METHODS We have already made a search on the coronary venous system about 200 patient who had normal heart before. Patients whose cardiac chamber were normal undergoing coronary angiography(CAG) and whose cardiac chamber enlarged were scheduled to undergo CRT and CAG from 2012-1-1 to 2014-12-31 were enrolled in this study. All the images would be gathered in the position of RAO 30°, LAO 45°, and AP. We used coronary vein direct enhancement for CAG patients and inverse development for CRT patients.

RESULTS 1 In normal heart group and dilated heart group, the number of the patients whose CS were tubular-shaped was 16(53.3%) and 18(66.7%), bell-shaped was 14(46.7%) & 9(33.3%). There was no significance (P=0.50).

2 The position of the coronary sinus Horizontal Line: In normal heart group: there were 7 patients’ CSO 3 centrum below the bifurcation trachea(23.3%); 17 patients’ CSO 3.5 centrum below(35.7%); 5 patients’ CSO 4 centrum below(16.7%); 1 patient’s CSO 4.5 centrum below(3.2%). In the other group: the numbers were 3(11.1%), 13(48.1%), 10(37.0%), and 1(3.8%). There was no significance (P=0.07).

Mid-line: In normal heart group: there were 17(56.7%) patients’ CSO at the left side of spine, 10(33.3%) in the middle, (3.0%) patients at the right. In another group, the numbers were 11(40.7%), 10(37.0%), 5(17.1%). There was no significance (P=0.16).

3 In normal heart group and dilated heart group, there were 18(60.0%) & 21(77.8%) patients on bottom right, the mean angle was 71.48°±10.47° (35.2° ~ 83.1°) & 56.61°±14.30° (30.5° ~ 79.1°); 2(6.7%) & 1 (4%) patients were on right level, the angle was 90.15°±1.48° (89.1° ~ 91.2°) & 90°; 10(33.3%) & 5 (18.2%) patients were on top right, mean angle was 108.57°±10.16° (96.5° ~ 132.8°) & 115.71°±16.77° (98.0° ~ 142.0°). There was no significance (P=0.157).

The mean diameter of coronary vein sinus of normal heart group and dilated heart group: CSO 8.39±1.54mm & 11.09±1.47mm, CS-LPV 5.10±1.88mm & 6.22±1.54mm, LPV 2.62±1.80mm & 3.72±2.55mm. Above all, there was significance between two groups (P<0.05).

5 We divided dilated heart group into two subgroups by sex. The mean diameter: CSO M 13.11±5.04mm & F 11.94±3.83mm, CS-LPV M 11.46±5.71mm & F 10.37±3.03mm, CS-LPV M 6.35±0.35mm & F 7.81±2.89mm, GCV M 4.79±1.54mm & F 4.94±2.05mm, MCCV M 5.81±1.43mm & F 5.31±1.77mm, LPV M 3.88±2.81mm & F 3.12±1.99mm. There was no significance (P=0.05).

CONCLUSIONS 1 Through the comparison between two groups, we could draw the conclusion that there was no difference in the shape of the CSO, the position and the angle of the CSO, the diameter of coronary vein system of dilated heart is greater than that of the normal heart.

2 There was no difference between the groups divided by sex.

GW26-e4369 The effectiveness of ibutilide and the factors that affect the successful cardioversion and ibutilide-induced malignant arrhythmia

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OBJECTIVES To determine the effectiveness of ibutilide and the factors that affect the effectiveness of ibutilide and the factors that affect the ibutilide-induced malignant arrhythmia.

METHODS Retrospectively collected 155 hospital records of whom use ibutilide for conversion of atrial flutter and atrial fibrillation <90days’ duration. All data would be processed by SPSS, mono factor analyses of variance and Logistic regression analyses were used to analysis.

