Advances in Endoscopic Diagnosis and Management of Pancreatic Neoplasms

Nirav Thosani, MD, MHA

Atilla Ertan MD Chair in Gastroenterology, Hepatology and Nutrition
Director of Advanced Endoscopy
Director of Gastroenterology and Hepatology Clinical Research
Disclosures

- Abbvie, Speaker
- Boston Scientific Corp., Consultant & Speaker
- Emcision Inc, Research Support
- Endogastric Solutions, Consultant & Speaker
- Medtronic Inc., Consultant & Speaker
- Mederi Inc., Consultant
- Pentax America, Research Support, Consultant & Speaker
Diagnosis of PNs

- Detection
- Localization
- Tissue
- Acquisition
Detection of PNs

Endoscopic Ultrasound

Hypoechoic
Well circumscribed

Cystic Degeneration

Iso-echoic
Small size
Advanced Techniques

- Elastography
- Contrast Enhanced EUS
- Needle Based Confocal Endomicroscopy
Elastography

Measurement of tissue stiffness compared to background

Thosani N et al, Endosc Ultrasound 2016: 342-345
Clinical Case

- 22 year female
- Biochemically proven insulinoma
- Negative Workup for localization
  - Pancreas protocol CT scan
  - MRI
  - Octreotide scan
  - EUS
EUS Elastography
Endoscopic Management of PNs

Patient Population

- Poor surgical candidates
- Patients who do not want to undergo surgery
- Functional PNETs for symptom control
- Incomplete resection or Post surgical recurrence
PNs Ablation Techniques

- EUS Fine Needle Injection (FNI)
- Probe Based Ablation
EUS Guided RFA

- 1 Fr (0.33 mm) monopolar wire
- 19 G or 22G needle
- RFA applied at 10-20 mm tip (length) at 1-2 mm radial circumference
EUS Guided RFA

Mechanism of Action

• Coagulative necrosis

• Possible Immuno-modulation

• Marginal zone infiltration by neutrophils, macrophages, dendritic cells, natural killer lymphocytes and T & B lymphocytes
Clinical Case

Diarrhea, Dehydration, Hypokalemia, Achlorhydria

VIPoma

EUS RFA
RFA of Pancreatic Tumor
Clinical Case

Diarrhea, Dehydration, Hypokalemia, Achlorhydria
Pancreatic Cancer

Depiction of extent of tumor and involved vessels
Pancreatic Cancer

Tear drop portal vein and SMV confluence suggestive of definite involvement
Pancreatic Cancer

Celiac involvement

SMA Abutment
Pancreatic Cancer

Following EUS guided RFA
Complete opening of portal vein and SMV with pre-treatment tear drop appearance is no longer seen
Pancreatic Cancer

Following EUS guided RFA
The previously seen encasement of celiac artery has also resolved
with now we can see a fat plane between tumor and celiac
Pancreatic Cancer

2 month EUS guided RFA MRI shows further improvement as seen by no tumoral abutment of celiac, SMA and SMV
EUS RFA in PDAC

Survival (Months)

Pt 1
Pt 2
Pt 3
Pt 4
Pt 5
Pt 6
Pt 7
Pt 8
Pt 9
Pt 10

Thosani, DDW 2018
Future Directions

• EUS RFA
  • Low morbidity, short or no hospital stay, preservation of healthy surrounding tissue compared to surgery
  • Long term safety and efficacy data is needed