

Asystole of 7 Seconds during a Diagnostic Coronary Angiogram

Complete Heart Block without Ventricular Escape Rhythm during Left Ventriculography

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Abstract

Complete heart block (CHB) is a rare complication during left ventriculography. We present a case of transient CHB without ventricular escape rhythm in a patient with an incomplete trifascicular block.

Keywords: AV block; complete heart block; left ventriculography

Case Description

A 80-year-old male patient with known severe triple vessel disease and a history of multiple percutaneous coronary interventions of all three major coronary arteries including the left main coronary artery, was admitted with a hypertensive crisis and elevated troponin lev-

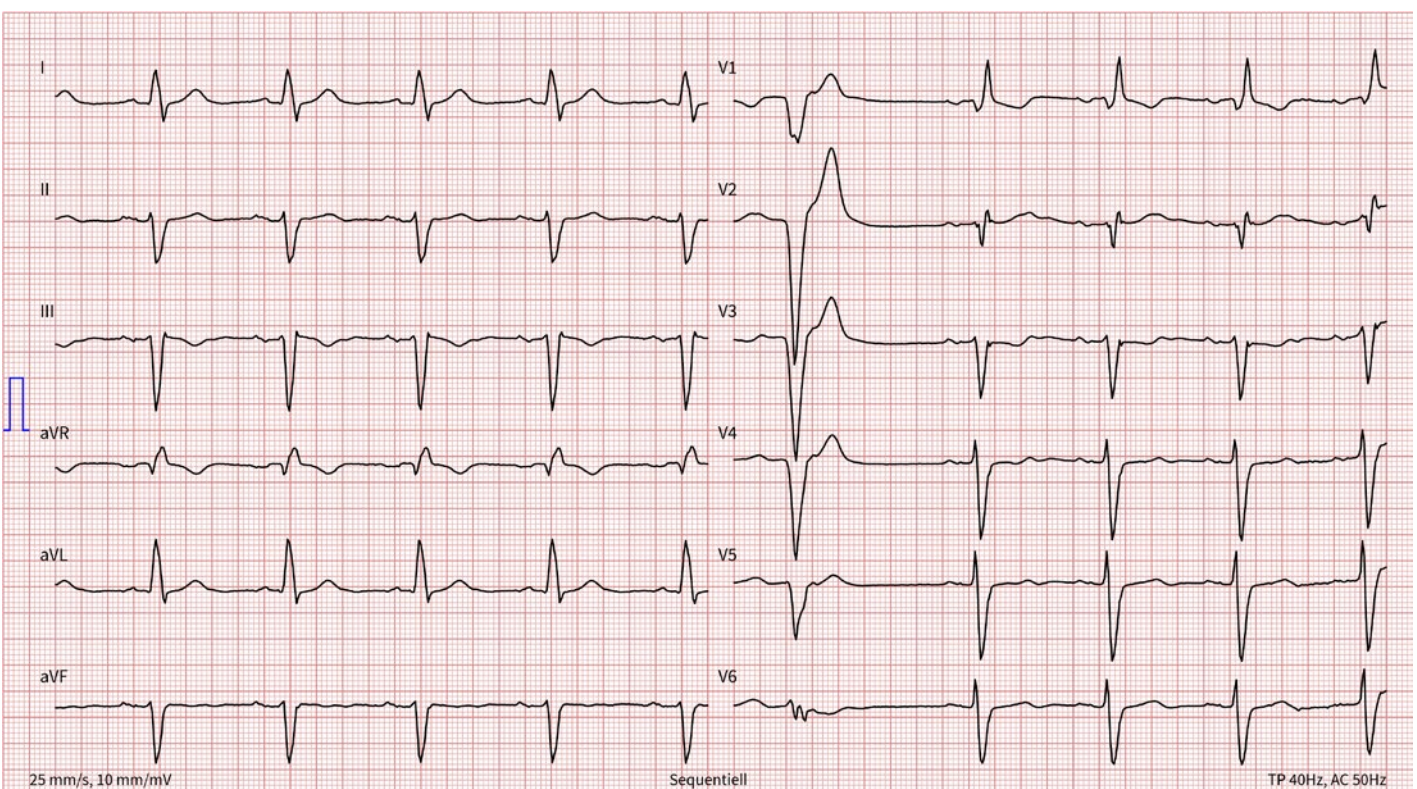


Figure 1: Baseline ECG showing first degree AV block (PR interval: 206 ms), complete right bundle branch block and left anterior fascicular block (QRS duration: 160 ms).