RESULTS The total successful conversion ratio of ibutilide is 50.9%. The cardioversion ratio of atrial flutter is 61% while the cardioversion ratio of atrial fibrillation is 44%. All failed patients receive biphasic shock defibrillation return to sinus rhythm. The result of mon factor analysis of variance shows that weight, LAB, LVD, beta blockers signifi- cant affect the conversion ratio. Meanwhile the result of Logistic regression analyses is that lower weight is the predictive factor of successful conversion. About the safety of ibutilide, 16 patients develop malignant arrhythmia after using the ibutilide, the ratio is 10.3%. The incidence of drug-induced malignant arrhythmia in atrial flutter and atrial fibrillation patients is 12.9% and 10.3% respectively. Mono factor analysis of variance show that the propafenone and amiodarone influence the drug-induced arrhythmia. However, by logistic regression analysis, no factor was found.

CONCLUSIONS 1 Ibutilide is an effective and safe drug for conversion of atrial flutter and atrial fibrillation <90days’ duration.

2 Ibutilide pretreatment preceding biphasic shock defibrillation improves the efficacy of cardioversion.

3 Lower weight is the predictive factor of successful conversion.

4 No predictive factor was found of the ibutilide-induced malignant arrhythmia.

GW26-e5376 Mechanism of Torsades de Pointes Elucidated in Human AV Block

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OBJECTIVES Torsades de Pointes (TdP) is the cause of SCD in Long QT syndrome. It is also observed in complete heart block as originally denominated and described by Dessertenne in 1966. Its mechanism was considered as the result of two foci with opposite direction and different rates. This phenomenon has been reproduced in the laboratory. Here we demonstrate by two independent methods that a reentrant phenomenon and not ectopic foci is the mechanism of TdP in patients with complete AV block.

METHODS ECG strips were selected from several hours of tape recordings with 35-90 seconds episodes of TdP (1.0 ± 0.7 seconds). The almost same morphology of the initial TdP beats can be identified and classified in different subgroups. In 9 patients’ endocardial recordings (EGM) from regular USCI bipolar catheters positioned at the apex of the right ventricle were synchronously recorded with ECG lead II.

RESULTS Patient 1: Three subgroups (a-c) of similar initial beats of TdP can be identified. Subgroup (a): 3-5 QRS complexes occurred after a long QT interval of 560ms. Subgroup (b): 3-15 QRS complexes occurred with a QT interval of 560ms. Subgroup (c): 4-17 QRS complexes of a different morphology occurred after the same QT interval of 560ms. One Event of all of this group leads to ventricular fibrillation during NC shock. The end of 11 episodes out of 15 were announced by an increase in the amplitude of the QRS complexes. In 4 tracings the initial QRS complexes with the longest QT (660ms) was followed by identical large amplitude PVC but a possible start of TdP was aborted. Patient 2: A constant coupling of 600ms precedes the TdP made of 2-6 consecutive almost identical QRS complexes. Final increase of amplitude was observed on 7 out of 13 tracings. Endocardial signals recorded in 5 out of 9 patients’ EGM showed at the beginning or inside the T wave EGMS with episodic interval exceeding TdP duration.

CONCLUSIONS Predetermined variable initial conditions of long QT initiated by bradycardia in complete AV block demonstrate specific preferential pathways of activations during the short of short lasting episodes of TdP. Immediate reaction of endocardial potentials before the end of refractory period suggest that TdP is the result of slow conduction leading to a large unstable reentrant phenomenon.

GW26-e1067 The study of the influence on cardiac pacemaker short-term threshold by active fixed pacing leads and the relationship with myocardial damage

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OBJECTIVES To explore the short period influence factors on cardiac pacemaker short-term threshold by active fixed pacing leads after implantation and the myocardial damage. Instantly pacing threshold and active fixed pacing lead 30-60 minutes after implantation of pacemaker threshold is defined as short-term pacing threshold. Evaluation influence of cardiac pacemaker installation intraoperative patient general condition and past medical history on short-term pacing threshold.

