Novel technique for diagnosis of mucinous cystic neoplasms: in vivo and ex vivo confocal laser endomicroscopy

Rohan M. Modi, MD,[1] Amrit K. Kamboj, MD,[2] Benjamin Swanson, MD, PhD,[3] Darwin L. Conwell, MD, MS,[4] Somashekar G. Krishna, MD, MPH[4]

A 51-year-old woman presented with abdominal pain, and a CT scan of the abdomen revealed a cystic lesion in the tail of the pancreas measuring 4.4 cm × 3.8 cm. An EUS demonstrated a 4.1 cm × 4.0 cm anechoic cystic lesion without main pancreatic duct involvement. The differential diagnosis was broad and included intraductal papillary mucinous neoplasm (IPMN), mucinous cystic neoplasm (MCN), and serous cystadenoma (SCA). However, MCN was slightly higher on the differential diagnosis because these lesions are typically seen in middle-aged women, with the majority of lesions seen in the pancreatic body or tail without communication with the main pancreatic duct.

Here we present a relatively new technique, needle-based confocal laser endomicroscopy (nCLE), which allows for real-time image acquisition during EUS. The nCLE demonstrated solitary epithelial bands without any papillary conformation (Video 1, available online at www.VideoGIE.org) (Fig. 1). These bands are best described as having a horizon-type configuration with variable thickness, suggestive of a diagnosis of MCN.[1] FNA revealed a carcinoembryonic antigen (CEA) level of 75.5 ng/mL, and cytologic analysis demonstrated the presence of mucin.

Although MCNs can progress to malignancy, the decision regarding surgical resection is often institution dependent.[2] Considering the size of the cystic lesion and the strong suspicion of a mucinous cyst (either IPMN or MCN), a decision was made for distal pancreatectomy. After surgical resection, ex vivo probe-based confocal laser endomicroscopy (pCLE) examination of the cyst was performed with a Gastroflex ultrahigh-definition probe (Mauna Kea Technologies, Paris, France). The ex vivo pCLE findings correlated with the in vivo EUS-nCLE findings (Video 1; Fig. 2), and surgical histopathologic analysis revealed an MCN with low-grade dysplasia (Fig. 3).

Here we present in vivo EUS-nCLE findings suggestive of MCN that were correlated with the results of postsurgical ex vivo pCLE examination. Three major trials have been conducted to assess the accuracy of nCLE findings in diagnosing pancreatic cystic lesions (PCLs).[3,4] For MCNs specifically, 1 study found a diagnostic

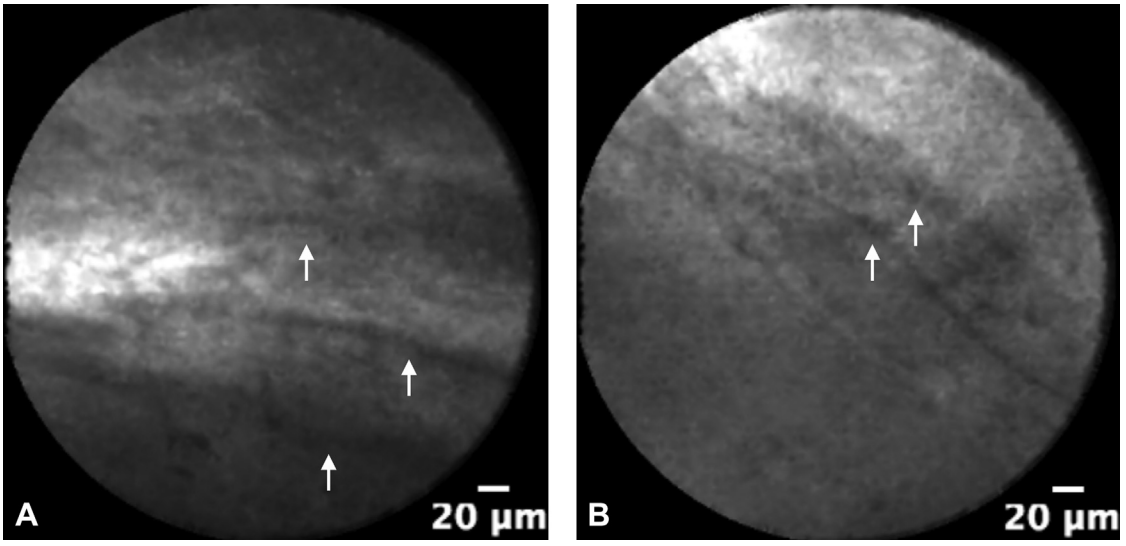

Figure 1. In vivo EUS needle-based confocal laser endomicroscopic view showing solitary epithelial bands without papillary conformation.

Written transcript of the video audio is available online at www.VideoGIE.org.

