

16 channel MDCT protocol for detecting BCVI, Baltimore

MDCT.—Scans were acquired with one of three 16-channel multidetector-row scanners (MX8000 IDT, Brilliance 16 Power, or Brilliance Big Bore; Philips Medical Systems, Cleveland, OH). Two different scanning protocols (Table 1) were in routine clinical use during the study period. The neck MD-CTA protocol, limited to the region between the aortic arch and circle of Willis, was utilized when clinical concern was limited to the craniocervical arterial system. The WB-MDCT protocol, which was utilized to reconstruct diagnostic images of the cervical spine and neck arteries, was routinely used to scan multitrauma patients in whom both cervical spine and chest CTs were requested. Intravenous contrast (iohexol [Omnipaque 300], 300 mg iodine/mL; Nycomed Amersham, New York, NY) was administered with a power injector (MedRad, Pittsburgh, PA) through peripheral venous access without a subsequent saline “chaser.” Final images were archived to a picture archiving and communications system (PACS) (AGFA version 5.2; AGFA, Mortsel, Belgium). At the discretion of the interpreting radiologist, independent workstations (AquariusNET viewer and Aquarius Workstation; TeraRecon, San Mateo, CA; Brilliance Workspace; Philips Medical Systems, Cleveland, OH) were used to review thin-section data and perform additional postprocessing that included off-axis– and curved multiplanar–reconstructed, volume-rendered, and maximum intensity projection images. All supplemental radiologist-directed postprocessed images were archived to the PACS.

Table 1: 16-Channel MDCT Protocols

Parameter	WB-MDCT	Neck MD-CTA
Patient positioning	Arms fully abducted	Arms fully adducted
Detector collimation and configuration	16 × 0.75 mm	16 × 0.75 mm
Pitch	1.0	0.9
Rotation time	0.75 sec	0.75 sec
kV	140	120
mA	210	245
Area scanned	Circle of Willis to lung bases (or ischial tuberosities)	Aortic arch to circle of Willis
Contrast volume	150 mL	100 mL
Contrast injection rate	90 mL at 6 mL/s then 60 ml at 4 mL/s	4 mL/s
Scan trigger threshold*	90 HU	120 HU
Source axial images (thickness × interval) [†]	1 × 0.5 mm	1 × 0.5 mm
Reconstruction filter	C (“sharp soft tissue”)	B (“soft tissue”)
Diagnostic axial images to PACS (thickness × interval)	2 × 2 mm	1 × 0.5 mm
Sagittal MPR (thickness × interval)	1 × 3 mm	5 × 2 mm MIP
Curved coronal MPR (thickness × interval)	1 × 3 mm	5 × 2 mm MIP
Thin-section axial images to independent workstation (thickness × interval)	2 × 1 mm	1 × 0.5 mm

*Bolus Pro triggering system (Philips Medical Systems, Cleveland, OH), with region of interest at the distal ascending aorta.

[†]Source axial images used to construct all routine diagnostic images.