METHODS Selected 192 patients with cardiac pacemaker therapy, 136 patients with single active pacing lead used in it, the application of 56 patients with two active pacing leads. All patients who were once implanted active pacing leads is successful. Using multiai- riable Logistic regression analysis of cardiac pacemaker active pacing lead patients after general situation and past medical history effects on short-term pacing threshold. In a pacemaker preoperative and postoperative 24 h, 48 h, or even 72 h monitoring concentration of myocardial enzymes and record. The myocardial enzyme levels in different time and the comparison between the two groups using repeated measures design analysis of variance.
RESULTS 1. Analysis of logistic regression, the results showed that coronary heart disease, diabetes, hyperlipidemia, smoking and drinking to the influence factors of ventricular instantly pacing threshold; Women, age, diabetes, alcohol as the influence factors of ventricular 5-10 minutes pacing threshold; Coronary heart disease, smoking as the influence factors of atrial pacing immediately threshold; Diabetes, smoking 5-10 minutes for atrial pacing threshold of influencing factors.

2. Different time of myocardial enzyme levels. MYO difference of preoperative and postoperative different time have statistically significance (F=39.075, P<0.001); CK-MB difference of preoperative and postoperative different time is statistically significant (δF=11.469, P<0.001); LDH difference of preoperative and postoperative different time is statistically significant (F=25.430). CTAI concentration pacemaker preoperative and postoperative different time difference had statistical significance (F=21.456, P=21.456).

3. Myocardial enzyme levels, different groups are compared The myocardial enzyme concentration comparing differences between single and two pacing leads group had no statistical significance.

CONCLUSIONS This study shows that: female, age, smoking, drinking to the independent factors influencing factors. Preoperative and postoperative myocardial enzyme level differences before and after 1, 2 different time after operation were statistically significant. There was no statistically significant difference of myocardial enzyme levels implanted active fixed pacing lead between single and two leads group (P>0.05).

GW26-e2438 Efficiency and safety of low-dose β-blocker for the treatment of vasovagal syncope
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OBJECTIVES To assess the efficacy and safety of low-dose β-blocker for the treatment of three types of vasovagal syncope.

METHODS Sixty-eight consecutive patients (23 males and 45 females; age 36±12y) with vasovagal syncope confirmed by head upright tilt testing (HUTT) from June, 2010 to September, 2014 were enrolled, including 18 patients of vasodepressive type (VD), 21 patients of cardioinhibitory type (CI), and 29 patients of mixed type. Oral β-blocker with a dosage of 23.75 mg/day was given to each patients. The frequency of syncope, conversion rate of HUTT, and potential adverse reactions (heart<50bpm, blood pressure<85/60mmHg, or observable adverse reactions) was recorded. The follow-up time was 12 months. The efficacy of treatment is defined as either a >50% reduction of syncope attacks or a negative conversion of HUTT.

RESULTS For all patients, the effective rates significantly increased along with the follow-up time (30.88% vs. 42.65% vs. 64.71% vs. 69.12% at 1, 3, 6 and 12 months respectively, P<0.05). At the 1st month follow-up, there was no significant difference of the effective rates among three types of vasovagal syncope (27.77% vs. 33.33% vs. 31.03%, P>0.05). However, CI patients had higher effective rates than VD and CI patients at the follow-up of 3 months (52.38% vs. 44.44% vs. 34.48% respectively, P<0.05), 6 months (76.19% vs. 61.41% vs. 58.62% respectively, P<0.01) and 12 months (85.71% vs. 61.11% vs. 62.07% respectively, P<0.01). No adverse reaction was recorded for all patients.

CONCLUSIONS Low-dose β-blocker is effective and safe for the treatment of vasovagal syncope. Compared to VD and mixed patients, CI patients seem to get more benefits from a long-term treatment due to the differences of pathogenesis.

GW26-e0685 Identification of accessory pathways connecting the right atrial appendage and right ventricle
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OBJECTIVES To summarize the experience and outcomes of radio-frequency catheter ablation (RFCA) of accessory pathways connecting the right atrial appendage (RAA) and right ventricle (RV) in our center.

