

Coronary cameral fistula

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History

A 40-year-old female patient, suffering from intermittent palpitations, came to the hospital for a check up. Her medical history was unremarkable except for a known arterial hypertension. A coronary CT Angiography (cCTA) was requested for further evaluation.

Diagnosis

cCTA images showed a diffusely dilated right coronary artery (RCA) as well as the first diagonal branch (D1) connecting via tortuous distal segments with a single fistulous connection, draining into the left ventricle (LV) chamber. The fistula had a small caliber with a bulbous change at the entrance. The drainage site was situated below the posterior atrioventricular groove. There were no signs of a LV hypertrophy present

Comments

Coronary cameral fistula, defined as the entry of a coronary artery into any of the cardiac chambers, commonly originates from the RCA and seldomly involves the LV chamber. [1] In this rare case, the fistula originates from the distal connection of the RCA and the D1, and drains directly into the LV chamber. CT images used for assessment are acquired with prospective ECG triggered sequential scanning and reconstructed at the systolic phase.

The system is designed to identify the best systolic phase and to reconstruct the images automatically. This has a significant impact on time-saving in the daily workflow. Another helpful technical feature is the adaptive collimation, in 2.4 mm steps according to the defined scan range. This reduces radiation outside the defined scan range, due to the fixed collimation settings. Despite the patient's elevated and irregular heart rate (76 – 84 bpm), an optimal image quality is achieved, owing to the high temporal resolution of 66 ms granted by the dual source CT scanner, SOMATOM Force. Image post processing, using maximum intensity projection (MIP) and cinematic volume rendering technique (cVRT), facilitate the three-dimensional demonstration of the complex anatomy. ●

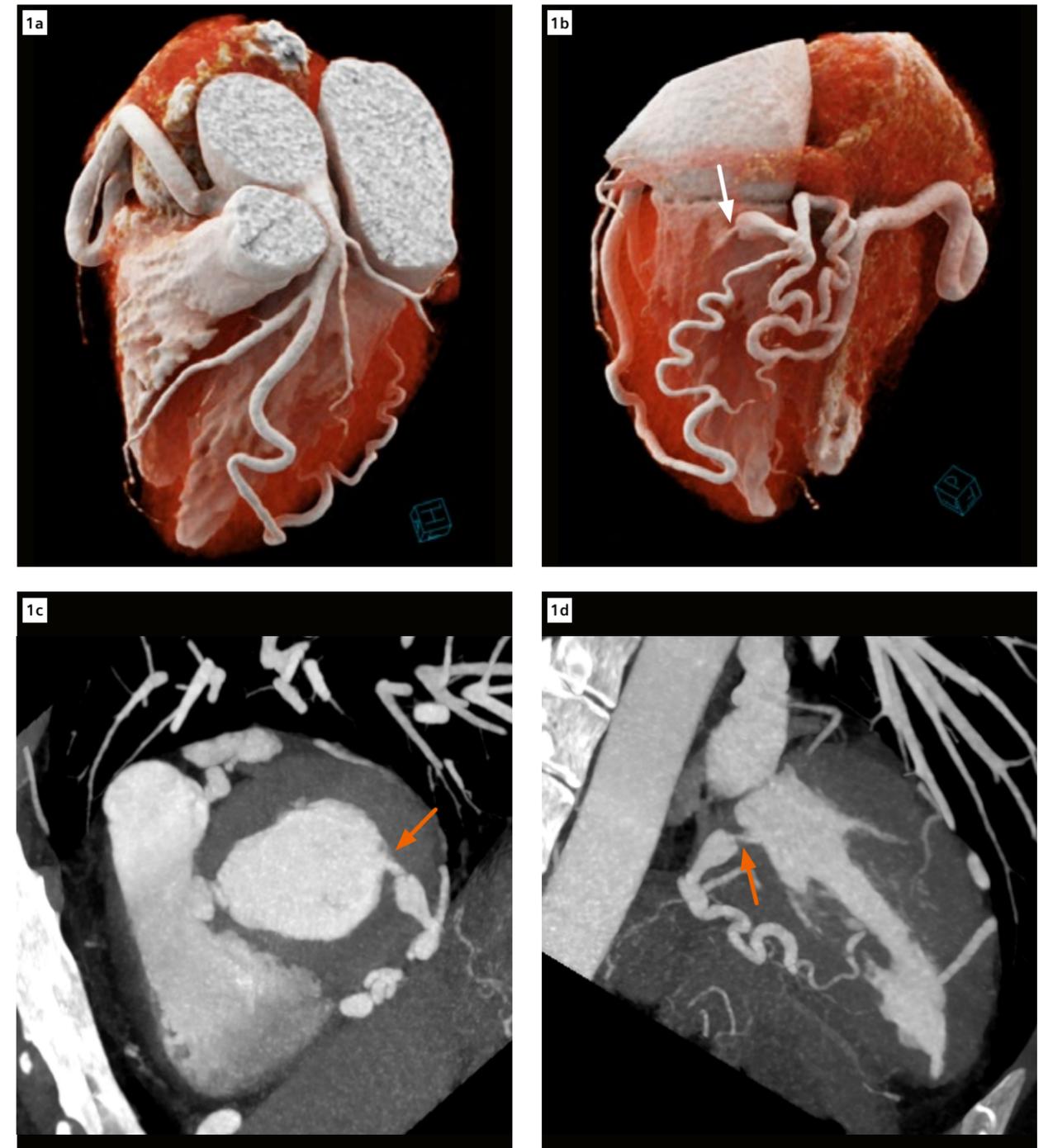
References

- [1] Gabin Yun, Tae Hyun Nam, Eun Ju Chun. Coronary Artery Fistulas: Pathophysiology, Imaging Findings, and Management. *RadioGraphics* 2018; 38:688–703

The statements by Siemens Healthineers' customers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or laboratory and many variables exist (e.g., hospital size, samples mix, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

Examination Protocol

Scanner	SOMATOM Force
Scan area	Heart
Scan mode	Prospective ECG Triggered Sequential Scan
Scan length	131 mm
Scan direction	Cranio-caudal
Scan time	4.4 s
Tube voltage	100 kV
Effective mAs	334 mAs
Dose modulation	CARE Dose4D
CTDI _{vol}	25.3 mGy
DLP	333.7 mGy*cm
Rotation time	0.25 s
Slice collimation	176 x 0.6 mm
Slice width	0.75 mm
Reconstruction increment	0.5 mm
Reconstruction kernel	Bv40
Heart rate	76 - 84 bpm
Contrast	320 mg/mL
Volume	60 mL + 30 mL saline
Flow rate	5 mL/s
Start delay	Bolus tracking with 100 HU at ascending aorta + 5 s



1 cVRT images (Figs. 1a & 1b) and thin MIP images (Figs. 1c & 1d) show the tortuous trajectory of the dilated RCA and D1, which are connected distally. A single fistula (arrows) with a bulbous change at the entrance is seen below the posterior atrioventricular groove, draining into the LV chamber.