A case of mitral regurgitation deterioration via right ventricular apex constant pacing caused by pilsicainide hydrochloride induced impaired atrioventricular conduction

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Introduction: We experienced a case of acute cardiac failure with mitral regurgitation deterioration caused by antiarrhythmic drug-induced constant right ventricular apex pacing.

Methods: A 88-year female was admitted to our department, diagnosed as cardiac failure due to severe mitral regurgitation. She previously had experienced frequent syncopal attack under rhythm-control therapy using class I antiarrhythmic drug (AAD) for atrial tachycardia/fibrillation (AT/AF) and QT prolongation with TdP was documented. As rhythm-control for AT/AF using AADs were still needed, permanent pacemaker implantation was therefore performed in order to prevent QT prolongation-related fatal arrhythmia. Pilsicainide hydrochloride (Pil) was used in addition to bepridil, as AT/AF was uncontrollable during the follow-up. 12-lead ECG on regular check-up under bepridil administration revealed pacemaker rhythm with atrial pacing followed by normal QRS morphology (Atrial pace-Ventricular sense mode: ApVs mode). However, constant ventricular pacing (Vp) due to atrioventricular (AV) conduction delay was documented on admission. AAD induced impaired AV conduction as the major cause of Vp was suspected and therefore Pil was discontinued after admission.

Result: ApVs pacemaker rhythm restoration with significant improvement of mitral regurgitation and cardiac failure was observed after Pill discontinuation (Figure).

Conclusion: This case highlighted the potent inhibitory effect on AV conduction under Pil administration, although Pill is well known as class Ic AAD, with a pure sodium channel-blocking pharmacokinetic property. Furthermore, deleterious effect on left ventricular function (i.e. mitral regurgitation deterioration in this case) may cause rapidly once a high burden of Vp is observed in patients with permanent cardiac electrical stimulation.