

# Cystic Lesions of the Pancreas

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## ROSE

### Rapid Onsite Evaluation

- ROSE has been shown to be effective in optimizing the yield and efficiency of EUS-FNA
- Only solid tumors should be asked for ROSE
- Like frozen and intra-operative consultation, definitive diagnosis should NOT be demanded on ROSE
- Staffing, time, and cost constraints limit availability

### Pancreatic Cyst Terminology

- **Unsatisfactory (Reason)**
- **Negative (Consider descriptive)**
  - Cystic contents: Mucinous epithelium is not identified
  - Negative for high grade dysplasia or malignancy, no cyst contents
  - Debris/inflammatory cells present without mucinous epithelium c/w pseudocyst
- **Atypical**
  - Mucinous epithelium present, no evidence of high grade dysplasia
    - of uncertain origin
    - c/w mucinous neoplasm (most likely IPMN)
  - C/W serous cystadenoma
- **Suspicious for malignancy**
  - Mucinous epithelium present with at least high grade dysplasia/CIS
  - Abnormal epithelium suspicious for invasiv adenocarcinoma
- **Positive for malignancy**
  - Adenocarcinoma

## Pancreatic Lesions

- Solid
  - Chronic pancreatitis
  - Ductal adenocarcinoma
  - Acinar cell carcinoma
  - Pancreatic endocrine neoplasm (PEN)
  - Solid pseudo-papillary tumor (SSPT)
  - Pancreatoblastoma
  - Metastasis
- Cystic
  - Pseudocyst
  - Serous cyst
  - Mucinous cyst (MCN and IPMN)
  - Cystic degeneration of typically solid tumors
    - PEN
    - SSPT
    - other
  - Other more rare cysts
    - Simple cysts
    - Lymphoepithelial cyst
    - Peripancreatic cysts

## EUS-Fine Needle Aspiration

Transgastric: body and tail  
Transduodenal: head

## Cysts of the pancreas

- Non-neoplastic
  - Pseudocyst
  - Retention cyst
  - Congenital cyst
  - Foregut cyst
  - Endometriotic cyst
- Cystic nonepithelial neoplasms
  - Lymphangioma
  - Hemangioma
- Secondarily cystic solid neoplasms
  - Ductal adenocarcinoma
  - Endocrine neoplasms
  - Acinar cell neoplasms
  - Solid-pseudo papillary neoplasm







## Cytology – Low diagnostic accuracy

Belsley et. Al. Cancer (Cytopathology), 104:102-110, 2008

	All histology confirmed SCA (n=21)
CT confirmed	3/12 (25%)
Histiocytes present	16/21 (76%)
Histiocytes with hemosiderin	11/21 (52%)
GI contamination	7/15 (47%)
SCA cells	5/21 (24%)
Prospectively Dx	1/21 (5%)

## Mucinous Cystic Neoplasm

- Gender: much more common in women than men
- Age: mean age at diagnosis - 50
- Location: Tail > head
- Gross: Thick fibrous wall, multicystic; usually larger than 2cm
- Lined by ovarian stroma, septa may CA++
- Chemistry: low amylase, high CEA

Adsay NV. ModPathol (2007); 20:571-583

## Mucinous cystic neoplasm: cytology

- Thick mucous, if present, extremely helpful
- Low cellularity
- Flat sheet or single mucous cells
- Ovarian-type stroma often absent
- Cytologic atypia depend on differentiation
- Cytology often underestimate the final histologic grade

Pitman et al. Cancer Cytopathol. 2010:1181-13

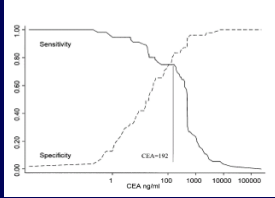
# Cooperative Pancreatic Cyst Study

Brugge, Gastroenterol 2004

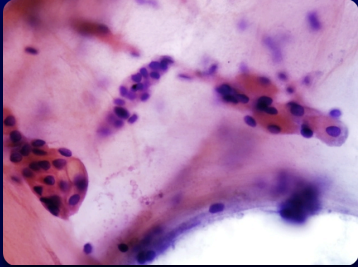
Table 3. Accuracy of the Tested Tumor Markers in Differentiating Between Mucinous and Nonmucinous Lesions

Tumor marker	Sensitivity	Specificity	Accuracy	ROC value*	P value*	Cut off
CEA	.73	.84	.79	.7930	<.001	192
CA125	.83	.37	.60	.5610	.183	9
CA15-3	.19	.94	.57	.5011	.816	121
CA19-9	.68	.62	.66	.6654	.004	2600
CA72-4	.80	.61	.72	.7423	.001	7

ROC, receiver operator characteristics curve (area); Cut off: calculated optimal cutoff values for each marker (ng/mL).  
\*P value: significance vs. chance in predicting a mucinous lesion.

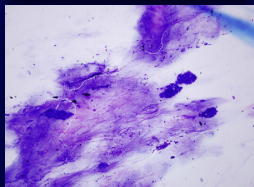
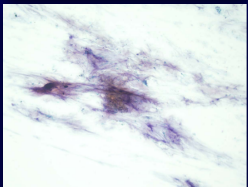
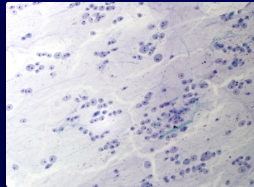
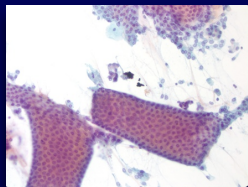


## Is this a mucinous cyst?



Neoplastic mucin or GI mucin?

If there are abundant "gut" epithelium, be careful!





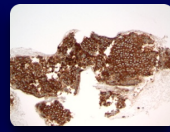
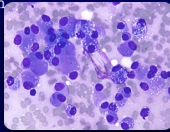
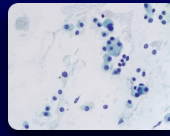
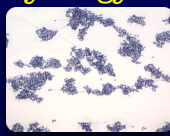




## Cystic Neuroendocrine Neoplasms:

### Cytology

- Cellularity: varies
- Loose aggregate and single cell pattern
- Monomorphic appearance; some cells out of proportion to others
- Plasmacytoid, bi-nucleate
- Salt and pepper chromatin
- Pink granules of air dry
- Synaptophysin +



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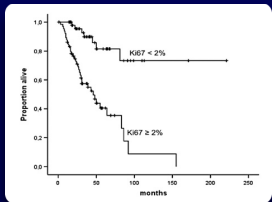
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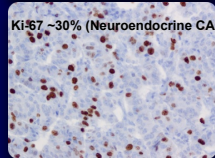
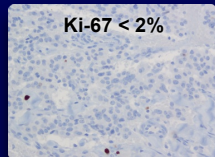
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## Ki-67 Matters



Ekeblad S et al. Clin Cancer Res 2008;14:7798-7803



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