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CONTRAST-ENHANCED ENDO-ULTRASONOGRAPHY OF A NEUROENDOCRINE PANCREATIC TUMOR

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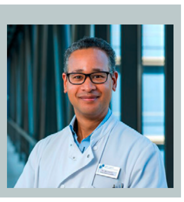


PATIENT INFORMATION/ INDICATION

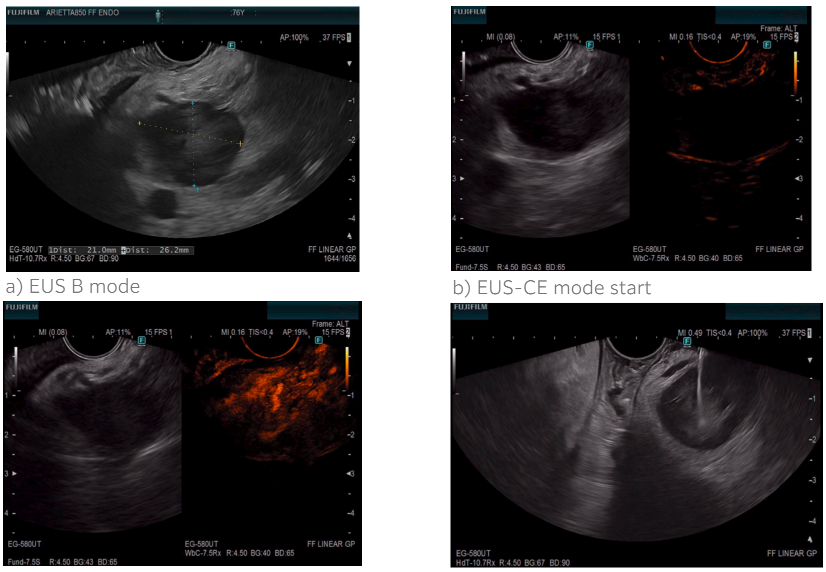
In a 76-year-old man, a solid mass was incidentally found in the head of the pancreas on a CT abdomen. Differential diagnosis of this solid pancreatic tumor includes ductal adenocarcinoma, neuroendocrine tumor (NET), focal pancreatitis, as well as rarer diagnoses such as lymphoma, metastasis, pseudopapillary tumor, and autoimmune focal pancreatitis.

METHODS & RESULTS

Using endoscopic ultrasonography, the pancreas is assessed. We used a Fujifilm EG-580UT linear echo endoscope in combination with an Arietta 850 ultrasound system from Fujifilm (FUJIFILM Healthcare Europe GmbH, Ratingen, Germany). A well-defined hypoechoic mass is observed in the head of the pancreas.
To assess the microperfusion, intravenous SonoVue contrast (Bracco Int. Amsterdam, NL) agent is administered. With the contrast harmonic imaging setting, the non-linear signals from the intravascular bubbles are displayed in color, and the tissue-specific background signals are filtered out. There is a notable intralesional, homogeneous hyperenhancement, indicating hypervascularization of the lesion. Hypervascularization argues against the diagnosis of adenocarcinoma, as these tumors often have low vascular density. Given the ultrasonographic characteristics and homogeneous intralesional hypervascularization, the most likely diagnosis is a pancreatic NET. Tissue is obtained through FNB with an Acquire 22G FNB needle (Boston Scientific, Massachusetts, USA). On microscopy, H&E staining showed atypical cells that were strongly positive for Chromogranin A and Synaptophysin. The Ki67 was less than 1%. In conclusion, it is a NET grade 1.

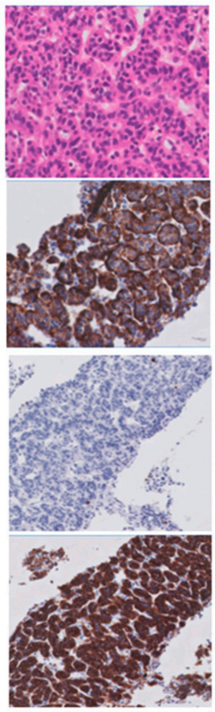
CONCLUSION

Various meta-analyses show good sensitivity (91-94%) and specificity (96-97%) for contrast-enhanced EUS (CE-EUS). A recent meta-analysis demonstrated a significant diagnostic improvement with the addition of contrast to EUS (OR 3 p 0.03; Yamashita et al. Endosc Int Open 2022).
More research is needed to optimize the applicability of CE-EUS for pancreatic NETs. Current research primarily focuses on ductal adenocarcinoma. The diagnosis of a NET is currently always made with a tissue diagnosis. In the future, FNB may not be necessary for small NETs without resection indication with specific sonographic features. Additional intraprocedural techniques such as DFI (Detective Flow Imaging), artificial intelligence but also radiomics could potentially provide additional diagnostic and prognostic data in this context.



a) EUS B mode
b) EUS-CE mode start
c) EUS-CE after 30s
d) EUS-FNB

Figure 1: a) EUS B mode image of the lesion in the pancreatic head, b) EUS-CE mode before SonoVue(R) injection, c) EUS-CE 30 seconds after SonoVue(R) injection showing hyperenhancement of the lesion, d) EUS-FNB with a 22G needle



a) H&E
b) Chromogranin A
c) Ki67
d) Synaptofysin

Figure 2 shows histologic evaluation with positive staining for a) H&E, b) Chromogranin A, c) Ki67 and d) Synaptofysin, indicating a neuroendocrine tumor.

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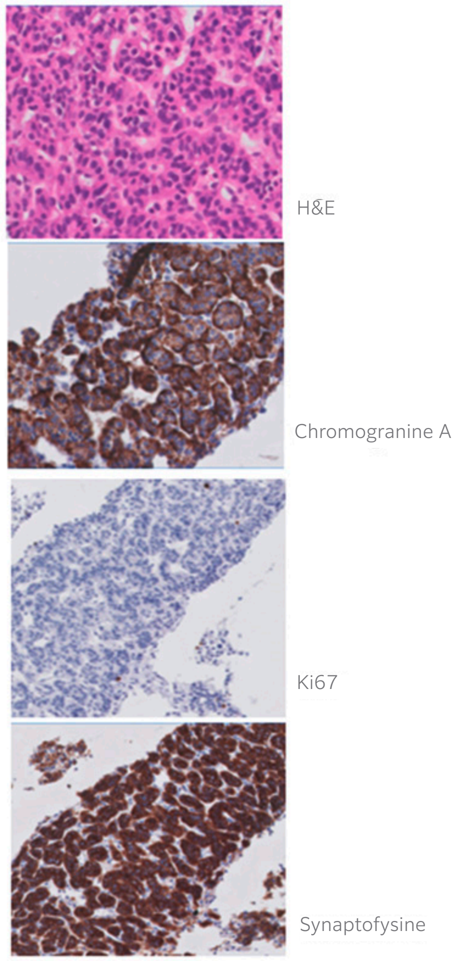

Figure 2 shows histologic evaluation with positive staining for Chromogranin A, Ki67 and Synaptofysin, indicating a neroendocrine tumor