Canon

Pediatric W-Volume

High Resolution Chest

Inspiration

Expiration

HISTORY

Three-year-old female presented with cough and wheezing. A high resolution chest CT without intravenous contrast was requested for bronchiectasis assessment.

TECHNOLOGY

An inspiration and expiration 0.5 mm wide-volume acquisition was performed on the AquilionONE™ 640, which allows coverage of up to 160 mm of anatomy per rotation. Radiation dose was optimized by the integration of ^SUREExposure™ 3D and AIDR 3D (Adaptive Iterative Dose Reduction).

FINDINGS

The images demonstrate expiratory narrowing of the lower trachea and both main bronchi consistent with tracheobronchomalacia as well as multifocal sub segmental atelectasis. There was no sign of bronchiectasis. The esophagus and stomach are distended with gas, likely related to airway management.

CONCLUSION

AquilionONE wide area detector enables fast acquisition with reduced motion imaging. AIDR 3D integrated with ^SUREExposure 3D provides radiation dose reduction while maintaining diagnostic image quality.

Scan Mode	kVp	mA	Scan Range	Dose Reduction	CTDIvol	DLP	Effective Dose
W-Volume	100	40	180 mm	AIDR 3D integrated	1.25 mGy	27.6 mGy·cm	0.6 mSv*

*AAPM Report 96, k Factor 0.022
The protocol above was performed in inspiration and expiration.

FEATURES AND SAFETY

Volumetric Coverage

AquilionONE takes advantage of its high resolution 0.5 mm wide detector technology that can cover up to 16 cm of anatomy in a single rotation. For pediatric patients this means that the majority of exams can be performed in just one rotation as fast as 0.275 seconds with no table movement, reducing the risk of image degradation due to patient motion. Therefore, the use of sedation can be reduced or even eliminated completely in appropriate clinical situations.

AIDR 3D and SUREExposure

Canon Medical Systems' comprehensive dose management tools include SUREExposure and AIDR 3D. These advanced technologies and dose reduction capabilities help to improve patient safety in every CT scan.

The integration of SUREExposure 3D and AIDR 3D optimizes the radiation dose for every procedure. They are designed to adapt to the individual patient and clinical task to automatically achieve dose reduction while improving image quality.

SUREExposure 3D controls the mA modulation (XYZ patient axis) based on the anatomical region and the lateral and antero-posterior (AP) scanograms, maintaining an ideal noise level for optimal image quality. AIDR 3D and SUREExposure 3D make the dose reduction process easier and applicable to all clinical tasks and patients.

i-Station

Friendly and interactive, the i-Station monitor displayed on the front of the gantry is used to check the patient name and ID, display ECG waveforms and provide breathing instructions. In the case of pediatric patients, a colorful cartoon is displayed instructing the patient to hold still and perform breathing per given instructions, reducing the potential for repeat images secondary to motion and inadequate breath holding.
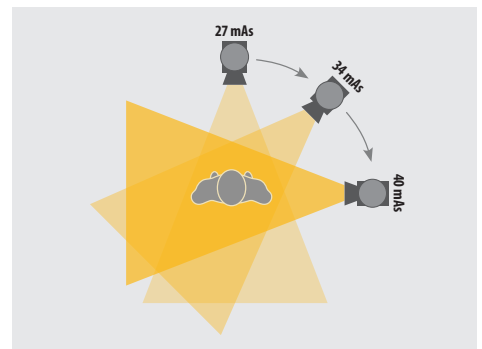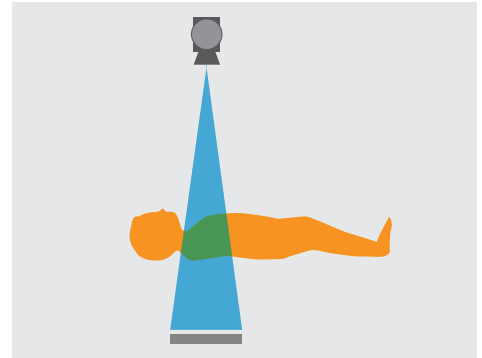
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