A 28-year-old non-professional runner was taken to the emergency room with severe dyspnoea starting suddenly while he was running a marathon. On arrival the patient was in pulmonary oedema, which was treated with i.v. nitrates, diuretics, and non-invasive-mechanical-ventilation with rapid improvement. The admission ECG showed sinus tachycardia with no repolarization abnormalities. An urgent echocardiographic study [Panel A (still image) and Supplementary material online, Video 1; parasternal short-axis view] revealed global hypokinesia, though more severe in the septum and antero-lateral wall, and severe left ventricular systolic dysfunction. An elective echocardiographic study repeated 12 h later [Panel B (still image) and Supplementary material online, Video 2; parasternal short-axis view] showed normalization of the left ventricular function. Coronary angiography revealed an anomalous left coronary artery (LCA) originating from the right sinus of Valsalva (left-ACAOS) (Panel C). A Coronary CT-scan showed the anomalous left-ACAOS having an intramural and inter-arterial course (Panel D). High signal intensity in the basal segment of the anterior wall and septum in T2-weighted images (Panel E) without late enhancement was observed in cardiac magnetic resonance, suggesting stunned myocardium.

The patient did well during hospitalization and underwent elective surgical coronary repair using a modified-unroofing technique (Panel E; right coronary artery and LCA ostia in the right coronary sinus). He was discharged a week later.

Coronary arteries originating from the opposite coronary cusp may cause chest pain and are the second cause of sudden death in athletes <35 years. To our knowledge, his is the first case of left-ACAOS presenting with acute heart failure as its first manifestation.

Supplementary material is available at European Heart Journal online.