patient cohort is up to 43%. Our understanding of the long-term outcomes, and risk factors for arrhythmia recurrence in this cohort remains limited.
Purpose: Our aim is to review the incidence, indications and outcomes of TOF patients undergoing catheter ablation for atrial and ventricular arrhythmias; and to determine if baseline echocardiographic variables correlate with recurrence of arrhythmia.
Methods: We retrospectively reviewed the records of TOF patients at our institution from January 1, 2000 to December 31, 2015. Inclusion criteria included adult TOF patients who underwent catheter ablation for an atrial or ventricular arrhythmia. Data on baseline demographics; incidence, indications and outcomes were reviewed.
Results: Out of 507 TOF patients, 37 patients underwent ablation during the study period, of which 23 (62.1%) were male. The median age at the time of the ablation was 50 (IQR 17.25). The most common indication (of which some patients had more than one) was atrial flutter (64.9%) followed by ventricular tachycardia (43.2%). The most commonly performed atrial flutter ablation was an incisional/scar-related ablation (54% of flutter ablations). 20 patients (54.1%) underwent implantable cardioverter-defibrillator implantation, with the most common indication for this being ventricular tachycardia (VT) in 17/20 patients. 6 patients (16.2%) underwent permanent pacemaker implantation. There was no significant change in ejection fraction (EF), right ventricular systolic pressure (RVSP) or tricuspid regurgitation (TR) velocity pre- and post-ablation ($p>0.05$). Overall, 19 patients (51.3%) had no arrhythmia recurrence with a median follow-up of 39 months; however, 6 patients (16.2%) required repeat ablation. There was no association between baseline echocardiographic variables and risk of arrhythmia recurrence ($p>0.05$). Variables studied included baseline pulmonary and tricuspid regurgitation, degree of right ventricular enlargement and dysfunction, pulmonary mean gradient and peak velocity, left ventricular EF, TR velocity and RVSP. Survival analysis comparing VT ablation vs. atrial flutter ablation (the two most commonly performed procedures) showed no difference in arrhythmia-free survival between the two procedures (p=0.53).
Conclusion: The most commonly performed ablation procedures in TOF patients remain for atrial flutter and VT, with 51.3% of patients experiencing no arrhythmia recurrence during our study period. There does not appear to be a correlation between baseline echocardiographic variables and risk of recurrence.

P293
Patterns of vegetative regulation in children with catecholaminergic polymorphic ventricular tachycardia after left cardiac sympathetic denervation

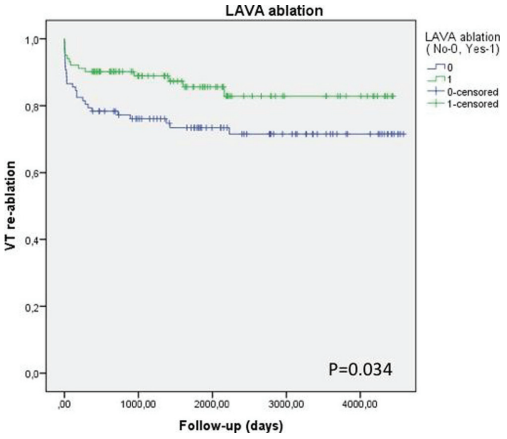
R. Ildarova, E.B. Polyakova, M.A. Shkolnikova, S.A. Termosesov, E.A. Kuleshova, Z.O. Romancova. *Moscow Institute for Paediatry and Pediatric Surgery, Moscow, Russian Federation*

Introduction: Previous studies have shown safety and efficiency of left cardiac sympathetic denervation (LSCD) in patients with catecholaminergic polymorphic ventricular tachycardia (CPVT). Efficiency is evaluated based on the absence of cardiac events, while electrocardiographic markers have not been studied. The contribution of vegetative effects to the heart rhythm has not been evaluated.
Purpose: To evaluate the dynamics of vegetative influences on the heart rhythm after LSCD in children with CPVT.
Materials and methods: Six children with CPVT underwent video-assisted thoracoscopic LSCD for the purpose of secondary prevention of life-threatening arrhythmias. The average age of children was 10±3.2 years (from 6 to 14 years); all patients were male. Syncope occurred in four patients. All patients received beta-blockers and three patients – additionally propafenone; two patients had ICD. The observation period after sympathectomy was 9±3 months (from 6 to 13 months). Time domain parameters of heart rate variability according to Holter monitoring were estimated before and after operation (after ≥6 months): SDNN, SDNNi, rMSSD (ms), and pNN50 (%).
Results: There were neither cardiac events after the operation, nor complications in the early and late postoperative period. After the operation, the dynamics trend showed the growth in SDNN and SDNNi values, which indicates an increase in parasympathetic effects. We did not see any dynamics in rMSSD and pNN50 values.
Conclusions: Video-assisted thoracoscopic LSCD is safe in childhood. Growing parasympathetic effects on the heart rhythm in patients after surgery is relative. The change in parameters of heart rate variability on the background of surgery may demonstrate a reduction in sensitivity to sympathetic influences. Further studies will be important for evaluating long-term effects and clarifying patterns of autonomic innervation of the heart in children with CPVT.

