



How can multidetector CT helps in better characterization of the aortic arch and carotid anomalies

Essay

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By

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List of Abbreviations

AA	Aortic arch
CCA	Common carotid artery
ICA	Internal carotid artery
ECA	External carotid artery
CECT	Contrast enhanced CT
RAA	Right aortic arch
ALSA	Aberrant left subclavian artery
DK	Diverticulum of Kommerell
PA	Pulmonary artery
RV	Right ventricle
LV	Left ventricle
TGA	Transposition of great arteries
L-TGA	Levo-Transposition of great arteries
D-TGA	Dextro-Transposition of great arteries
VSD	Ventricular septal defect
IAA	Interrupted aortic arch
PDA	Patent ductus arteriosus
SVAS	Supravalvular aortic stenosis
DA	Descending aorta
RSA	Right subclavian artery
LSA	Left subclavian artery
DAA	Double aortic arch
MPA	Main pulmonary artery
AbICA	Aberrant internal carotid artery
PFO	Patent foramen ovale
ATCM	Automatic tube current modulation
ASIR	Adaptive statistical iterative reconstruction

INTRODUCTION

Congenital anomalies of the thoracic vascular system are an important cause of morbidity and mortality in infants and children. Anomalies in the developmental process of the aortic arch and its main branches have clinical importance, as the anomalies may be associated with other congenital cardiovascular diseases or vascular rings around the trachea and esophagus that may or may not be symptomatic depending on the location and degree of compression (*Ramos-Duran et al., 2012*).

Multiple imaging modalities, such as chest radiography, barium oesophagography, echocardiography, CT, MRI and conventional angiography, are used to diagnose the anomalies and plan possible treatment.

Conventional radiology detects the presence of anomalous compressions of the trachea and oesophagus. However, in most cases, it is not sufficient alone to accurately diagnose the vascular abnormalities. Although echocardiography is a useful and safe technique for the diagnosis of thoracic vascular anomalies, angiography is usually necessary for definitive anatomical evaluation, especially before surgery. Digital subtraction angiography is the gold standard for detection of extracranial vascular anomalies. However, the sensitivity and specificity of MDCT angiography are reported to be high (*Silvennoinen et al., 2007*). Digital subtraction angiography is also an invasive technique that has several disadvantages including long procedure time, need for sedation, arterial puncture and rare potential complications such as dissection and occlusion.

CT angiography is a preferable modality of diagnosis for arterial disease as an alternative to conventional angiography, because it is safer, less time