Case Report

els (high-sensitive troponin 53 ng/l, normal <14 ng/l). Baseline 12-lead surface electrocardiogram (ECG) showed a preexisting asymptomatic incomplete trifascicular block, namely a first degree AV block with a PR interval of 206 ms, a complete right bundle branch block (RBBB) and a left anterior fascicular block with a QRS duration of 160 ms (fig. 1). The ECG showed no signs of ischemia. Baseline medication included 5 mg of nebivolol twice daily.

Coronary angiography showed diffuse coronary artery disease unchanged to a previous exam two years earlier with patent stents. There was no significant stenosis in a major coronary vessel. For assessment of the left ventricular function, volume and filling pressures, left ventriculography was performed in a standard fashion using a 5F pigtail catheter. 40 ml of contrast dye at a rate of 15 ml/s and a pressure of 963 pound per square inch were injected with an ACIST CVi™ power injector (ACIST CVi™ Contrast Delivery System, ACIST Medical Systems, Bracco Group, Eden Prairie, MN). Due to a ventricular couplet with abrupt movement of the catheter towards the left ventricular outflow tract (LVOT), the patient developed a complete heart block (CHB) with preserved atrial but no ventricular contractions (fig. 2, video). Atrioventricular conduction resumed after seven seconds. Briefly, the patient was hypotensive, but never

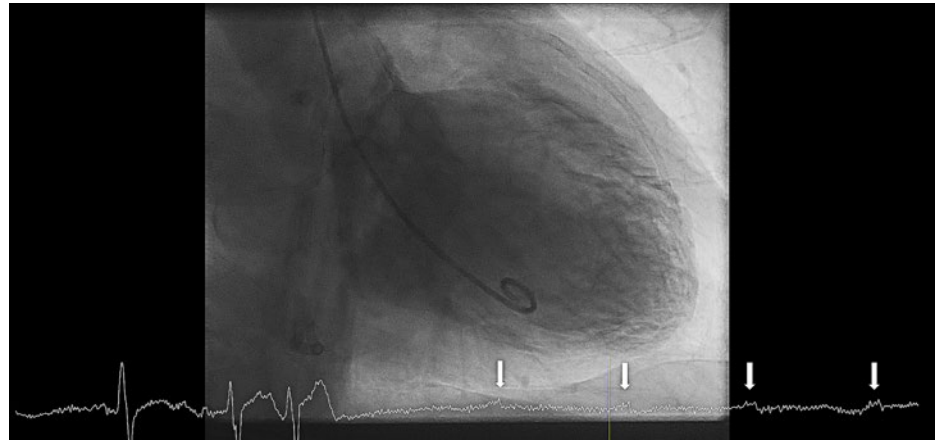


Figure 2: Still frame of left ventriculography. Please note the ECG with complete heart block after a ventricular couplet with persistent P-waves (white arrows).

unconscious. The ECG after the procedure showed a slightly longer PR-interval of 230ms, but remained otherwise unchanged compared to the baseline ECG (fig 3). The beta blocker was stopped. Rhythm monitoring over the next 24h was unremarkable. The patient was discharged the next day. A three-day Holter monitor and a treadmill exercise test one month later were unremarkable and the patient was free from cardiac complaints.

Discussion

Left ventriculography is a standard method to evaluate left ventricular volume and function

with a low complication rate [1]. Iatrogenic conduction system injury during left ventriculography has been reported in the context of unintentional contact of the catheter with the LVOT and/or preexisting RBBB [2–4]. Anatomical studies have shown the proximity of the atrioventricular bundle and the left bundle branch to the aortic root [5]. In the present case, the combination of only one remaining conducting fascicle (the left posterior fascicle), contact of the catheter with the LVOT during a ventricular couplet, and preexisting beta blocker therapy may have contributed to a transient CHB.

