

CT:1

CT sieverts (Sv)

(1). rems .

CT Monte Carlo

Jessen (5)

CT

CT (dose length product)

CT 가 ,

CT 가 . 2000 0.0023, 0.017, 0.019 mSv/mGy · cm

CT 가 (200% 가) , (3).

CT 가

CT 가 (1 - 4),

. 2000 (the United States

Food and Drug Administration's Center for Devices and Radiological Health) 43%

CT (4).

CT

CT

CT

CT 가 (6). Brenner

1 CT CT 0.18% 0.07%

CT 가 (7).

CT

x

roentgens (R) 10 2

coulombs per kilogram (C/kg)

x

grays (Gy) rads

CT

CT

CT

CT x

CT x

1

2004 9 24 2005 1 5

1

가 x

CT

CT dose index (CTDI)가

(

CTDI_w 'w' 'weighted'

(CTDI_w = 1/3 CTDI_{center} + 1/3CTDI_{surface}).

가 CTDI_{vol} milligrays (mGy)

CT

(8).

CT

가

(8), CT

가

0.375

CT

CT

(3,

가

4).

CT (geom -

etry),

가

mAs

mAs

가

가

가

가

mAs

focal spot

CT

CT

x

가 x

Table 1. Weight-Based Low Dose Pediatric CT Protocol for a 4-slice Scanner (Lightspeed QX/i; GE Medical Systems, Milwaukee, WI)

kVp/mA	60 kg	40 - 59.9 kg	20 - 39.9 kg	10 - 19.9 kg	5 - 9.9 kg	< 5 kg
Chest	120/80	120/70	100/70	80/90	80/70	80/50
High-resolution Chest*	120/120	120/100	120/60	100/90	100/70	100/50
Abdomen & Pelvis	100/180	100/160	100/140	100/120	80/100	80/60
Brain*	120/200	120/170	120/160	100/220	100/180	100/160
80 kVp / 10 mA		0.5	(* - , CT 1			CT 0.5

Table 2. Weight-Based Low Dose Pediatric CT Protocol for a 16-slice Scanner (SOMATOM Sensation 16; Siemens, Forchheim, Germany)

kVp/mA	60 kg	40 - 59.9 kg	20 - 39.9 kg	10 - 19.9 kg	5 - 9.9 kg	< 5 kg
Chest	100/100	80/130	80/90	80/65	80/50	80/40
High-resolution Chest*	140/90	120/110	120/80	100/120	100/80	100/50
Abdomen & Pelvis	100/130	80/180	80/130	80/105	80/80	80/65
Brain*	120/200	120/170	120/160	100/190	100/140	100/120
80 kVp / 50 mA		0.375	(* - , CT 1			CT 0.27

, , 4 CT 가
 16 CT 가 가 가 (20).
 (Table 1, 2).
 (CT) CT CT , x ,
 가 , CT 가 filter (9) CT CT
 가 (10). (21) (22)
 , CT CT 가
 CT 가 CT 가
 CT (3). 가 CT 가
 , 가 가 가가 가
 (11). 가 가 가
 CT 가 CT 가 CT
 가 CT 가 CT 가 CT
 (12, 13). CT (14, 15), CT (16, 17). CT
 CT 가 CT 가 CT
 (CT 180 ° , CT 360 °) x, y, z CT 가 CT
 (automatic CT tube current modulation)
 , CT (18, 19). CT (noise index) CT
 가 , CT

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Pediatric CT: Understanding of Radiation Dose and Optimization of Imaging Techniques¹

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The number of CT examinations is dramatically increasing due to recent technical advances including multi-slice spiral CT. Although the benefits of CT outweigh the risks of radiation exposure of CT, radiologists should alert to the potential harmful effects of CT and avoid unnecessarily high CT dose, especially for pediatric CT examinations. To accomplish this, we should understand CT radiation dose and be familiar with imaging techniques of reducing CT dose without degrading diagnostic image quality. In addition, it is important to spread this balanced and useful information into CT referring clinicians, radiologists in training, and medical students.

Index words : Computed tomography (CT), in infants and children
Computed tomography (CT), radiation exposure
Radiations, exposure to patients and personnel

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