesophageal atrial pacing) were included. (1) EGCG before and after ablation were examined in overt group. The effect of pre-excitation on terminal QRS vector was observed. Furthermore, the relationship between the change of terminal QRS vector and AP location as well as delta wave was analyzed. EGCG post-ablation and anteroposterior (AP) to lateral (L) ratio of ventricular reentrant tachycardia were analyzed. In cases with a change of terminal QRS vector, the relationship between initial V wave derived from target site (activated via AP) and the onset of the QRS complex on the surface ECG (activated by AV nodal pathway termed as the incomplete latent pre-excitation) was analyzed.

Results: (1) In overt group, 150 cases had a change in terminal QRS vector in comparison to the ECG post ablation. Of these 150 cases, 126 (84.0%) had a change in polarity and 24 (16.0%) had a change in amplitude. The change of terminal QRS vector was related to AP location and delta wave. (2) In latent group (6 cases), 6 cases had a change in terminal QRS vector, suggesting failure conduction of AP (latent pre-excitation). The remains of 8 cases had a change in terminal QRS vector. The initial V wave derived from target site in an electrophysiological study and the onset of the QRS complex on the surface ECG appeared nearly at the same time, indicating that the activation from AP is nearly in synchronism with activation from AV nodal pathway (terminally termed as the incomplete latent pre-excitation).

Conclusions: (1) Both initial QRS vector and terminal QRS vector are affected by the antegrade conduction of AP. (2) The presence of a delta wave indicates that AP conduction is faster than AV node conduction. (3) The change of terminal QRS vector is the hallmark of antegrade conduction via the AP. The pre-excitation mainly manifest the change of terminal QRS vector, which is termed as the incomplete latent pre-excitation syndrome. The change of terminal QRS vector detected by comparing with ECG during AVRT is helpful for the diagnosis of pre-excitation syndrome with no evident delta wave.

GW25-e5209
Study on the changes of ambulatory electrocardiogram before and after military training in volunteers
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Objectives: To investigate the changes of multiple-indices by ambulatory electrocardiogram before and after 3km military training in volunteers and explore the effect of large intensity training to electrophysiology, then provide the basis for the myocardial injury and exercise-related sudden death which are caused by the long-term and large intensity training.

Methods: 160 health male volunteers were selected, whose age was (20.2±2) years old. Using the MIC-12H dynamic electrocardiogram (jingo Medical Equipment Co., LTD, Beijing) to record 24 hours. Firstly, the electrocardiogram was detected for 24 hours the day before the training, then the electrocardiogram was tested again immediately after the training which was required to complete in 15 minutes, and the data was analyzed collected by the special software. Heart rate (HR), HRV, Parasympathetic (Parasympathetic index [PI]), sympathetic (Sympathetic index [SI]), time, domain Heart Rate Variability (HRV) parameters (SDNN) and T wave alternans (TWA) were measured and compared respectively before and after 3km military training by ambulatory electrocardiography. And the changes of the arrhythmia such as AVRT, AD and ventricular beats were observed.

Results: (1) HR (71.89±6.70bpm per minute) after 3 km military training was higher than that (68.97±6.88bpm per minute) before the training (P<0.001). (2) DC (31.63±3.45) after the training decreased markedly (P<0.001) compared with (12.68±3.36) in pro-training group. (3) The time domain index SDNN of HRV (201.96±36.97 ms) after the training were more higher (P<0.001) than those (193.01±34.44 before the training. (4) The rate of TWA were not changed (P>0.05), but there was a significant increase in the incidence rate (P<0.001) of the arrhythmia such as premature atrial (4.2%) and ventricular beats (3.03%).

Conclusion: The test of DC and arrhythmia could not exclude the risk of cardiac sudden death in training. This study suggested that whether the deceleration of DC would increase the risk of exercise-induced sudden death, we also need further attention. And the increasing of HRV indices and HR improved the integral function of the independent nerve system. But the increase of premature atria and ventricular beats, the risk of malignant arrhythmia could not exclude. So we should pay attention to monitor the indexes of DC and arrhythmia, and giving an early warning to exercise-induced sudden death.

GW25-e1673
Study of Three Different Kinds of Approaches to Permanent Pacemaker Implantation
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Objectives: To evaluate the success ratio, safety and utility of three different kinds of approaches to permanent pacemaker implantation.

Methods: Three different groups were made as follows: directly under fluoroscopy in anatomical localization, 95 patients were punctured in axillary vein and implanted electrodes wire; 55 patients were implanted the electrodes wire with the subclavian vein puncture; 48 patients with intravenous injection of contrast agent to locate the axillary vein and with electrodes wire implanted.

Results: The success ratio of the way with directly bony landmarks to locate and puncture in axillary vein and implant electrodes under X ray was the highest in these three groups. And the complication in this group was also least in operation. In addition, the times and the time consuming of vein puncture, and time of X-ray exposure all were similar to the other two groups. The success ratio of the way with directly bony landmarks to locate and puncture in axillary vein and implant electrodes under X ray was the highest.

