Cellvizio Enables Real-Time Diagnosis of Serous Cystadenoma

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Technology Review

Optical biopsy with Needle-based Confocal Laser Endomicroscopy (nCLE) is a new imaging technology that provides microscopic level views of the mucosa. nCLE allows for a real-time in vivo diagnostic assessment of pancreatic cysts during Endoscopic Ultrasound-guided Fine Needle Aspiration (EUS-FNA) procedures. By placing the AQ-Flex 19 miniprobe through the lumen of a 19g EUS needle and against the cyst wall, it allows the endoscopist to make a real-time histological diagnosis.

Case Report

A 75 year old female was first referred with abdominal pain on her right side. The initial surveillance found a large hepatic cyst that was subsequently aspirated percutaneously. Results were benign and the patients pain was resolved. An additional small cystic lesion in the tail of the pancreas was also found in the initial surveillance. Continuous surveillance was performed for three years with periodic MRI/CT and the lesion was stable. Four years later, CT scan stated that the cystic lesion had grown in size over prior CT to at least 2.8 x 2.2 cm in size. Radiologists over the years read the cyst as Serous Cystadenoma or IPMN / Mucinous Cystadenoma but gave no definitive diagnosis.

One year later, CT scan was performed and the cyst was now stabilized. Patient remained asymptomatic but an EUS-FNA with nCLE was scheduled to determine the nature of the cyst (SCA or IPMN). Under EUS, the cyst had no communication with the pancreatic duct and was 2.8 x 2.6 cm in size.

2.5mL 10% Fluorescein was injected, imaging started T=1 minute post injection. The 19-Gauge EUS needle was inserted through the working channel of the EUS scope. EUS imaging was of the tail of the pancreas. Cellvizio was used for a total of 7 minutes including the short setup time. Cellvizio imaging was suggestive of a non-mucinous cyst due to the network of connected blood vessels with variable widths (so called Superficial Vascular Network (SVN) criteria) consistent with image criteria for a Serous Cystadenoma. CEA and cytology results showed no malignant cells with Hemosiderin Laden Macrophages seen.

Summary

All of the given information from the SVN image criteria seen on the nCLE images along with the low CEA and non-viscous fluid analysis correlated with an SCA. The CONTACT nCLE publication shows 100% specificity of the SVN criteria for the diagnosis of an SCA. Therefore, despite the cyst's recent increase in size and the patient being asymptomatic, the multidisciplinary team at UTMDACC agreed to proceed with surveillance and the frequency of surveillance to be extended due to the findings.

"Given the diagnostic uncertainty on CT and recent increase in size with non-diagnostic cytology and nCLE, it was reassuring and comforting that nCLE showed a classic pattern of Superficial Vascular Network, which has been found to be very specific of Serous Cystadenoma, so that we could follow this asymptomatic patient rather than sending her to surgery, despite the increase in cyst size." – Manoop Bhutani, M.D.
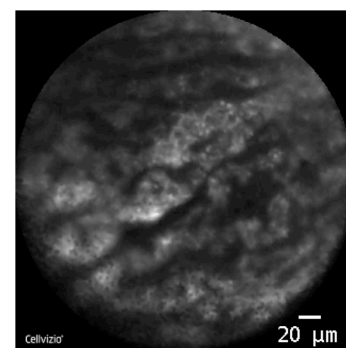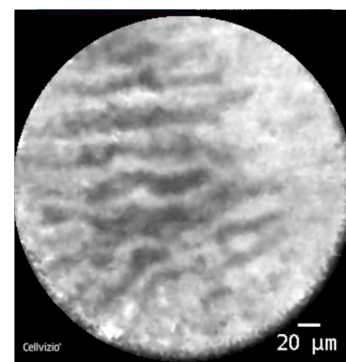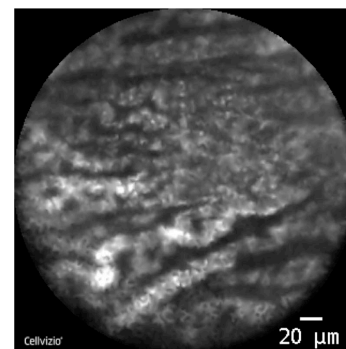

Fig 1-3: nCLE images of Superficial Vascular Networks (SVN)