



Abstract 0121 – Figure

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Heart rate variability in elderly ischemic patients with ventricular arrhythmias

Cristina Enciu^{*} (1), Silviu Stanciu (1), Dumitru Matei (2), Gérald Roul (3) (1) Spitalul Militar Central, Bucuresti, Roumanie – (2) Universite de Medecine et Pharmacie 'Carol Davila', Bucuresti, Roumanie – (3) CHU Strasbourg, Strasbourg, France

^{*}Corresponding author: enciucristinacardio@yahoo.com (Cristina Enciu)

Background Heart rate variability and autonomic nervous system dysfunction have a recognised value in the assessment of the prognostic of heart disease and it is well known that variability decreases with age and in heart failure or ischemic patients, as a predictor for worsen outcome and for an increase in mortality and morbidity.

Materials and methods We retrospectively investigated 12 lead Holter ECG monitoring in the past 2 years for ischemic patients aged 50 or older who had ventricular arrhythmias. We included in our observational study 25 patients, 16 women and 9 men with a mean age of $64,71 \pm 9,09$. For each of the participants we evaluated the heart rate variability parameters: SDNN, SDANN, MSSD, pNN50.

Results Our analysis revealed that there is a good correlation between the number of ventricular escape beats on a 24 hours monitoring and the heart rate variability parameters SDNN ($y=8,7266x - 757,02$ $R^2=0,8171$) and rMSSD ($y=8,6658x - 65,347$ $R^2=0,6395$).

Conclusions The results may be a starting point for future research for improving the prognostic in elderly with cardio-vascular disease, taking into consideration that both parameters (heart rate variability and ventricular arrhythmias) may be influenced and improved either by adequate physical activity or by antiarrhythmic drugs with strong implications in deciding for primary and secondary prevention.

The author hereby declares no conflict of interest

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Prognostic value of epicardial-endocardial gradient measured by echocardiography to predict Cardiac Resynchronization Therapy (CRT) response

Frederic Sebag^{*}, Laura Ernande, Nicolas Mignot, Nicolas Lellouche APHP-CHU Henri Mondor, Créteil, France

^{*}Corresponding author: dr.fsebag@gmail.com (Frederic Sebag)

Background As right ventricular lead is positioned endocardially and left ventricular lead epicardially, we hypothesized that baseline epi-endo gradient could predict CRT response.

Method and results We studied 46 patients referred for CRT. Transthoracic echocardiography (TTE) was performed for all patients before and one year after implantation. Offline analysis with speckle tracking imaging (STI) analysis of LV endocardial and epicardial wall was performed. Specifically, epi-endo gradient delay (GD) and gradient contraction (GC) measurements were performed on the septal and lateral LV wall before and one year after implantation. CRT response was defined as a reduction >15% of LV end systolic volume one year after CRT.

Results Mean age was 62 ± 11 year-old and mean EF was $26 \pm 7\%$. Twenty-two patients were classified as responders. Baseline characteristics of patients with or without CRT response were similar, except for QRS duration. Before implantation, septal (10 ± 31 ms vs. 20 ± 133 ms, $p=0,67$) and lateral GD (1 ± 25 ms vs. 4 ± 26 ms, $p=0,76$) were low and similar in both groups. However lateral GC was higher in CRT responders ($-4,05 \pm 2,29\%$ vs. $-2,38 \pm 2,82\%$, $p=0,009$). After multivariate analysis, lateral GC was the best predictor of CRT response ($p=0,013$). One year after implantation, septal GD and GC were comparable in CRT responders or not. However lateral GC significantly decreased in CRT responders ($-4,05 \pm 2,29\%$ at baseline vs. $-1,86 \pm 2,2\%$, $p<0,01$) whereas no changes were observed for non-responders. Finally lateral GD was significantly increased at one year in CRT non responders 4 ± 26 ms at baseline vs. 18 ± 43 ms, $p<0,01$). **Conclusion:** At baseline no significant LV

epicardial-endocardial delay gradient was observed in patients with CRT response or not. However lateral epi-endo gradient contraction is highly independently associated with CRT response. Finally this gradient was homogenizing one year after CRT for responders.

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Assessment of radiation exposure during cardiac device implantation: lessons learned from a multicenter registry

Paul Bru^{*} (1), Antoine Dompnier (2), Walid Amara (3), Georges Haddad (4), Gianina Galuscan (5), Pascal Sagnol (6), Mathieu Steinbach (7), Christian Montagnier (8), Jérôme Taieb (9), Julien Beguec (9)

(1) CH Saint-Louis, La Rochelle, France – (2) CH Annecy, Annecy, France – (3) CH Montfermeil, Montfermeil, France – (4) CHD, La Roche Sur Yon, France – (5) CH Versailles, Versailles, France – (6) CH Châlon, Châlon S/Saône, France – (7) CH Haguenau, Haguenau, France – (8) CHBA, Vannes, France – (9) CHPA, Aix En Provence, France

^{*}Corresponding author: paul.bru@ch-laroche.fr (Paul Bru)

Background Few data exist about radiation exposure during implantation of cardiac electrical device. No dose reference levels (DRLs) were reported.

Purpose to define DRLs and to analyze factors related to an increased radiation dose delivered to patients and medical staff.

Methods the Raypace study is a multicenter, prospective observational registry. Using a national database, patient demographic, procedural and radiation data were collected. Fluoroscopy time (FT) and dose-area product (DAP) were registered. Physician/staff exposure was measured using 2 real-time personal dosimeters, one worn under the lead apron and the other one worn outside the apron. Statistical analysis used log-transformation of DAP, FT and DAP/FT ratio.