Conclusions: The method of puncturing axillary vein and implanting electrodes under X ray with directly bony landmarks is safe, easy and reliable with higher successful rate and less complications. This method could instead of the way with the subclavian vein puncture and the way through injection of contrast agent to locate the axillary vein and puncture in axillary vein. In clinical, this method would be the conventional method for the implantation of electrode wire of permanent pacemaker.

GW25-e1734
A consistency study of interventricular delays optimization for cardiac resynchronization therapy by modified intracardiac electrogram-based method and echocardiography
Tang Xuewen, Zhao Ling
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Objectives: To investigate the consistency of interventricular delays optimization for cardiac resynchronization therapy by modified intracardiac electrogram-based method and echocardiography.
mitral regurgitation in 1, 3 months follow-up after CRT (P < 0.05). JACC Vol 64/16/Suppl C

There were 2 patients with previous myocardial infarction, 2 patients with atrial fibrillation (AF) and 2 patients with drug-resistant paroxysmal atrial fibrillation (PAF). The left ventricular ejection fraction (LVEF) of all patients was more than 25%. Non-invasive parameters of LVZs (Connection of nearby barriers) were used to optimize the left ventricular lead placement.

Methods: A total number of 20 patients with congestive heart failure implanted with IEGM-based functioned CRT/CRT-D were enrolled. The follow-up period for all the patients after CRT was 1, 3 and 6 months. Modified IEGM-based method, traditional IEGM-based method and echocardiographic optimization were used to achieve the optimized VV delays and assessed the improvement degree of acute hemodynamic effects by the three different methods.

Results: The results showed the optimized VV delays achieved by modified IEGM-based method have better agreement and correlation with the echocardiographic optimization comparing with the traditional IEGM-based method. The parameter of left ventricular ejection fraction (LVEF) by modified IEGM-based method was independently related to more favorable outcomes than the traditional echocardiography during the 1, 3 and 6 months follow-up period (0.31±0.07 vs 0.29±0.08, 0.37±0.07 vs 0.34±0.08, 0.45±0.07 vs 0.42±0.08, P<0.05). Moreover, the degree of the mitral regurgitation decreased markedly by modified IEGM-based method in 6 months follow-up after CRT (2.08±1.78 vs 2.6±4.2, P<0.05). However, there was no statistically significance between the traditional IEGM method and modified IEGM-based method in A Wave Velocity-time Integral (VTIAo) and the degree of the mitral regurgitation in 1, 3 months follow-up after CRT (P>0.05).

Conclusions: (1) The optimized VV delays achieved by modified IEGM-based method have better agreement and correlation with the echo optimization comparing with the traditional IEGM-based method. (2) The optimized VV delays achieved by modified IEGM-based method have better acute hemodynamic effects.

GW25-e2222

Relationship of Thickness of Left Atrial Epicardial Adipose Tissue and Atrial Fibrillation
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Objectives: Obesity is an important risk factor for atrial fibrillation (AF). Epicardial adipose tissue in close anatomic proximity to cardiac structures and autonomic fibers, is a source of several inflammatory mediators related to the genesis of AF. This study is aiming to investigate the relationship of thickness of left atrial epicardial adipose tissue and atrial fibrillation.

Methods: 150 consecutive hospitalized patients with AF from the January 2008 to January 2009 underwent 16-slice spiral CT as the experimental group (48 (32%) patients with persistent AF, 102 (68%) patients with paroxysmal AF). 131 cases of non-AF patients in our outpatient for 16-slice spiral CT as a control group. In a short-axis view of the mid-left atrium (LA), pericardial epicardial adipose tissue was measured at the esophagus (LA-ESO), main pulmonary artery (LA-PA), and thoracic aorta (LA-TA). Axial plane measurement of the anteroposterior diameter, sagittal measurement of the left atrial diameter were performed as the LA diameter.

Results: Left atrial epicardial adipose tissue thickness in patients with persistent atrial fibrillation increased than that in patients with paroxysmal atrial fibrillation and without atrial fibrillation (all P value less than 0.05). Epicardial adipose tissue thickness in patients with persistent atrial fibrillation increased than that in patients with paroxysmal atrial fibrillation (all P value less than 0.05). Adjusted for age, sex, hypertension, diabetes, BMI and left atrial size, left trial epicardial adipose tissue thickness had relationship with AF history duration and AF burden.

Conclusions: Left atrial epicardial adipose tissue thickness was independently associated with AF duration and AF burden.

GW25-e2379

Substrate-guidated Catheter Ablation of Electrical Storm after Implantation of Implantable Cardioverter Defibrillator
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Objectives: To summarize the experience and outcomes of radiofrequency catheter ablation (RFCA) of electrical storm after implantation of implantable cardioverter defibrillator (ICD-ES).

Methods: We reviewed 5 cases of ICD-ES who underwent RFCA guided by 3D mapping. Seven patients with non-valvular AF that received irregular warfarin therapy were excluded after performing a rigorous exclusion screening. Suitable LAmbreTM device were selected by coronary angiography and released into LAA, prior to assessment of residual shunt by transesophageal echocardiography (TEE). Operability of device was evaluated by a same operator, objectively.

