Results: (1) The patients in low, medium and high-risk group according to CHADS2 scoring system: CHADS2 score are: LAA entrance width (35.33±2.47 mm vs 35.89±0.90 mm vs 36.79±2.51 mm, P<0.001), LAA emptying velocity (23.36±1.02 cm/s vs 23.03±2.00 cm/s vs 20.96±4.42 cm/s, P<0.001), thorobus (0.00±0.00 vs 0.00±0.00 vs 0.006±0.24, P<0.001), SEC (0.00±0.00 vs 0.00±0.00 vs 0.07±0.26, P<0.001). There is some correlation between CHADS2 score and LAA width/depth (2.26±0.12 vs 2.30±0.01 vs 2.42±0.37, P=0.022). (2) The patients in low, medium and high-risk group according to CHA2DS2-VASc score: CHA2DS2-VASc score are: LAA entrance width (35.33±2.47 mm vs 35.89±0.90 mm vs 36.79±2.51 mm, P<0.001), LAA emptying velocity (23.36±1.02 cm/s vs 23.03±2.00 cm/s vs 20.96±4.42 cm/s, P<0.001), thorobus (0.00±0.00 vs 0.00±0.00 vs 0.006±0.24, P<0.001), SEC (0.00±0.00 vs 0.00±0.00 vs 0.07±0.26, P<0.001). There is some correlation between CHA2DS2-VASc score and LAA width/depth (2.26±0.12 vs 2.30±0.01 vs 2.42±0.37, P=0.022). The success ratio of the way with directly bony landmarks to locate and implant pacemaker (without optical guidance) was higher than that of the way with optical guidance (P<0.05), but there was a significant increase in the incidence rate (P<0.001) of the arrhythmia such as premature atrial and ventricular beats (3.03%).

Conclusions: The test of DC could prevent 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 indexes and HR improved the integral function of the independent nerve system. But the increase of premature atrial 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-e2260
Pre-excitation syndrome: the clinical significance of the change of terminal QRS vector
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Objectives: The change of initial QRS vector is mainly emphasized in the ECG of pre-excitation syndrome. The ECG diagnosis and localization of accessory pathway (AP) is mainly based on the wave. Both initial and terminal QRS vector are affected by the antegrade conduction of AP. However the effect of pre-excitation on terminal QRS vector is usually ignored by clinicians. In this study, we made the comparison of ECG pre and post ablation during sinus rhythm in cases with AP capable antegrade conduction (overt and latent pre-excitation), further explored the effect of pre-excitation on terminal QRS vector and its clinical significance.

Methods: In the study, 158 cases who were proved to have a single AP capable antegrade conduction were included. All cases were divided into 2 groups according to the ECG characteristics pre ablation. In overt group, there were 150 cases (there was classical pre-excitation on the ECG), who 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 anteroseptal AP; 8 were right midseptal AP; 12 were right posteriorseptal AP). In latent group, 8 cases (delta wave was not visible on the resting ECG, but it was detected during transoesophageal atrial pacing) were included. (1) ECgs 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. (2) ECgs before and after ECGs pre and post ablation were 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 no 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-e2269
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-indexes 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 (20.6±2) years old. Using the MIC-12H dynamic electrocardiogram (jimo 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 by the specialist. The Heart Rate (HR), Deceleration Capacity (DC) 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 electrocardiogram. And the changes of the arrhythmia such as premature atrial and ventricular beats were observed.

Results: (1) HR (71.89±6.70/min beats per minute) after 3 km military training was higher than that of (68.97±6.88/min beats 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±3.30) 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%).

Conclusions: The test of DC could prevent 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 indexes and HR improved the integral function of the independent nerve system. But the increase of premature atrial 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 were similar to the other two groups. 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
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Objectives: To investigate the consistency of interventricular delays optimization for cardiac resynchronization therapy by modified intracardiac electrogram