Discussion
MRI is widely used for guiding ablations, mainly atrial fibrillation, given its accuracy to delineate the anatomy. The ability of late contrast-enhanced MRI to define the location and extent of myocardial necrosis may be of interest in guiding VT ablation procedures. This case shows the feasibility of integrating late-enhanced images and how they match the areas of low voltage depicted by the electro-anatomic mapping system. Characterization of the myocardial tissue by MRI and its integration with the electro-anatomic maps can help in delineating the extent of the scar, making substrate ablation of unmappable VT more accurate. Further research in this field is warranted.

Conflicts of interest: none declared.

References

CASE REPORT

Pacemaker syndrome and pseudo-ventricular high threshold after dual-chamber pacemaker replacement

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We report a 60-year-old male patient who presented with pacemaker syndrome. The patient had recent dual-chamber pacemaker replacement. Surface ECG and endocavitary electrograms were compatible with leads connection inversion. Device interrogation showed pseudo-ventricular high threshold. Dual-chamber pacemaker leads inversion in a pacer-dependent patient can lead to life-threatening complications. Industry technicians should not perform device technical assistance when unsupervised by physicians with expertise.

Case report
A 60-year-old patient presented with pacemaker syndrome (PMS). He was pacemaker (PM)-dependent and had device replacement 6 months ago. After that, only the company representative performed device follow-up and had nothing to mention.

Device interrogation showed high ‘ventricular output’ in this automatic ventricular capture device. The markers showed Ap-Vs (atrium paced, ventricle sensed) which could have been interpreted as ventricular intrinsic activity restoration (Figure 1). Surface ECG showed retrograde P waves in D3 concomitant with Vs. Leads inversion diagnosis was retained and surgical correction was performed.

Figure 1 Surface ECG shows retrograde P waves. Intracardiac markers show Ap-Vs.
Discussion

Single-chamber ventricular pacing is classically known to be a common cause of PMS. In our case, the onset of PMS was caused by inadvertent leads inversion during PM (dual chamber) replacement. The atrial threshold was mistaken for an elevated ventricular threshold. This was due to atrial pacing during the natural atrial refractory period (with intermittent atrial sensing loss, ventricular sensitivity = 2 mV) as evidenced by the intrinsic retrograde P waves on the ECG. Resumed intrinsic ventricular activity in a previously dependent patient was a pitfall because Vs detected on the marker’s channel were in reality retrograde P waves.

Lead inversion in a pacemaker-dependent patient can be life-threatening. If the sinus rate goes faster than the programmed rate, this will inhibit ‘atrial’ pacing (in reality, ventricular pacing) and may lead to asystole.

In our institution, to avoid this complication and to conform to the guidelines, the first follow-up after initial pacemaker implantation is performed prior to hospital discharge under a physician’s supervision. This policy should also be applied for box replacements and a physician with expertise in cardiac pacing should always be present during the post-implant device interrogation and programming.

Conflict of interest: none declared.

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References