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Summary

THE ROLE OF QUANTITATIVE CONTRAST ENHANCED-ENDOSCOPIC ULTRASOUND IN THE DIFFERENTIAL DIAGNOSIS BETWEEN PANCREATIC NEUROENDOCRINE NEOPLASMS AND PANCREATIC ADENOCARCINOMAS : A PROSPECTIVE STUDY

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UEG Week Berlin 2025 Poster

October 4, 2025

Quantitative contrast-enhanced endoscopic ultrasound using VueBox software distinguished pancreatic neuroendocrine neoplasms from pancreatic ductal adenocarcinomas with 96.1% accuracy in a prospective study of 73 patients.

KEY POINTS

- Among 73 patients (51 PDACs, 22 pNENs) at San Raffaele Hospital, quantitative CE-EUS parameters differed significantly between tumor types, with pNENs showing consistently higher contrast uptake values for MeanLin, PE, WiAUC, WiR, WiPI, WoAUC, and WiWoAUC (all $p<0.001$).
- The wash-in perfusion index (WiPI, AUC 0.838) and wash-in rate (WiR, AUC 0.804) were the best discriminators individually; combining them via logistic regression achieved an AUC of 0.961.
- Operator-based CE-EUS evaluation showed hypo-enhancement in 88.2% of PDACs versus only 4.6% of pNENs ($p<0.001$), but conventional CE-EUS is limited by subjectivity and low interobserver agreement even among expert endosonographers.
- Multivariate analysis found only lesion diameter significantly correlated with local transit time in pNENs ($p<0.0001$), with no patient- or tumor-level variables showing significant associations with contrast uptake in the full cohort.
- This proof-of-concept study suggests quantitative CE-EUS may offer a reproducible, non-invasive tool for pancreatic tumor diagnosis, staging, and treatment planning, potentially reducing operator dependency.

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