Computed tomography angiography: uncommon findings in an adult patient with unrepaired Tetralogy of Fallot

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A 48-year-old man with unrepaired Tetralogy of Fallot (ToF) was admitted to our institution with dyspnoea on exertion and several episodes of cyanosis.

The diagnosis of ToF had been established in early infancy, but surgical repair had been repeatedly refused.

Retrospectively, ECG-gated 64-slice computed tomographic angiography (CTA) showed multiple abnormalities of cardiovascular morphology and function, and ruled out coronary artery disease and pulmonary embolism in a single non-invasive examination.

The following findings of ToF were demonstrated on CTA: an overriding aorta (Ao), a large outlet ventricular septal defect (arrow), a dilated and hypertrophic right ventricle (RV) (Panel A), with reduced left ventricular function (ejection fraction: 30%) and interventricular septum flattening (Panel B).

Right ventricular outflow tract obstruction was minimal (overlapping double outlet right ventricle anatomy). The pulmonary artery (Panel C) was aneurysmal with a diameter of 47 mm. The pulmonary valve was bicuspid (Panel D). There were no filling defects in the pulmonary arteries.

The aortic root and ascending Ao were not dilated, with a non-stenotic tricuspid aortic valve.

The coronary arteries were anomalous but not stenotic. The right coronary artery (RCA) and left anterior descending artery arose from the tubular ascending Ao with a normal course subsequently. The left circumflex artery originated from the RCA and took a retro-aortic course, terminating in the atrio-ventricular groove (Panel E).

Owing to advanced heart failure and pulmonary hypertension, surgical correction was not feasible, and the patient was referred for heart–lung transplantation.