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323 Prophylactic epicardial pacing in tricuspid valve replacement
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Introduction Patients undergoing surgical tricuspid valve replacement (TVR) are at high risk of developing atrioventricular (AV) conduction disorders. Because of this high risk and to avoid implanting a lead through the tricuspid bioprosthesis, patients who undergo TVR in our center usually receive a prophylactic epicardial pacemaker.

Objective We aimed to assess the efficacy and safety of prophylactic implantation of epicardial pacemaker after TVR.

Method Among patients who underwent TVR and received prophylactic epicardial pacemaker, clinical evaluations, electrocardiograms and pacemaker interrogation reports were collected and analyzed retrospectively. Pacemaker efficacy assessed by characterizing the physiologic atrioventricular conduction and safety was evaluated by listing and adjudicating postoperative events.

Results From 2014 to 2018, 100 patients underwent TVR, 80 out of them received a prophylactic epicardial pacemaker. Mean age was 57 ± 16 years old and 70% were women. Only 35% patients underwent isolated TVR. Following the postoperative period, heart rhythm was analyzed for 59/80 patients during a median follow-up of 35 months. Cardiac stimulation was considered necessary in 46% of patients: 14% had pacing dependency, 17% had a class II/IIa indication for permanent cardiac pacing (second or third-degree AV block), and 15% had a permanent ventricular pacing (> 80%). No preoperative or operative variables could predict cardiac pacing requirement. Postoperatively, a spontaneous heart rate over 70/minutes (P = 0.02) and the documentation of narrow QRS (< 120 ms) (P = 0.03) were significantly associated with a lower risk of long-term cardiac pacing requirement. Serious complications related to epicardial pacemaker were observed in 2.5% of cases.

Conclusion After TVR, permanent cardiac stimulation was required in 46% of patients, mostly for high grade conduction disorders. This high incidence legitimates a pacing strategy for patients undergoing TVR.

Disclosure of interest The authors declare that they have no competing interest.

https://doi.org/10.1016/j.acvdsp.2021.04.201

353 Electrophysiologic evidence of epicardial connections between low right atrium and remote right atrial region or coronary sinus musculature: Relevance for catheter ablation of typical atrial flutter
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Introduction The coronary sinus (CS) is surrounded by a myocardial coat with extensive connections to the left and right atria that contributes to the interatrial electrical connection. Whereas epicardial connections between CS musculature and the left atrium have largely been demonstrated, clinically relevant epicardial connections from the CS musculature toward the low right atrium (LRA) and epicardial connections between two regions of the right atrium remain questionable (Fig. 1).

Methods Five patients underwent electrophysiology (EP) study for typical atrial flutter (AFL) using either conventional multipolar catheters (four patients) or three-dimensional high-density mapping system (one patient).

Results All five patients had a similar sequence of events during the EP studies. After several cavotricuspid isthmus (CTI) radiofrequency (RF) applications, double potentials were recorded along the ablation line while tachycardia persisted. The right atrial activation pattern strongly suggested the presence of a complete endocardial CTI line of the block. Based on the detailed conventional atrial mapping, RF applications at the middle cardiac vein/CS ostium allowed sinus rhythm restoration in four patients. High-density mapping showed an early breakthrough site at the septal side of the ablation line, close to the CS ostium during counterclockwise AFL, in the fifth patient. RF applications at this site resulted in tachycardia termination.

Conclusion Our observations suggested the existence of epicardial fibers connecting the LRA with either the CS musculature or a remote right atrial region. When AFL ablation fails whereas evidence for the local endocardial block is observed, the operators should integrate this finding in the diagnosis and ablation strategy.

Fig. 1 Schematic representation of anatomical relationship of the coronary sinus with the surrounding structures.

Disclosure of interest The authors declare that they have no competing interest.

https://doi.org/10.1016/j.acvdsp.2021.04.202

340 Severe bradycardia in critically ill patients with COVID-19 — A cases report
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Introduction Cardiac injury has been reported as an important manifestation of coronavirus disease 2019 (COVID-19) and arrhythmic events are common. Here, we report a case series of severe sinus bradycardia among patients hospitalized in intensive care units (ICU) with COVID-19.
Objective and method From January to May 2020, 113 patients were admitted in ICU for severe COVID-19. All these patients underwent continuous monitoring of their cardiac rhythm. Ten patients (9%) presented a bradycardia. A 24-hour Holter-ECG was subsequently performed for 7 patients.

Results Patients had a median age of 63 years. Most of them were men and had severe acute respiratory distress syndrome. All episodes were due to sinus bradycardia with a median heart rate of 36 bpm. Bradycardia was sudden for four patients and required brief resuscitation maneuvers for one. Bradycardia was persistent for the six other patients and required transient continuous isoproterenol infusion for three. Patients had normal baseline ECG and echocardiography. A comprehensive review of patient’s files ruled out bradycardia due to drug-drug interactions, myocarditis, hyperkalemia, hypoxia or vagal physical stimulation. Two patients had beta-blockers interrupted several days before bradycardia and one patient received Hydroxychloroquine discontinued 21 days before bradycardia. On the Holter-ECG, 3 recordings evoked vagal hyperactivity (low mean heart rate and elevated pNN50/RMSSD, Fig. 1, patient A), 3 others cardiac dysautonomia (SDNN < 100 ms, Fig. 1, patient B). Amongst these 10 patients, five returned home and five died from COVID-19 associated multiple-organ failure. None of them required temporary or permanent cardiac pacing (Fig. 1).

Conclusion We hypothesized that bradycardia may be due to an autonomic nervous system injury. The parallel course of COVID-19 and bradycardia suggest that these patients do not have intrinsic sinus node disease and that pacemaker implantation should not be recommended.

Fig. 1 Representative ECG and Holter-ECG traces.