Conclusions Catheter ablation from the base of the NCC represents a safe and effective means to eliminate focal AT.

**e0557 CARTO MAPPING TO GUIDE ABLATION OF RIGHT VENTRICULAR OUTFLOW TRACT TACHYCARDIA VENTRICULAR CONTRACTION**

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**Objective** The aim of this study was to determine whether CARTO mapping is feasible in the right ventricle and assess its utility in guiding ablation of right ventricular outflow tract (RVOT) ventricular tachycardia (VT).

**Background** In patients with RVOT VT; CARTO mapping permits ablation guided by a VT complex, which may facilitate ablation of VT cases. However, the mapping system may be geometry-dependent, and it has not been validated in the unique geometry of the RVOT.

**Methods** 30 patients with left bundle branch block and right axis VT, no history of structurally cardiac disease and normal left ventricular function underwent CARTO guided ablation.

**Results** The procedure was acutely successful in 27 of 30 patients, 3 had failed ablation. During a mean follow-up of 6 months, 26 of 30 patients remained arrhythmia-free.

**Conclusions** In this study, CARTO mapping was safely and effectively used to guide ablation of patients with RVOT VT.

**e0558 EFFECTS OF RIGHT VENTRICULAR APICAL PACING ON CARDIOPULMONARY FUNCTION IN PATIENTS WITH NORMAL HEART FUNCTIONS**

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**Objective** To estimate the effects of long term right ventricular apical pacing on cardiopulmonary functions in patients with normal heart function.

**Method** A total of 30 patient underwent dual-chamber pacemaker implantation with normal heart function (LVEF >55%), NYHA classification I–II) were enrolled and divided into two groups according to the percentage of ventricular pacing (VP), VP≤45% group (n=16) and VP>45% group (n=14). Patients with disease of respiratory, nervous or motor systems were excluded. Cardiopulmonary exercise test (CPET) was performed in all patients. We recorded the peak oxygen uptake (VO2 peak), anaerobic threshold (AT), ventilatory response (VE/VCO2 slope) and other parameters during the exercise. Left ventricular ejection fraction (LVEF), left ventricular end diastolic dimension (LVEDD), left ventricular end-diastolic volume (LVEDV), systolic volume and E/A were measured using echocardiography before and after the pacemaker implantation.

**Results** There were no significant differences in baseline characteristics between the two groups. The meantime of enrollment after pacemaker implantation was 5.8 years. Cardiopulmonary function was significantly better in VP≤45% group than VP>45% group. Independent-samples t-testing showed a significantly higher VO2 peak (19.2±3.3 ml/kg·min vs 17.5±2.5 ml/kg·min, p=0.047) and AT (15.8±1.4 ml/kg·min vs 16.6±2.5 ml/kg·min, p=0.038) in VP≤45% group than VP>45% group. While VE/VCO2 slope (31.4±3.0 vs 35.1±5.9, p=0.04) was significantly lower in VP≤45% group than VP>45% group. But there were no significant differences with respect to the LVEF and other echocardiography parameters between the two groups.

**Conclusion** Long Term right ventricular apical pacing is associated with the deterioration of cardiopulmonary function in patients with normal heart functions. Cardiopulmonary exercise test is a sensitive diagnostic method to show the early changes of cardiac function.

**e0559 EFFECTS OF LONG-TERM RIGHT VENTRICULAR APICAL PACING ON LEFT VENTRICULAR REMODELLING AND CARDIAC FUNCTION**

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**Objectives** To investigate the impacts of long-term right ventricular apical pacing on the ventricular remodelling and cardiac functions of patients with high-grade and third-degree atrioventricular blockage with normal heart structures and cardiac functions. In addition, we provide evidences for choosing an optimal electrode implantation site.

**Methods** Study participants included patients who were admitted for pacemaker replacements and who revisited for examinations of implanted pacemakers at outpatient. Pacemakers were implanted to treat high-grade and third-degree atrioventricular blockage. At the time of pacemaker implantation, patients had normal cardiac functions and showed no serious heart diseases or cardiac dilatation. The durations from the implantation to follow-up were more than 5 years. The pacing rate was higher than 80%. Patients with a left ventricular ejection fraction (LVEF) 55 mm were excluded. Ventricular remodelling was defined as: increase of LVEDD by 10% and a reduction of LVEF by 25% 5 years after implantation. Cardiac functions were evaluated according to the New York Heart Association (NYHA) classification.

**Results** A total of 62 patients with a mean age of 66.97±13.19 years (range, 12–91 years old), including 59 male and 4 female were enrolled in this study. The average duration between two assessments was 8.7 years (104.4 months). Before pacemaker implantation, the average left atrial diameter (LA), LVEDD and LVEF were 37.0 mm, 50.23 mm and 64.87%, respectively. After the implantation, these values were 59.39 mm (p=0.001653), 50.82 mm (p=0.177842) and 60.50% (p=0.000104), respectively. 4 patients (4.87%) had ventricular remodelling with deteriorations of cardiac function. Among them, three patients had anterior wall myocardial infarction after implantation and one had type II diabetes. Clinical heart failure symptoms were not found in the patients who did not exhibit ventricular remodelling.

**Conclusion** Through a long period follow-up study, we found that long-term right ventricular apical pacing in patients with normal heart structure and cardiac function generally would not cause ventricular remodelling and clinical deteriorations of cardiac function. Right ventricular apical is a safe and effective site for pacing electrode wire implantation.

