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CLINICAL VIGNETTE

Electrocardiogram changes due to myocardial infarction in a patient with selective His bundle pacing

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We present a case of a 91-year-old patient dependent on right ventricular pacing due to a third-degree atrioventricular block. The patient had an upgrade to His bundle pacing because of the development of heart failure which occurred after several weeks of septal pacing. During the procedure, old leads were left in the right atrial appendage (atrial lead) and right ventricular septum (ventricular lead), respectively. A new pacing lead (Select Secure 3830; Medtronic, Minneapolis, MN, USA) was implanted in the His bundle area, and only selective His bundle pacing was achieved. The lead was plugged into the left ventricular (LV) port of the biventricular pacemaker (Allure CRT-P, St. Jude Medical, Sylmar, CA, USA), which was set to DDD, 60 bpm, LV-only, bipolar pacing and sensing in all leads and paced/sensed atrioventricular delay of 200/150 ms. Coronary angiography revealed severe multivessel disease. Due to the age of the patient, coronary artery bypass grafting was contraindicated and a percutaneous coronary intervention of the left anterior descending artery (LAD) was recommended. The procedure was unsuccessful because it was impossible to inflate the balloon in the severely calcified part of the vessel. Temporary worsening of blood flow in the LAD was observed periprocedurally, followed by an elevation of cardiac troponin levels. The electrocardiogram began showing negative T waves in the anterolateral leads (II, V2–V5), both during pacemaker inhibition and at the time of His bundle pacing (Fig. 1). These changes were not present during selective His bundle pacing before (Fig. 2A) or several weeks after (Fig. 2B) the periprocedural infarction. This paper shows that ischaemic changes during non-transmural myocardial ischaemia were clearly detected in a patient with His bundle pacing, which proves the advantage of this technique compared to the unifocal right ventricular or biventricular myocardial stimulation.

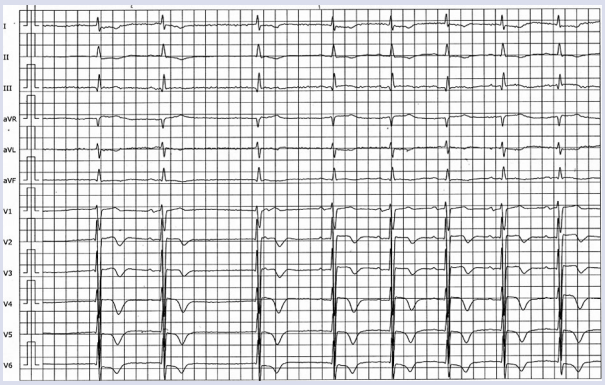

Figure 1. Electrocardiogram showing repolarisation changes in the anterolateral leads. First three QRS complexes from the left were recorded during pacemaker inhibition and spontaneous action (sinus rhythm with intermittent 2:1 sino-atrial block and a third-degree atrioventricular block with junctional escape rhythm) and were followed by five paced QRS complexes (pacing artefacts are not visible because of bipolar pacing)

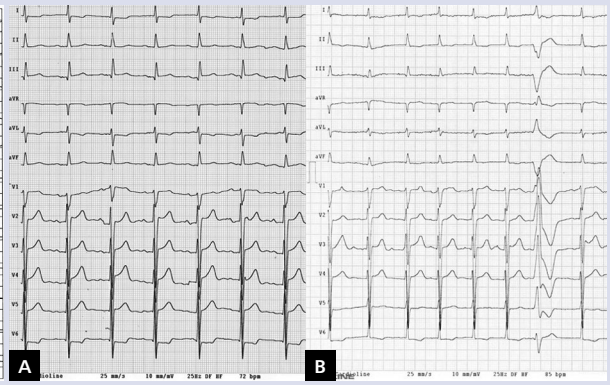

Figure 2. Electrocardiography performed right before (**A**) and six weeks after myocardial infarction (**B**). No repolarisation changes were present on either examination

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