Session TH-SAM-332 - CE-Imaging: Physics and Technology of Computed Tomography IV
Talk #4
Start Time 8:55:00 AM
Talk Length 25
Koos Geleijns

1. Fundamental considerations exclude assessment of the computed tomography dose index (CTDI) for an axial volume CT scanner with a coverage of 16 cm:

   A. If the weighting factors of 1/3 (center) and 2/3 (periphery) are not adapted appropriately for the axial volume CT acquisition
   B. When CTDI_periphery is measured with a 100mm long pencil ionization chamber
   C. When CTDI_center is measured with a 100mm long pencil ionization chamber
   D. If prevailing temperature and air pressure are not recorded at the time of the measurements
   E. If the CT dose phantoms (head and body size) are shorter than 70cm

Answer (B) When CTDI_periphery is measured with a 100mm long pencil ionization chamber
Bauhs JA, Vrieze TJ, Primak AN, Bruesewitz MR, McCollough CH.
CT dosimetry: comparison of measurement techniques and devices.
Radiographics. 2008 Jan-Feb;28(1):245-53.

2. Dose assessment for axial acquisitions with an axial volume CT scanner with a coverage of 16cm should take into account the effect of:

   A. Overranging
   B. Overbeaming
   C. Post patient collimation
   D. The pitch factor
   E. Focal spot size

Answer (B) Overbeaming
Bauhs JA, Vrieze TJ, Primak AN, Bruesewitz MR, McCollough CH.
CT dosimetry: comparison of measurement techniques and devices.
Radiographics. 2008 Jan-Feb;28(1):245-53.

3. Current practice for acceptance testing of the dosimetric performance of an axial volume CT scanner with coverage of 16 cm is based on measurements with:

   A. Optically stimulated luminescence (OSL) CT dosimeters
   B. 35 cm long CT dose phantoms (head and body size)
   C. A 30 cm long CT dose (pencil) ionization chamber
   D. Standard 15cm long CT dose phantoms (head and body size) and a 100mm long pencil ionization chamber
   E. A small Farmer type (thimble) ionization chamber and standard 15cm long CT dose phantoms (head and body size)

Answer (D) Standard 15cm long CT dose phantoms (head and body size) and a 100mm long pencil
Ionization chamber
Mori S, Endo M, Nishizawa K, Tsunoo T, Aoyama T, Fujiwara H, Murase K.
Enlarged longitudinal dose profiles in cone-beam CT and the need for modified

dosimetry.
Med Phys. 2005 Apr;32(4):1061-9.