Results A total of 657 procedures from 9 institutions were reviewed. Pacemaker (PM) and cardioverter-defibrillator (ICD) implantation was performed in 481 and 176 patients, respectively. A cardiac resynchronization device was implanted in 153 patients. Fluoroscopy time was similar for PM and ICD implantations. Median fluoroscopy time was 836, 117 and 101 second and median DAP was 1410, 150 and 129 cGy.cm² for biventricular, dual chamber and ventricular device implantation, respectively. LAO projection, in addition to AP projection, was used in 47% of the procedures. Five centers out of 9 used collimation. The median Hp (10) effective dose measured outside the lead apron was 4.6 µSv and 0.1 µSv under the lead apron.

Regarding CRT implant procedures, four systems out of 6 were responsible for an increased exposure (p<0.001). DRLs were 2600, 338 and 332 cGy.cm² for biventricular, dual chamber and ventricular device implantation, respectively.

Conclusions DAP reduction was improved with the use of latest generators but needed customized settings. Biventricular device implantation was responsible for the highest radiation exposure. However, radiation exposure during those procedures have decreased as compared to previously reported values.

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Occlusion of superior vena cava due to a pacing lead after an electrification

Farouk Boukerche^{*}, Leila Hammou
CHU Oran, Oran, Algérie

^{*}Corresponding author: boukerche.farouk@yahoo.fr (Farouk Boukerche)

Introduction Transvenous pacing is a relatively safe treatment with a low complication rate, but serious thromboembolic complications have been reported to occur in 0.6% to 3.5% of cases. Superior vena cava obstruction syndrome is generally an uncommon but serious complication occurring in <0.1% of patients.

Case report description A 28-year-old lady with history of DDD permanent pacemaker implantation secondary to a cardiac surgery (mitral and aortic

valves replacements). She was unfortunately electrified occasioning a threshold elevation. An attempt to implant a new endocavitary lead failed, the venography showed a partial occlusion of the right subclavicular vein and a total occlusion of superior vena cava with supleance, confirmed by the angioscanner. Her ancient leads were already functional; we replace only the pulse generator.

General examination doesn't revealed features suggestive of superior vena caval obstruction which was later confirmed by imaging. She was treated by continuing her long term oral anticoagulation.

Discussion A review of the literature suggests that neither thrombotic nor fibrotic obstruction in patients with pacemaker leads is strictly related to the number of abandoned leads, the presence of severed leads, or the time lapsing from pacemaker implant.

In our case despite anticoagulation for mechanic valve replacement the occlusion of the VCS occurred. Cardiac surgery, traumatic placement of ancient leads and latest electrocution probably contributed to this fact.

Conclusions/Implications Superior vena cava obstruction in patients with transvenous pacing leads, although rare, is a well recognized complication. One should carefully look for thromboembolic complications during follow-up in patients with transvenous pacemaker leads, as it has implications for future management and carries significant morbidity and mortality.

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Zero-fluoroscopy ablation for young patients: about 2 cases

Soufia Naccache^{*}, Franck Halimi
Hôpital privé Parly II, Le Chesnay, France

^{*}Corresponding author: naccache.soufia@gmail.com (Soufia Naccache)

Radiofrequency catheter ablation (RFA) is the mainstay of therapy for supraventricular arrhythmias. Conventional radiofrequency catheter ablation requires the use of fluoroscopy, exposing patients to ionising radiation. The feasibility and safety of non-fluoroscopic ablation has already been reported using three-dimensional mapping systems. We are reporting 2 cases of young patients, for whom a RFA was performed without using Fluoroscopy.

1st Case: A 20-year old patient, presenting dyspnea and palpitation. Physical examination was normal. On ECG, a supraventricular tachycardia (SVT) with long RP and negative P waves in inferior leads was noted. RF ablation was indicated. Catheters were placed in the right atrium without the need to use fluoroscopy, guided by Carto 3D system mapping. The electrophysiology study made the diagnosis of atrial tachycardia arising from the coronary sinus ostium. The foci was successfully ablated.

2nd Case: A 16-year old patient, consulting for orthodromic reciprotting tachycardia. Physical examination and transthoracic echocardiography were unremarkable. Catheters were placed in the right atrium without the need to use fluoroscopy, guided by Carto 3 D system mapping. Tachycardia was initiated via atrial pacing. An anterograd left lateral accessory pathway was diagnosed. Left atrium was mapped with Carto 3D system through a permeable foramen ovale. The pathway was ablated. Ablation of SVT without use of fluoroscopy has a high acute procedural success rate with low incidence of procedural complication. Use of this technique completely relieves the patient and healthcare of radiation exposure.

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Usefulness of positon emission tomography to guide reimplantation after lead extraction for endocarditis

Sok-Sithikun Bun^{*} (1), Maria Jurj (1), Decebal Gabriel Latcu (1), Marc Faraggi (1), Jean-Claude Deharo (2), Nadir Saoudi (2)

(1) CH Princesse Grace, Monaco, Monaco – (2) APHM-CHU la Timone, Marseille, France

^{*}Corresponding author: soksithikun@hotmail.com (Sok-Sithikun Bun)

Purpose PET/CT may be useful in difficult cases to identify endocarditis in patients (pts) implanted with cardiac devices. The usefulness of PET/CT before reimplantation after lead extraction for endocarditis has never been studied. We