Different Assessment Of AAA Size With Ultrasound And MDCT.

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OBJECTIVE:

Accurate measurements of abdominal aortic aneurysm (AAA) diameters with both multiple detector computed tomography (MDCT) and ultrasound (US) are essential for screening, planning and surgical intervention and follow-up after endovascular repair. Clinical assessment of maximal AAA diameter assumes clinical equivalency between US and MDCT. This study was undertaken to compare maximal AAA diameter by US and MDCT, and to assess the effect that AAA angulation and length of neck has on each measurement.

METHODS:

Anteroposterior and transverse diameters were measured outer to outer, by US and MDCT, while aortic angulations and minor axis diameters were measured prospectively (neck length ≥2.5 cm). Correlations were performed between all image diameters, and differences in their means were assessed with paired t-test.

RESULTS:

213 patients were analyzed. Mean anteroposterior diameter measured by MDCT (59.0 mm) was insignificantly larger (P>0.05) than those measured by US (58.1 mm). The difference between transverse diameter of AAA measured by US and MDCT (3.6 mm) was significant (P<0.05).

In cases of AAA without angulations mean AAA diameter measured by US was 5.4 (±0.68) cm and 5.5 (±0.58) cm measured by MDCT (P=0.4), with excellent correlation (r=0.94).

In cases of AAA with angulation ≥ 30° mean AAA diameter measured by US was 5.6 (±0.39) cm and 5.8 (± 0.43) cm measured by MDCT (P = 0.2), with good correlation for this group (r=0.69).

In cases of AAA with angulation ≤30° mean AAA diameter measured by US was 5.7 (±0.83) cm and 6.0 (±0.79) cm measured by MDCT; significantly larger (P<0.001).

Difficulties in AAA diameter are caused by aortic tortuosity. Diameter of this tortuous aorta is exaggerated with a true transverse view and is correctly measured only in an oblique view, coronal images eliminate this problem.

CONCLUSION:

There is good correlation between the AAA diameter measured by MDCT and US, but in cases when aortic neck angulation is lesser than 30 degrees MDCT measurement in transverse plane becomes unreliable.