P294
Predictors of long-term mortality and re-ablation in patients undergoing ischaemic or non-ischaemic VT ablation

K.V. Nagy[1], N. Szegedi[2], E. Szabo-Madacsi[2], S.Z. Kugler[2], S.Z. Herczeg[2], Z. Sallo[2], G. Szeplaki[2], T. Tahin[2], I. Osztheimer[2], B. Merkely[2], L. Geller[2]. *[1]Semmelweis University, Heart Center, Budapest, Hungary; [2]Semmelweis University, Heart and Vascular Center, Budapest, Hungary*

Background: Radiofrequency (RF) ablation is an effective treatment in patients with monomorphic ventricular tachycardias (VTs). It is highly important to identify clinical factors predicting outcome after VT ablation. Our aim was to determine predictors of long-term all-cause mortality and re-ablation in patients undergoing VT ablation at our Clinic.
Methods: Between 1st of January 2005 and 31st of December 2016 VT ablation was performed in 200 patients with sustained monomorphic VTs (173 men (86.5%), age 68 [36–90], EF≤35% in 83 patients [41.5%]). 83% of patients had ischaemic heart disease. During the procedure after activation and voltage mapping of the left ventricle (LV), substrate and LAVA (local abnormal ventricular activity) ablation were performed. 16 patients underwent epicardial ablation (8%). Medical history, echocardiographic, procedural and follow up data was collected and analysed retrospectively. Ablation was considered successful, if during follow up no re-ablation was needed.
Results: The median follow up time was 1257 (4–4572) days, 120 patients died (60%). 41 patients needed re-ablation (20.5%). During multivariate Cox analysis, after adjustment of relevant clinical covariates, severe heart failure with NYHA IV functional stadium (HR: 0.64, CI: 0.42–0.96, p=0.03), presence of electrical storm (HR: 0.62, CI: 0.41–0.94, p=0.02) and right ventricular dysfunction characterised by TAPSE <17mm (Tricuspid annular plane systolic excursion) (HR: 0.53, CI: 0.33–0.85, p=0.009) independently predicted all-cause mortality. Kaplan-Meyer curves showed significantly lower survival in patients with NYHA IV stadium heart failure ($p<0.001$), deteriorated RV function (p=0.01) and electrical storm (p=0.004). Regarding VT recurrence indicating re-ablation elimination of LAVA potentials was independently associated with lower number of re-ablations (HR: 0.62, CI: 0.41–0.94, p=0.02).



Kaplan-Meyer analysis of LAVA ablation

Conclusion: Apart from ICD implantation, VT ablation is an efficient and safe treatment option. Based on our results severe heart failure, RV dysfunction and electrical storm were independent predictors of long-term all-cause mortality. Moreover, LAVA elimination resulted in lower number of re-ablations.

P295
Stellate ganglion block in patients with ventricular arrhythmias, an innovative procedure that must be part of electrophysiologist therapeutic arsenal

A.F. Miranda-Arboleda[1], J.F. Agudelo[2], R. Correa[2], G. Saenz[2], C. Martinez[3], L.C. Saenz[4], J.D. Ramirez[2]. *[1]Universidad de Antioquia, Cardiology, Medellin, Colombia; [2]Cardiovascular Clinic Santa Maria, Electrophysiology and arrhythmia section, Medellin, Colombia; [3]Universidad Pontificia Bolivariana, Medellin, Colombia; [4]Foundation Cardioinfantil, International Arrhythmia Center, Bogota, Colombia*