Results: 4 patients with non-valvular AF that received irregular warfarin therapy were selected out, after exclusion of 1 in 8 cases as existence of mural thrombus detected by TEE. Among all 7 inclusive cases, 6 were female and 1 was male, 6 were permanent AF and 1 was paroxysmal AF. The average age was 67±7. Four had a history of heart failure, 2 had atrial fibrillation and/or/paroxysmal ischemic stroke, CHADS2 score was 2.7±1.25 and international normalized ratio (INR) was 1.3±0.72, including only 1 reached the target (INR 2-3). Pre-procedural ejection fraction of left ventricle was 61.69±9.9 percent. Under continuous monitoring of TEE, all cases underwent LAOO using LAmbreTM device. There was no, 1 slight and 1 mild residual shunts indicated all successful procedures. Average time-cost was 70±16.9 minutes. There were also satisfied evaluations of supporting, contrastive, stable and positioning abilities for the devices. These patients underwent uneventful recovery. The time between the procedure and discharge was 3±0.5 days.

Conclusions: Percutaneous left atrial appendix occlusion with LAmbre™ device was safe and effective, however, long-term follow-up should be evaluated closely.

GW25-e4609

Effects of left ventricular lead position on cardiac resynchronization therapy in heart failure of different etiologies
Sun Ju'an, Wang Dongmei
Bethune International Peace Hospital

Objectives: Cardiac resynchronization therapy (CRT) was an established treatment of chronic heart failure for nearly 20 years. Myocardial ischemia is an independent predictor of CRT response, and high cardiovascular mortality after CRT and high hospitalization rate. Patients with ischemic cardiomyopathy could benefit from CRT, but patients with ischemic cardiomyopathy had a lesser degree of improvement for the optimal position of left ventricular lead after CRT response rate, but it is not clear that weather the same left ventricular lead position in heart failure patients of different etiology would have the same effect.

Methods: From 2001 March to 2012 December, 187 heart failure patients treated with CRT were enrolled in 6 months in NICM group (21 left ventricular lead placed in septum, 93 points) and epi-cardial positioning abilities for the devices. These patients underwent uneventful recovery. The time between the procedure and discharge was 3±0.5 days.

Results: Left atrial epicardial adipose tissue thickness in patients with persistent atrial fibrillation increased than that in patients with paroxysmal atrial fibrillation and without atrial fibrillation (all P value less than 0.05). Epicardial adipose tissue thickness in patients with persistent atrial fibrillation increased than that in patients with paroxysmal atrial fibrillation (all P value less than 0.05). Adjusted for age, sex, hypertension, diabetes, BMI and left atrial size, left trial epicardial adipose tissue thickness had relationship with AF history duration and AF burden.

Conclusions: Left atrial epicardial adipose tissue thickness was independently associated with AF duration and AF burden.

GW25-e4375

Early clinical experience of left atrial appendix occlusion using LAmbre™ device from a 7-case series
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Objectives: Left atrial appendix is the main origin of thromboembolus that causes ischemic stroke in the patients with atrial fibrillation (AF). Percutaneous left atrial appendix occlusion (LAOO) is a potential method for prevention of stroke. In these series, we performed LAOO using novel LAmbre™ device, to detect its abilities of occlusive effectiveness, percutaneous operability and safety.

Methods: Patients with non-valvular AF that were intolerant to warfarin therapy were excluded after performing a rigorous exclusion screening. Suitable LAmbre™ device were selected by coronary angiography and released into LAA, prior to assessment of residual shunt by transesophageal echocardiography (TEE). Operability of device was evaluated by a same operator, objectively.

Results: 4 patients with non-valvular AF that received irregular warfarin therapy were selected out, after exclusion of 1 in 8 cases as existence of mural thrombus detected by TEE. Among all 7 inclusive cases, 6 were female and 1 was male, 6 were permanent AF and 1 was paroxysmal AF. The average age was 67±7. Four had a history of heart failure, 2 had atrial fibrillation and/or/paroxysmal ischemic stroke, CHADS2 score was 2.7±1.25 and international normalized ratio (INR) was 1.3±0.72, including only 1 reached the target (INR 2-3). Pre-procedural ejection fraction of left ventricle was 61.69±9.9 percent. Under continuous monitoring of TEE, all cases underwent LAOO using LAmbre™ device. There were no, 1 slight and 1 mild residual shunts indicated all successful procedures. Average time-cost was 70±16.9 minutes. There were also satisfied evaluations of supporting, contrastive, stable and positioning abilities for the devices. These patients underwent uneventful recovery. The time between the procedure and discharge was 3±0.5 days.

Conclusions: Percutaneous left atrial appendix occlusion with LAmbre™ device was safe and effective, however, long-term follow-up should be evaluated closely.

GW25-e4609

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Sun Jia'nan, Wang Dongmei
Bethune International Peace Hospital

Objectives: Cardiac resynchronization therapy (CRT) was an established treatment of chronic heart failure for nearly 20 years. Myocardial ischemia is an independent predictor of CRT response, and high cardiovascular mortality after CRT and high hospitalization rate. Patients with ischemic cardiomyopathy could benefit from CRT, but patients with ischemic cardiomyopathy had a lesser degree of improvement for the optimal position of left ventricular lead.