Does Size Matter? Agreement in Pancreatic Cyst Size Between EUS, CT, and MR

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BACKGROUND. Consensus guidelines suggest surgical resection for pancreatic cystic lesions of >3 cm in diameter and cysts that grow in size, yet the agreement and accuracy of the imaging modalities that generate size estimates have not been investigated. The aim of this study was to compare size measures generated by multiple imaging modalities during evaluation of pancreatic cysts.

METHODS. A retrospective chart review was performed on all patients presenting to a tertiary referral center from 2000-08 for EUS evaluation of pancreatic cystic lesions. The largest one-dimensional cyst diameters from CT, MRI/MRCP, and EUS reports were collated. Measurements from surgical pathology, when available, were included for comparison. Eligible patients had two or more size estimates from studies occurring within 90 days of each other. Differences in cyst diameter were calculated between available imaging studies and between imaging and surgical pathology.

RESULTS. 64 patients had CT and EUS, 28 had MRI/MRCP and EUS, and 21 had MRI/MRCP and CT size measures (Fig.1). Median size differences between imaging studies are as follows: EUS - CT (i.e., size determined by EUS minus size determined by CT) = -0.055 cm (range +1 to -1.4), EUS - MRI = -0.14 (+1.2 to -1.7), and CT - MRI = +0.1 (+0.8 to -0.8). Estimates from surgical pathology were compared to 12 EUS, 13 CT, and 8 MRI/MRCP studies (Fig.2). Median size differences between imaging and pathology are as follows: EUS - Path = +0.15 cm (range +2 to -1.91), CT - Path = +0.2 (+2 to -0.3), and MRI - Path = -0.25 (+2 to -2.1). There were 13 instances in which one imaging study measured a cyst at 3 cm or below while a second study found the size to be >3 cm.

CONCLUSION. There is notable variation in size estimates of pancreatic cysts by different imaging modalities, which should be taken into account during management decisions. Consistent use of a single imaging study is recommended during follow-up surveillance, realizing that variability in size may simply reflect the precision of the measurement. The precision of imaging modalities for measuring pancreatic cysts needs to be prospectively defined if change in size is to be reliably used for clinical management.