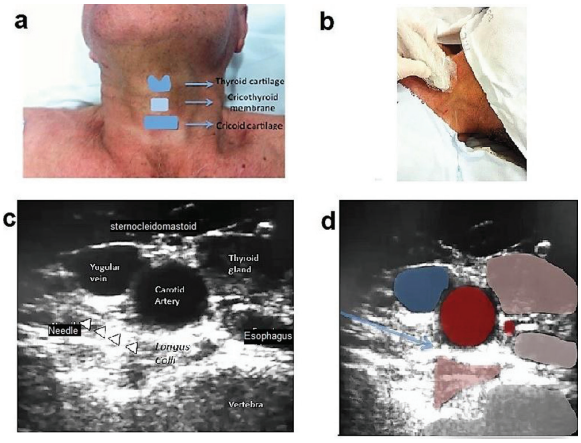
Background: Stellate ganglion block (SGB) is widely used for the management of regional pain, it has been used in electrophysiology for long QT syndromes and in patients with ventricular arrhythmias (VA). Our aim is to describe an ultrasound guided SGB technique performed by electrophysiologists.
Methods: SGB was performed in patients with refractory VA with a high frequency linear transducer over cricoid cartilage (figure), the short axis of ultrasonography shows the C6 transverse process and the longus colli muscle seen as an oval structure adjacent to the base of the transverse process and below of carotid artery. The C7 nerve root is situated just anterior to the transverse process, above of longus colli. A 22G-25G spinal needle is inserted through the lateral pathway and directed through the cervical fascia until the muscle Longus Colli. 5–10 mL of bupivacaine 0.25% – 0.5% are injected. The needle is withdrawn allowing clear separation of the tissue planes. Once finished the patient is monitored for 30 minutes.
Results: 6 patients between 36 to 79 years were treated (table). The most common indication was electrical storm from ICD 3 cases, followed by incessant ventricular tachycardia (VT) and one patient had sudden cardiac death, VT and high burden of premature ventricular contractions and non-sustained VT. We evaluated response in all patients with autonomic signs and lowering burden of the arrhythmia. Arrhythmia improved immediately in 5 cases, 3 patients could control arrhythmia control, 1 required cardiac transplantation, other patient underwent

Abstract P295 – Clinical profile of patients

Patient	1	2	3	4	5	6
Age	74	79	70	36	61	56
Diagnosis	Electrical storm, 42 shocks, 19 ATP	Electrical storm, 3 shocks	Electrical storm, 10 external shocks	CPR 5 external shocks, PVC and NSVT	Electrical storm, 17 shocks and 15 APT	Electrical storm, incessant VT

ATP: Antitachycardia pacing; CPR: Cariopulmonary resuscitation; F: female; CM: Cardiomyopathy; EF: ejection fraction; ICD: Implantable cardiac defibrillator; IDCM: idiopathic dilated cardiomyopathy; ICM: Ischemic cardiomyopathy; M: Male; NSVT: Non-sustained ventricular tachycardia; PVC: premature ventricular contraction; SCD: Sudden cardiac death; STEMI: ST elevation myocardial infarction; VT: Ventricular tachycardia.

electrophysiologic study and arrhythmia modulation, and one patient died. We had no complications related to the procedure.



Stellate ganglion block technique

Conclusion: SGB is a simple procedure that can be performed by electrophysiologist using anatomical and ultrasound guidance, obtaining high success in controlling arrhythmias and low complication rate. This innovative procedure requires better training and wider application to position it as an additional tool in the electrophysiologist therapeutic arsenal.

P296
Cryoablation of premature ventricular complexes arising from the septal region

G.V. Kolunin, V.A. Kuznetsov, V.E. Kharats, A.V. Pavlov, D.V. Belonogov, A.L. Ulyanov, A.Y. Rychkov, N.Y. Khorkova. *Tyumen Cardiology Research Center, Tomsk National Research Medical Center, Tyumen, Russian Federation*

Background: With the introduction of catheter technologies into clinical practice, possibility of radical substrate elimination of different arrhythmias has appeared. Radiofrequency ablation (RFA) has shown its high efficiency, however in certain critical zones (in particular - paraseptal) it is associated with a risk of damage to the conduction system. In this regard, endovascular cryoablation, due to its exceptional properties, has become an alternative to RFA in a number of clinical situations.
Objective: To evaluate safety and efficiency of cryoablation in patients with premature ventricular complexes (PVCs) of paraseptal localization.
Methods: Catheter ablation was performed in 152 patients with PVCs (mean age 43.4±13 years, 80 women) from 2010 to 2015. 122 (80.3%) procedures were performed using the navigation system "CARTO". In 5 patients (3.3%) the procedure was done with cryoablation.
Results: 2 patients from 5 undergoing cryoablation had ectopic substrate in the paraseptal region. In both cases, complete elimination of PVCs was achieved without damage to the conduction system.
There is an example: A patient, 61 years old, was presented to Cardiology Center with complaints about interruptions and irregularity of heartbeat, weakness. According to the data of 24-hour ECG Holter monitoring: during the sinus rhythm 13105 single monomorphic PVCs were recorded (at day - 5621, at night - 7484). Echocardiography showed that the heart cavity was within the normal range; the valves were not changed; left ventricular ejection fraction - 61%. The patient underwent coronary angiography which showed no significant stenosis in the coronary arteries. Endocardial electrophysiological study was performed. During mapping in the inflow tract of right ventricle the earliest activation time (-37 ms) was detected in His bundle region. Figure 1 shows a fragment of surface ECG and endocardial electrograms with ablation catheter. Early activation zone of the ectopic substrate is located in the His bundle region. Under fluoroscopic and electrophysiological control, the cryoablation electrode was positioned in the place of earliest ventricular activation at PVCs. With testing cryo-applications, a zona of PVC related substrate was determined, deterioration of AV-conduction was not observed. A series of 10 cryo-applications with a temperature from -30°C to -78°C with a duration of 30 to 320 sec was performed. PVC stopped. In 4 days after the procedure the control 24-hour ECG Holter monitoring detected: sinus rhythm, 2 PVCs, normal AV-conduction.
Conclusion: The presented clinical example demonstrated efficiency and safety of cryoablation for paraseptal localization of PVC. Confidence in stability of the electrode and possibility of mapping actions at temperatures as low as -30°C is the deciding factor in conducting a safe and effective procedure.

