Use of needle-based confocal laser endomicroscopy in the diagnosis of multifocal intraductal papillary mucinous neoplasm with high grade dysplasia

A 64-year-old woman with newly diagnosed type 2 diabetes mellitus was admitted with intermittent abdominal pain of 3 years’ duration. Computed tomography (CT) showed multifocal pancreatic cystic lesions with a dilated main pancreatic duct and calcification of a cyst wall (Fig. 1), raising suspicion of a mucinous neoplasm of the pancreas.

Needle-based confocal laser endomicroscopy (nCLE) (AQ-Flex 19; Mauna Kea Technologies, France) is a novel imaging technique that enables real time in vivo microscopic imaging of a cyst wall during endoscopy, with a promising diagnostic yield [1–3]. The diagnosis of intraductal papillary mucinous neoplasm (IPMN) is indicated by the presence of finger-like papillae, while mucinous cystic neoplasms (MCNs) have a characteristic single band-like epithelium on nCLE [1–3]. We performed endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) in our patient, with EUS confirming multifocal anechoic cystic lesions extending from the head of the pancreas to the tail, with hyperechoic margins. nCLE showed dark aggregates of cells with surrounding small vessels (Video 1), which had indicated features concerning for neoplasia in an earlier study [4]. The cyst fluid had a mucinous appearance and viscosity, and FNA cytology confirmed neoplastic mucinous cells (Fig. 2a, b). The patient consequently underwent a total pancreatectomy (Fig. 3). Histopathological examination revealed an IPMN with high grade dysplasia (Fig. 4). Lymph node sampling was negative for metastasis.

Wider use of nCLE has resulted in consensus on some of the characteristic features of common pancreatic cystic lesions, but this is an evolving area with scope for further definition of diagnostic features. In this case, nCLE images showed features concerning for neoplasia prior to surgery. The pattern of dark aggregates of cells with surrounding small vessels suggests neoplastic transformation.
aggregates of cells surrounded by small vessels may be a promising characteristic in identification of malignant pancreatic cystic lesions (MPCLs). Further studies are required to confirm these findings and to establish nCLE criteria in the diagnosis of MPCLs.

Competing interests
None

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Acknowledgment
The authors thank Sameer Siddique MD, from Einstein Medical Center Philadelphia, United States, for his kind help in language editing.

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DOI https://doi.org/10.1055/j-0043-115889
Published online: 3.8.2017
Endoscopy 2017; 49: E277–E278
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Stuttgart · New York
ISSN 0013-726X

Fig. 3 The surgically resected specimen. Throughout the pancreas there were multifocal cystic lesions filled with mucus.

Fig. 4 Histopathological appearance shows papillae protruding into the cyst lumen and neoplastic mucinous cells arranged in an irregular multilamellar pattern without infiltration (hematoxylin and eosin [H&E], ×40).