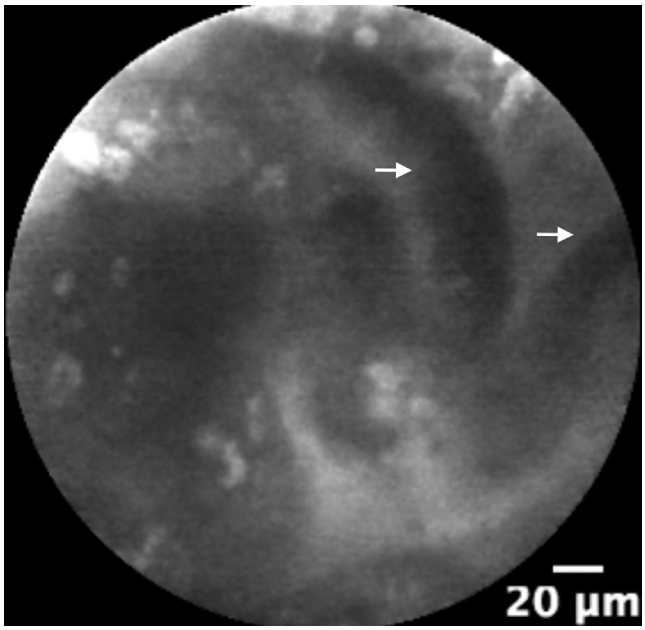

Figure 2. Postsurgical ex vivo confocal laser endomicroscopic view of features consistent with in vivo findings showing solitary epithelial bands.

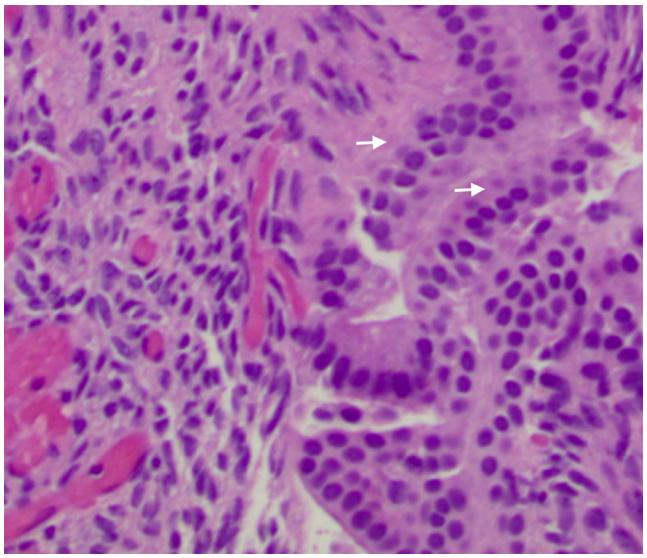

Figure 3. Histopathologic view of surgical specimen showing focal atypical glands *(arrows)* with adjacent area demonstrating fibrosis and confirming a low-grade mucinous neoplasm (H&E, orig. mag. ×20).

accuracy of 90% for nCLE, with a sensitivity of 67% and specificity of 96%.[1] However, given the novelty of the technique, these studies are limited by their sample size and surgical histopathologic confirmation. This case illustrates how nCLE can further supplement EUS and cytologic analysis in the workup of MCNs. Our study adds to the increasing body of literature demonstrating the utility of nCLE in the diagnosis and management of PCLs.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviations: CEA, carcinoembryonic antigen; IPMN, intraductal papillary mucinous neoplasm; MCN, mucinous cystic neoplasm; nCLE, needle-based confocal laser endomicroscopy; PCL, pancreatic cystic lesion; pCLE, probe-based confocal laser endomicroscopy; SCA, serous cystadenoma.

REFERENCES

1. Napoleon B, Lemaistre AI, Pujol B, et al. In vivo characterization of pancreatic cystic lesions by needle-based confocal laser endomicroscopy (nCLE): proposition of a comprehensive nCLE classification confirmed by an external retrospective evaluation. Surg Endosc 2016;30:2603-12.
2. Tanaka M, Fernandez-del Castillo C, Adsay V, et al. International consensus guidelines 2012 for the management of IPMN and MCN of the pancreas. Pancreatology 2012;12:183-97.
3. Konda VJ, Meining A, Jamil LH, et al. A pilot study of in vivo identification of pancreatic cystic neoplasms with needle-based confocal laser endomicroscopy under endosonographic guidance. Endoscopy 2013;45:1006-13.
4. Nakai Y, Iwashita T, Park do H, et al. Diagnosis of pancreatic cysts: EUS-guided, through-the-needle confocal laser-induced endomicroscopy and cystoscopy trial: DETECT study. Gastrointest Endosc 2015;81:1204-14.

Department of Internal Medicine, The Ohio State University Wexner Medical Center (1), The Ohio State University College of Medicine (2), Department of Pathology (3), Department of Gastroenterology, Hepatology and Nutrition, The Ohio State University Wexner Medical Center, Columbus, Ohio, USA (4).

This study was funded by the ACG pilot research grant to SK (ClinicalTrials.gov NCT02516488).

http://dx.doi.org/10.1016/j.vgie.2016.12.003