

Dual Source CT Pediatric Congenital Heart Disease

SOMATOM Definition Dual Source scanning

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HISTORY

A 10 day old newborn was referred to the pediatric cardiology department of our center for treatment of his congenital heart disease. Examination by transthoracic echocardiography lead to a diagnosis of right isomerism, complex cardiac type of total anomalous pulmonary venous connection with obstruction, double outlet right ventricle with complete atrioventricular septal defect, coarctation of the aorta and bilateral superior vena cava. We took an ECG-gated cardiac Dual Source CT scan to help confirm the diagnosis. The patient's height was 43.5 cm, body weight was 2.4 kg, and mean heart rate during the scan was 142 bpm. He was sedated by only oral medication before the scan.

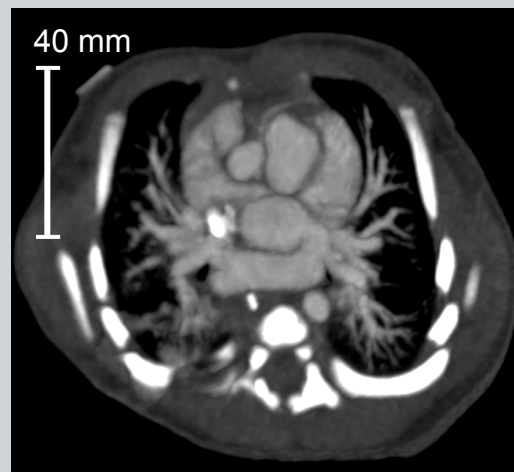
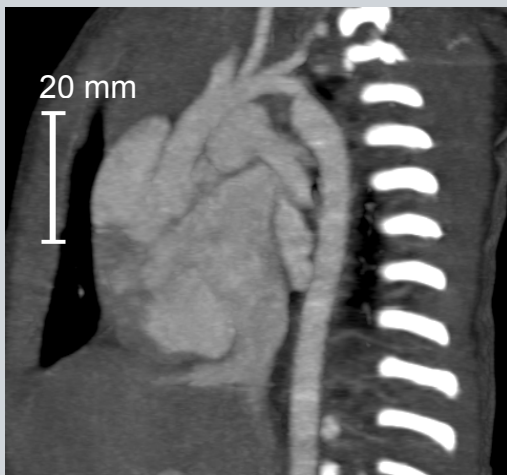
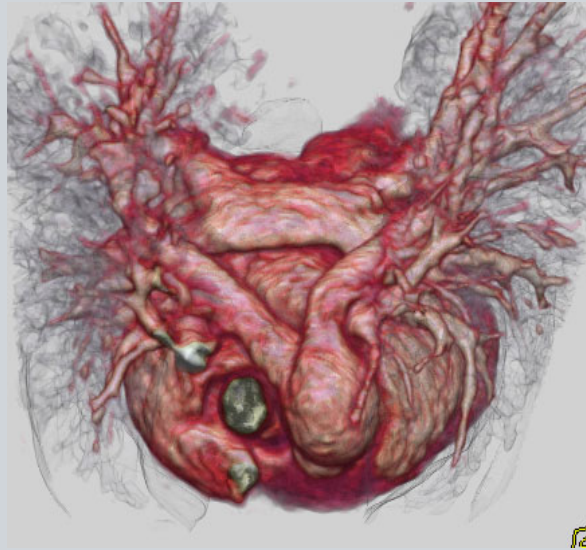
DIAGNOSIS

The aortic coarctation and the anomalous pulmonary venous connection to the abnormal site of the atrium are shown in the Dual Source CT images below. Dual Source CT could confirm the morphologies of these great vessels, which were difficult to discern by echocardiography alone. The morphology of the cardiac chambers was also well detected as diagnosed by echocardiography. Based on these findings, palliative surgical correction was planned.

COMMENTS

The Dual Source CT images were of diagnostic quality despite the small size of the patient's heart and despite his high heart rate of 142 bpm. The patient could not hold his breath, but scan time was short enough to suppress the influence of banding artifacts. The high CT image quality made precise surgery planning possible.

This scan was performed shortly after installation of the Dual Source CT at our centre, but with more experience, we have become able to reduce the dose for similar scans of pediatric patients by about 70%.



EXAMINATION PROTOCOL

Scanner	SOMATOM Definition
Scan area	<i>Thorax</i>
Scan length	<i>80 mm</i>
Scan time	<i>3 s</i>
Scan direction	<i>Cranio -Caudal</i>
kV	<i>100 kV / 100 kV</i>
Effective mAs	<i>280 mAs /rot</i>
Rotation time	<i>0.33 s</i>
Slice collimation	<i>0.6 mm</i>
Reconstructed slice thickness	<i>0.6 mm</i>
Increment	<i>0.5 mm</i>
Kernel	<i>B25f</i>

The information presented in this case study is for illustration only and is not intended to be relied upon by the reader for instruction as to the practice of medicine. Any health care practitioner reading this information is reminded that they must use their own learning, training and expertise in dealing with their individual patients. This material does not substitute for that duty and is not intended by Siemens Medical Systems to be used for any purpose in that regard.

The drugs and doses mentioned herein are consistent with the approval labelling for uses and/or indications of the drug. The treating physician bears the sole responsibility for the diagnosis and treatment of patients, including drugs and doses prescribed in connection with such use. The Operating Instructions must always be strictly followed when operating the CT System. The source for the technical data is the corresponding data sheets. Results may vary.