Introduction: Splenomegaly is involved in a wide spectrum of abnormalities, which might lead to an increase in organ size. Splenic enlargement on CT is diagnosed basing on subjective criteria. The product of the length, estimated height and thickness of the spleen ("spleenic index", cut-off ≥480) has also been proposed as an indicator for evaluating splenic size on CT.

Methods: Abdominal CT examinations of 153 patients’ (77 females, 76 males) were retrospectively analysed in terms of maximal length, thickness, hilum thickness (axial plane), height (longest measurement in coronal plane), 90° height (maximum vertical height at coronal section), estimated height (number of axial scans where spleen was visible multiplied by the thickness of CT scans) (Impax Software) and real spleen volume (Vitrea software). Two-dimensional and three-dimensional coefficients were acquired through proper mathematical formulas. Splenomegaly was measured from the parasternal long-axis view at end-diastole.

Results: There was a statistically significant correlation between all single, field and volume measurements and real volume (p < 0.05). For single measurements, the correlation is the strongest for height (r = 0.813, sensitivity 65%, specificity 91.7%, PPV 71.4%, NPV 95.6%). For two-dimensional, it is the coefficient calculated from length and 90° height (r = 0.918, 85%, 94.7%, 70.8%, 97.7%). For three-dimensional, it is the coefficient calculated from length, 90° height and hilum thickness (r = 0.919, 75%, 96.2%, 75%, 96.2%). Cut-off for spleen index from our calculations was ≥1.148.

Conclusion: Coefficient from length, 90° height and hilum thickness correlate best with the real volume of the spleen. Spleenic index in our study is far from the perfection for clinical practice.

http://dx.doi.org/10.1016/j.pbj.2017.07.051

PS123

Evaluation of spleen volume: Practical diagnostic role of linear measurements, 2D and 3D coefficients in computed tomography

Justyna Teczár*, Iwona Kucybała, Anna Gajdosz, Kamil Krupa, Jakub Wnuk, Maria Widomska

Students’ Scientific Group at the Department of Diagnostic Imaging, Chair of Radiology, JU CM, Poland

E-mail address: justyna.teczar@tlen.pl (J. Teczár).

Aim: The aim of the study was to find which linear measurements, field and volume coefficients correlate best with the real volume of the spleen and can be further used for determination of splenomegaly.

Introduction: Spleen is involved in a wide spectrum of abnormalities, which might lead to an increase in organ size. Splenic enlargement on CT is diagnosed basing on subjective criteria. The product of the length, estimated height and thickness of the spleen (“spleenic index”, cut-off ≥480) has also been proposed as an indicator for evaluating splenic size on CT.

Methods: Abdominal CT examinations of 153 patients’ (77 females, 76 males) were retrospectively analysed in terms of maximal length, thickness, hilum thickness (axial plane), height (longest measurement in coronal plane), 90° height (maximum vertical height at coronal section), estimated height (number of axial scans where spleen was visible multiplied by the thickness of CT scans) (Impax Software) and real spleen volume (Vitrea software). Two-dimensional and three-dimensional coefficients were acquired through proper mathematical formulas. Splenomegaly cut-off: 314.5 ml. Pearson’s correlation coefficient was calculated for the relationship between single, field, volume measurements and real volume (Statistica software).

Results: There was a statistically significant correlation between all single, field and volume measurements and real volume (p < 0.05). For single measurements, the correlation is the strongest for height (r = 0.813, sensitivity 65%, specificity 91.7%, PPV 71.4%, NPV 95.6%). For two-dimensional, it is the coefficient calculated from length and 90° height (r = 0.918, 85%, 94.7%, 70.8%, 97.7%). For three-dimensional, it is the coefficient calculated from length, 90° height and hilum thickness (r = 0.919, 75%, 96.2%, 75%, 96.2%). Cut-off for spleen index from our calculations was ≥1.148.

Conclusion: Coefficient from length, 90° height and hilum thickness correlate best with the real volume of the spleen.