**e0560 ROLE OF SEVERITY OF OSAS ON CRP AND LEFT ATRIAL SIZE IN PATIENTS WITH PREMATURE ATRIAL CONTRACTION**

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**Objective** Recent studies have suggested an emerging link between sleep apnoea and atrial fibrillation (AF). It has also been reported that an inflammatory process is involved in the development of atrial fibrillation. In this study we hypothesised that premature atrial contractions (PAC) might be the precursor of atrial fibrillation.
We assessed the impact of severity of OSAS on the atrial size and CRP level in patients who were found to have atrial premature contractions.

**Methods** 277 patients diagnosed with obstructive sleep apnoea after overnight polysomnography underwent a 24-h Holter electrocardiography and ambulatory blood pressure monitoring. 137 patients (49%) were found to have premature atrial complexes (PAC). These patients were classified into 3 groups according to the apnoea-hypopnoea index (AHI) as mild (5≤AHI<15), moderate (15≤AHI<30) and severe (AHI≥30). Their C-reactive protein level was assessed by a high-sensitive radio-immunoassay. Of the 137 patients with PAC, 77 underwent transthoracic Doppler echocardiography (TTE) and their left atrial diameter (LAD), interventricular septal thickness (IVSD), left ventricle posterior wall thickness (LVPW), left ventricle mass weight (LVMW), peak diastolic early (E) and late (A) transmitral flow were recorded and their respective E/A ratio and left ventricular ejection fraction (LVEF) were calculated. CRP and echocardiographic parameters were compared between the different severity of OSAS patients having premature atrial complexes.

**Results** There is a high prevalence of premature atrial contraction in OSAS patients' reactive protein and left atrial diameter was significantly increased with severity of OSAS irrespective of systolic and diastolic function. CRP was higher in severe OSAS (5.01±4.68) mg/L as compared to moderate (3.03±1.94) mg/L and mild OSAS (2.98±1.52) mg/L, [mild v/s severe OSAS (p=0.040); moderate v/s severe (p=0.033)]. Left atrial diameter was increased in severe OSAS (40.1±7.9) mm as compared to moderate (37.9±5.5) mm and mild OSAS (33.7±3.8) mm, [mild v/s moderate (p=0.025), mild v/s severe OSAS (p=0.002)].

**Conclusion** The prevalence of premature atrial contraction (PAC) in OSAS patients is in line with the prevalence of AF in OSAS patients. Severity of OSAS was associated with increase in left atrial size and CRP level in patients with premature atrial complexes. Inflammation associated with OSAS might contribute to atrial structural and electrical remodelling in OSAS patients with premature atrial contraction.

**IMPACT OF CIRCUMFERENTIAL PULMONARY VEIN ISOLATION ON ELECTROPHYSIOLOGIC PROPERTIES OF PULMONARY VEINS IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION**

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**Objective** The special electrophysiological characteristics of pulmonary veins (PVs) are highly correlated with the incidence of Atrial fibrillation (AF), and circumferential PV isolation (CPVI) has been demonstrated to be effective in many patients with paroxysmal AF (PAF). However, the impact of CPVI on electrophysiologic properties of PVs is still rarely known.

**Methods** Eighteen patients (58.4±9.3 years old, 9 males) with frequent symptomatic and drug-resistant PAF were enrolled in this study. Under CARTO and Ensite Navx’s guidance (13 Carto, 5 Ensite Navx), CPVI was performed in these patients, and totally 72 PVs were isolated, which was confirmed by the disappearing of PV potentials recorded by using the 10-pole circular catheter during sinus rhythm, in the first procedure. Effective refractory period (ERP), Relative Refractory Period (RRP) and Functional Refractory Period (FRP) were measured by use of programmed stimulation with a single extrastimulus in the PVs and left atrial (LA) before and after ablation in each patient. Due to can’t record PV potential or can’t pace the PVs after CPVI, the changes of electrophysiologic properties of 33 PVs were used for final analysis.

**Results** No change of pacing threshold of PVs and LA was found before and after CPVI (3.2±0.6 V vs 3.3±0.5 V and 3.2±0.7 V vs 3.2±0.7 V, respectively, p>0.05). Before CPVI, the ERP and RRP of PVs (187±60 msec and 223±45 msec) were significantly shorter than that of the LA (229±51 msec, p<0.01 and 261±54 msec, p<0.05). After CPVI, the ERP of PVs was significantly increased to 245±38 msec as compared to that before the ablation (187±76 msec, p<0.001), which became much close to that of the LA (234±45 ms, p>0.05). No influence of CPVI on LA ERP was found (p>0.05). The RRP and FRP of PVs were also significantly increased as compared to that before the ablation (250±47 msec vs 259±44 msec and 230±74 msec vs 298±47 msec, respectively, p<0.05), but there were no changes of LA RRP and FRP (256±49 msec vs 240±54 msec and 254±90 msec vs 276±47 msec, respectively, p>0.05).

**Conclusions** In patients with PAF, an ERP gradient from PVs to LA, and then to RA was observed, with the shortest in PVs and the longest in RA. The CPVI may have different impact on the electrophysiologic properties of PVs and LA. CPVI significantly decrease the arrhythmicogenic of PVs and refractory heterogeneity between PVs and LA. These findings may help to explain the maintenance of sinus rhythm in a subgroup of patients with PAF by CPVI in spite of the PVs conduction already recovered.