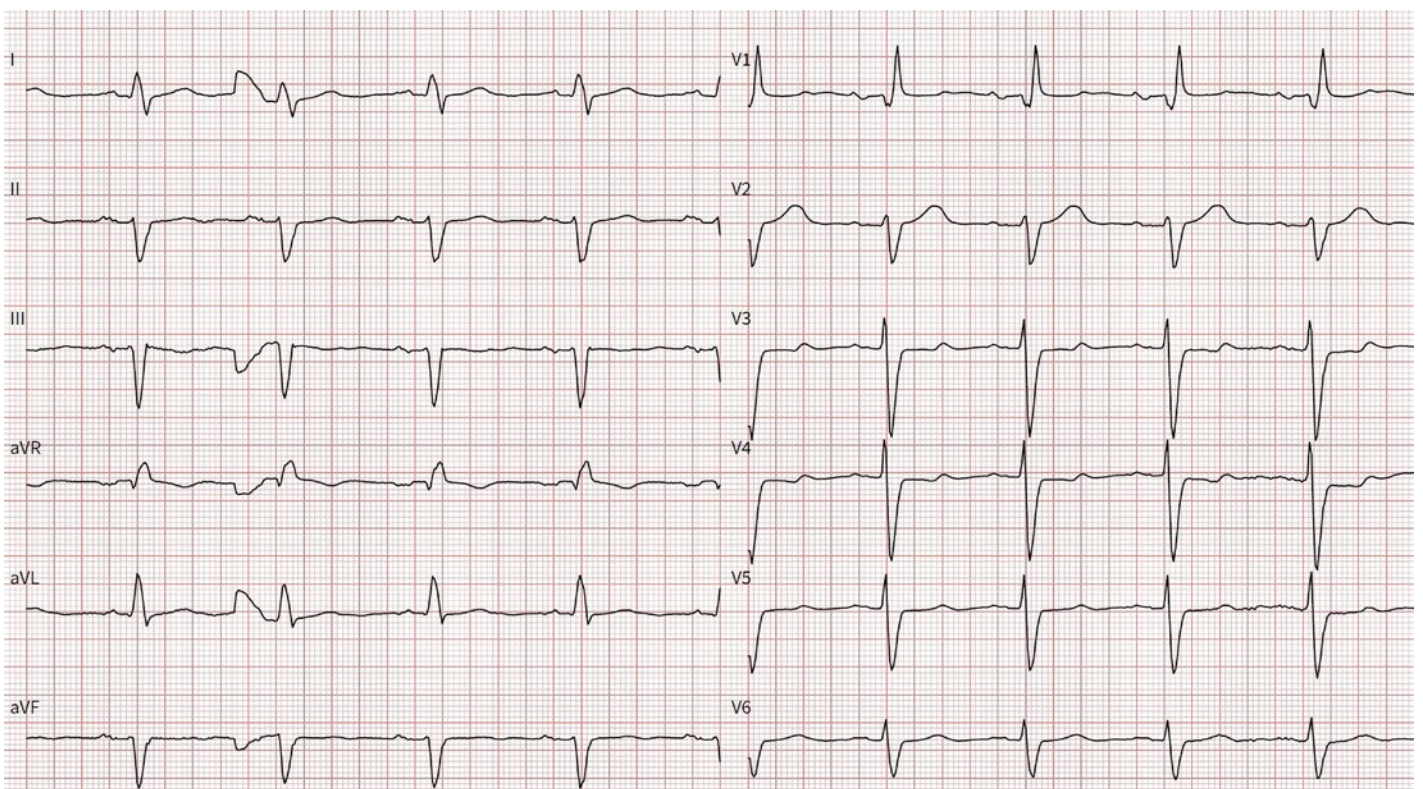


Figure 3: ECG after the coronary angiography with a slightly prolonged PR interval of 230 ms but otherwise unchanged findings compared to the baseline ECG.

We recommend to consider transthoracic echocardiography as an alternative to measure left ventricular function in patients with conduction abnormalities, especially if a RBBB is present. Besides giving more detailed information about regional wall motion abnormality and valvular function, performing transthoracic echocardiography instead of left ventriculography also reduces contrast dye exposure.

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Ethics Statement

Written Informed consent was obtained.

Conflict of Interest Statement

PLD and SM have no potential conflicts of interest to declare.

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Author Contributions

All authors contributed in the writing and reviewing process of the manuscript. All authors gave final approval of the version to be published.

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