METHODS We reviewed all the adult (≥14 years) 489 cases of supra-ventricular tachycardia due to accessory pathways (AP) from Jan 2011 to Dec 2013. Two patients were diagnosed to have APs connecting the RAA and RV through electrophysiological study (EPS) and accepted RFCA in 2011. We reviewed their surface ECGs and EPS courses, and summarized their electrophysiological features.

RESULTS The 2 patients were 17 years old (female) and 20 years old (male) respectively. One patient had undergone failed RFCA procedure in another center before he was referred to us. None of them suffered syncope and pre-syncope before EPS. Both patients had a type B WPW pattern of surface ECG with positive delta waves in leads I, II, III, and aVF. One patient’s delta wave in inferior leads (II, III, aVF) was positive. The other patient’s delta wave were positive in lead II and aVF, while flat in lead III. Their EPS confirmed that the APs located on the right side. We failed to eliminate the delta waves and V-A conductions via APs on the earliest A wave on the tricuspid annuli (TA) at the first attempts. Then we mapped diffusely in the right atria and got the earliest retrograde A waves in the RAA, one on the lower portion of RAA free wall with small V wave (V/A<1), the other on the higher portion of RAA base with barely visible V wave. RFCA broke the APs successfully in the RAAs. Both patients have remained symptomless after RFCA in our center with normal surface ECG pattern.

CONCLUSIONS The atrial end of APs can exist in other than the atrioventricular annulus, such as RAA, which makes ablation challenging. RFCA can cure these patients successfully with exquisite mapping.

GW26-e4458 A long-term misdiagnosis of catecholaminergic polymorphic ventricular tachycardia as epilepsy caused by RyR2 mutation
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OBJECTIVES Catecholaminergic polymorphic ventricular tachycardia (CPVT) is a rare lethal disorder among inherited arrhythmogenic channelopathies, and would be misdiagnosed by neurologists for the analogous symptom of syncope. We aim to describe a long-term misdiagnosis case of CPVT as epilepsy caused by ryanodine receptor 2 gene (RyR2) mutation.

METHODS Clinical data of the patient was collected and analyzed, and the candidate gene screening was performed by direct sequencing.

RESULTS An 11-year-old male presented with syncope accompanied with paroxysmal convulsion mainly induced by excise since age 3. He was diagnosed with epilepsy in several local hospital, but had poor therapeutic effect of antiepileptic drugs and surgery. When he was admitted to our hospital, a series of heart-related clinical examinations were performed and showed negative. The electroencephalogram revealed unspecific as well. However, the bidirectional and polymorphic ventricular tachycardia was captured via exercise testing and a RyR2 gene mutation (c.7202G>A, p.R240H) was identified by genetic testing. After taking a high dose of β-adrenergic blocker (metoprolol succinate sustained-release tablet), the patient has been free from attacks of syncope for 1 year of follow-up.

CONCLUSIONS The phenotype of syncope together with multiple ventricular arrhythmias on exercise ECG and a RyR2 mutation suggested that the boy suffers from CPVT. CPVT might be difficult to distinguish from epilepsy due to the normal heart structure and resting electrocardiogram of patients, especially for neurologists knowing less about the disease. Specific electrocardiographic and genetic testing should be considered for early diagnosis and treatment to the prevention of sudden death.

GW26-e0215 Observation of active lead performance during permanent direct His bundle pacing
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OBJECTIVES To evaluate left ventricular systolic synchronization during permanent direct His Bundle pacing.

METHODS A total of 42 patients who met class I or class IIa indications for device-based therapy of cardiac rhythm abnormalities were enrolled and randomly assigned to perform either direct His bundle pacing (DHBP) or right ventricular apical pacing (RVA). A quadrupolar electrophysiology catheter was advanced to locate His bundle and a