

Anterior T-wave inversions as a memory of a percutaneously closed atrial septal defect

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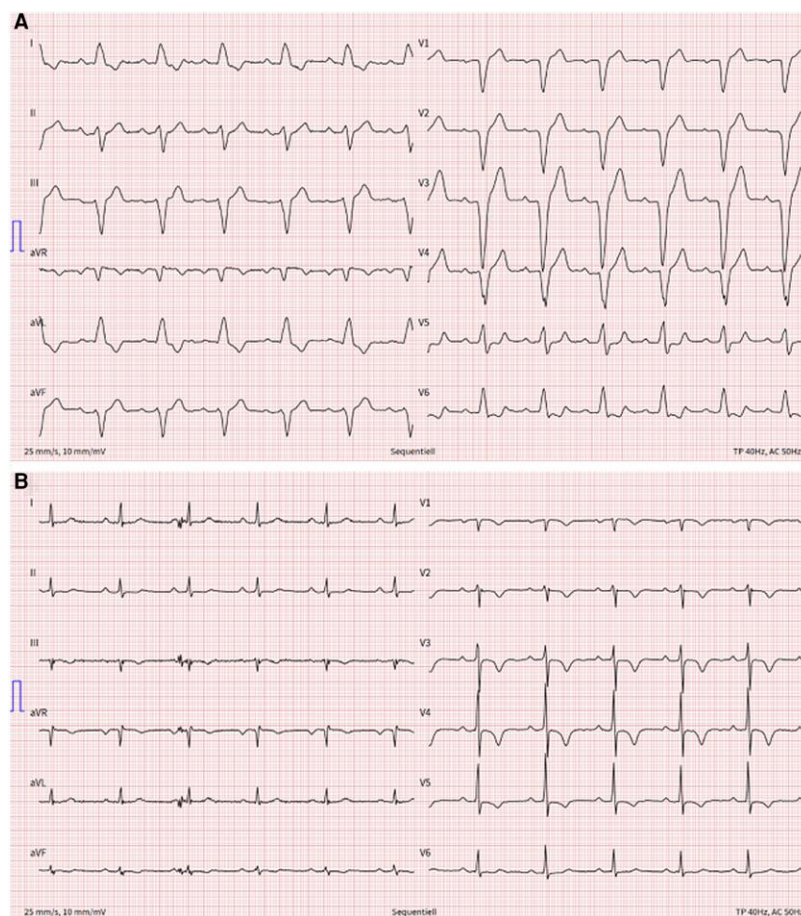


Figure (A) Pre-interventional ECG showing sinus rhythm with complete left bundle branch block. (B) Post-interventional ECG showing narrow QRS complex with T-wave inversions in the precordial leads and normal repolarization in leads I and aVL (following the direction of the preceding wide QRS complex).

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A 64-year-old male patient was evaluated for asymptomatic left bundle branch block (LBBB) (Figure, panel A). Cardiac assessment showed a haemodynamically relevant atrial septum defect leading to right ventricular dilation. The patient underwent successful percutaneous defect closure. After the intervention, the ECG showed a narrow QRS complex with T-wave inversions in the precordial leads and normal repolarization in leads I and aVL, without clinical or laboratory signs of ischaemia (Figure, panel B). Cardiac memory was identified as the cause of the ECG changes. The patient was discharged without further examination and had an uneventful course.

Cardiac memory (CM) is defined as persistence of T-wave changes after the resolution of wide QRS rhythms. CM resulting from intermittent LBBB can be confused with Wellen's syndrome, in which T-wave inversions are related to a transient proximal left anterior descending artery occlusion. This may cause a clinical dilemma and result in inappropriate diagnostic interventions.

T-wave inversions related to Wellen's syndrome usually involve not only anterior but also lateral leads, i.e. leads I and aVL. In contrast, the vector of repolarization in CM after conversion to a narrow QRS complex follows the direction of the preceding wide QRS complex. Since

LBBB typically produces positive QRS vectors in leads I and aVL, the resulting T waves after resumption of normal conduction are also positive in these leads. This may help recognizing CM, an ECG phenomenon not requiring further interventions and distinguishing it from a serious cardiac condition such as Wellen's syndrome.

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Data availability

No new data were generated or analysed in support of this research.