

Case 3

Runoff CT Angiography for Peripheral Arterial Disease

By Aarthi Govindarajan, MD; Prasanna Vignesh, MD; Arun Kumar, MD, and Raj Kumar, MD

Aarthi Diagnostics, Vadapalani, Chennai, Tamilnadu, India

History

A 72-year-old male patient presented himself due to suspected peripheral vascular disease. A runoff peripheral CT angiography (CTA) was performed to evaluate the lower limb vessels.

Diagnosis

CT images demonstrated extensive atherosclerotic soft mural and calcified plaques, involving the abdominal aorta, the major lower limb arteries and its branches thus resulting in an irregular luminal narrowing. A small eccentric mural plaque involving the proximal superior mesenteric artery (SMA), immediately after the origin

and resulting in a 50% stenosis, was visualized. An extended soft plaque involving the left external iliac artery (EIA), 17 mm from the bifurcation and 12 mm in length, resulting in a 90% stenosis, was also detected. A complete thrombotic occlusion, measuring 6.2 cm in the left superficial femoral artery (SFA), with reformation in the adductor canal through collaterals, was shown as well. Compared to the posterior tibial artery (PTA), the caliber of the anterior tibial artery (ATA) and the CPA (central peroneal artery) appeared narrow on both sides throughout their entire course. The right common femoral, the superficial

femoral, the profunda femoris and the popliteal arteries appeared normal. Flow was noted in the dorsalis pedis artery on both sides.

Comments

Peripheral CTA is valuable in imaging workup and helps in establishing a quick diagnosis. In this case, the excellent image quality enabled a clear visualization of the vascular structures with a homogeneous contrast within the entire runoff range. Dose modulation CARE Dose4D and iterative reconstruction were both applied to achieve an effective dose as low as 2.27 mSv. ■

Examination Protocol

Scanner	SOMATOM Scope		
Scan area	Runoff	Rotation time	0.8 s
Scan length	1258 mm	Pitch	1.5
Scan direction	Cranio-caudal	Slice collimation	16 × 1.2 mm
Scan time	35 s	Slice width	1.5 mm
Tube voltage	110 kV	Reconstruction increment	1 mm
Tube current	48 mAs	Reconstruction kernel	I31s
Dose modulation	CARE Dose4D	Contrast	
CTDI _{vol}	3.14 mGy	Volume	100 mL + 40 mL saline
DLP	409.87 mGy cm	Flow rate	4 mL/s
Effective dose	2.27 mSv	Start delay	Bolus tracking

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



1

A VRT image shows an overview of the complete range of the runoff CTA.

2

A sagittal MPR image shows a small eccentric mural plaque resulting in a 50% stenosis in the proximal SMA.

3

A coronal MPR image shows an extended soft plaque resulting in a 90% stenosis in the left EIA.

4

A MIP image shows a complete thrombotic occlusion in the left SFA with reformation through collaterals.