Pectus excavatum as an unexpected cause for typical cardiologic signs revealed at imaging

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A 43-year-old mildly obese man presented with intermittent dyspnoea on exertion and angina-like chest pain. His medical history revealed arterial hypertension and dyslipidaemia, but was otherwise unrevealing. The physical examination was non-contributory. A 12-lead-ECG (Panel A) displayed normofrequent sinus rhythm with prominent T-wave inversions in leads I, aVL, and V4-V6; the Sokolov–Lyon index was positive. Subsequent transthoracic echocardiography showed moderate concentric left ventricular hypertrophy (LVH) while the ejection fraction was normal at 57%. Owing to the cardiovascular risk profile of the patient, coronary CT angiography (cCTA) was performed in accordance with current guidelines. cCTA also showed LVH and ruled out coronary artery disease. However, cCTA revealed sternal inversion due to pectus excavatum, which displaced the course of the right coronary artery (Panel B, arrow). Although outwardly less conspicuous (Panel C), the rotational sternal inversion (Panel D, arrows) furthermore compressed the anterior aspect of the right atrium and ventricle causing substantial alteration of the cardiac axis (Supplementary data online, Video S1).

Abnormal ECG findings, including vectorial deviation and ST-segment changes, are not uncommon in patients with pectus excavatum. In addition, a right bundle branch block may be noted occasionally. In this case, cCTA illustrated the sternal deformity with compression and displacement of cardiac structures that could explain the patient’s symptoms, and is likely causative of the pathological ECG pattern.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.