



Contrast-enhanced power Doppler endoscopic ultrasound used for the differential diagnosis of chronic pancreatitis and pancreatic cancer.

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BACKGROUND:

Endoscopic ultrasound (EUS) and EUS-guided fine needle aspiration have a moderate accuracy for the differential diagnosis of focal pancreatic masses, especially in the setting of chronic pancreatitis. Contrast-enhanced color and power Doppler endoscopic ultrasound were previously reported to be useful for the differential diagnosis, as a qualitative tool mainly used in combination with pulsed Doppler. The descriptive pattern of venous and/or arterial signals was previously employed to characterize benign and malignant focal masses, but the quantitative assessment of vascular index has not been reported yet, to the best of our knowledge.

AIM:

The aim of our study was to prospectively assess the accuracy of contrast-enhanced power Doppler EUS to differentiate focal masses in chronic pancreatitis (N=12) and pancreatic adenocarcinoma (N=20). A second generation contrast agent (Sonovue 2.4 mL) was injected intravenously, with all Doppler calculations made before and after contrast-enhancement. Power Doppler vascularity index (PDVI) was calculated as the percentage of pixels with Doppler signal divided to the total percentage of pixels in the region of interest (focal mass). A post-processing analysis based on specially designed software was used to analyze the contrast-enhanced power Doppler EUS movies. PDVI of each individual image was calculated in the portal venous phase and averaged during a 20 seconds movie.

RESULTS:

Based on the study group of 32 patients, the sensitivity, specificity and accuracy of differentiation of benign and malignant cases were 90.5%, 90.1% and 90.6%, based on a cut-off of 20% for the mean PDVI values recorded inside the region of interest. The positive predictive value and negative predictive value

were 95% and 83.3%, respectively. High PDVI values (>20%) indicating hypervascular lesions were suggestive of benign (inflammatory) masses, while low PDVI values (<20%) indicating hypovascular lesions were suggestive of pancreatic adenocarcinoma.

CONCLUSIONS Contrast-enhanced power Doppler EUS is a promising method that allows characterization and differentiation of focal pancreatic masses. Large studies with adequate power will have to establish the clinical impact of this procedure, especially in combination with contrast-specific low mechanical index software, which reliably excludes blooming and flash artifacts.