Figure 1

P297
Cardiac sympathetic denervation: evolving technique, expanding indications

V. Dusi[1], L. Pugliese[2], S. Castelletti[3], F. Dagradi[3], L. Crotti[3], A. Mori[4], R. Camporotondo[5], C. Raineri[6], L. Scelsi[6], S. Ghio[6], S. Savastano[6], A. Vicentini[6], R. Rordorf[6], P.J. Schwartz[3], G.M. De Ferrari[1]. *[1]University of Pavia, Department of Molecular Medicine, Pavia, Italy; [2]Policlinic Foundation San Matteo IRCCS, Department of Surgery, Pavia, Italy; [3]Italian Institute for Auxology IRCCS, Center for Cardiac Arrhythmias of Genetic Origin, Milan, Italy; [4]Policlinic Foundation San Matteo IRCCS, Department of Emergency and Urgency, Pavia, Italy; [5]Policlinic Foundation San Matteo IRCCS, Coronary Care Unit and Laboratory for Clinical and Experimental Cardiology, Pavia, Italy; [6]Policlinic Foundation San Matteo IRCCS, Department of Cardiology, Pavia, Italy*

Background: Left cardiac sympathetic denervation (LCSD) is an established therapy for refractory arrhythmias in long QT syndrome (LQTS) and catecholaminergic polymorphic ventricular tachycardia (CPVT). Our group, since 1973, performed more than 200 procedures with the supraclavicular approach. Since October 2014 we moved to Video-Assisted Thoracic Surgery (VATS) and recently we further implemented robotic VATS with the aim of increasing the accuracy of surgical dissection and reducing the mechanical trauma on nerve roots. At the same time we broadened our spectrum of indications.
Purpose: To describe our single-center experience with VATS-CSD.
Methods: 25 patients (pts) were treated with VATS, including 5 who received robotic VATS. In 19 (mean age 24 yrs) a LCSD was performed. Of these, 53% had a conventional indication: syncope despite full-dose beta-blockade (4 LQTS/1 CPVT) or repeated VT, ATP and/or ICD shocks (4 LQTS/1 CPVT). Seven LQTS pts, all without ICD, had prophylactic LCSD due to extremely prolonged QTc and/or beta-blocker (BB) intolerance. Finally, 2 pts suffered multiple ICD shocks in the setting of Barlow's syndrome. Six pts underwent bilateral denervation (BCSD). Most of them (4 pts, mean age 52 yrs) had ventricular dysfunction (mean EF 33%), heart failure and recurrent electrical storms despite optimized therapy (AADs and ablation, when indicated): a post-ischemic cardiomyopathy (CMP), an idiopathic CMP, a lamin A/C deficiency, a myotonic dystrophy. One pt had idiopathic VF, with multiple ICD shocks and self-limiting VF recurrences despite BB, quinidine and 2 previous catheter ablations targeting the distal Purkinje system. Finally, one boy aged 17 had arrhythmogenic right ventricular cardiomyopathy (ARVC) and fast VT recurrences with ICD shocks despite sotalol: he received first LCSD and few months later right CSD due to arrhythmia recurrences.
Results: Among the 19 pts who underwent LCSD (mean follow-up 19 months), there was only 1 event (ICD shock) triggered by hypokalemia in a severe perinatal-onset LQTS. Among the 6 pts undergoing BCSD (mean follow-up 11 months), 2 had ICD shock recurrences: the post-ischemic CMP (during severe amiodarone-induced thyrotoxicosis) and the lamine A/C related CMP. There were no major procedural complications.
Conclusions: Cardiac sympathetic denervation, mainly considered as a rescue therapy in LQTS and CPVT, seems to confirm its efficacy not only as primary prevention for the same diseases but also as secondary prevention in a broader spectrum of refractory ventricular arrhythmias. Particularly, our preliminary data in ARVC, Barlow's syndrome and non-ischemic CMPs are very promising. The