Cystic pancreatic lesions – A proposal for a network approach

Chris Briggs
Consultant HPB Surgeon
Peninsula HPB Unit
Derriford Hospital, Plymouth
Aims

- Brief overview of cystic pancreatic lesions
- International guidance
- What do we know from our own experience?
- Plan for a network pathway
Pancreatic cysts

- Mixed solid/cystic – e.g. Solid pseudopapillary tumour
- Serous cyst – pseudocyst / SCA
- Mucinous cyst – IPMN, MCN
Serous cysts

- Pseudocyst – simple cyst. No epithelial lining. Usually as a result of pancreatitis.

- Serous cyst adenoma – “bunch of grapes”. Only resected if symptoms (and this is rare)

- Both have very low malignant potential – we want to avoid intervening with these.
Mucinous “cysts”

- Main duct IPMN – malignancy risk ~60%
- Side branch IPMN – low malignancy risk, dependent on size, architecture and symptoms
- Mixed type IPMN – as per main duct
- MCN – risk of malignant change
Have I lost you yet? The problem is how do you tell one from the other?

2016 Brexit referendum results  1992 Mad cow disease affected areas
Presentation

• Incidentaloma – has become the commonest

• Symptomatic or signs of malignancy
  – Pain
  – Jaundice
  – Pancreatic insufficiency
  – ?new diabetes
Initial Imaging and workup

- USS  – limited information
- CT   – delineate diagnosis / anatomy
- MRI  – relationship to duct - ?IPMN
- EUS
  - relationship to duct / nodules
  - aspiration cytology / chemistry (CEA)
Pancreatic resections for cystic disease
Peninsula HPB Unit (Dec 2006-present, n=73)
Pancreatic resections for cystic disease
Peninsula HPB Unit (Dec 2006-present, n=73)

Location of cyst

- HEAD: 26%
- BODY: 25%
- TAIL: 29%
- UNCINATE: 10%
- MAIN DUCT IPMN: 10%
# Pancreatic resections for cystic disease

Peninsula HPB Unit (Dec 2006-present, n=73)

<table>
<thead>
<tr>
<th>Age (median [range])</th>
<th>64 [25-81]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male : Female</td>
<td>26 : 47</td>
</tr>
<tr>
<td>ASA</td>
<td>1 = 7</td>
</tr>
<tr>
<td></td>
<td>2 = 46</td>
</tr>
<tr>
<td></td>
<td>3 = 15</td>
</tr>
<tr>
<td>Whipple</td>
<td>21</td>
</tr>
<tr>
<td>Distal Pancreatectomy</td>
<td>37</td>
</tr>
<tr>
<td>Total Pancreatectomy</td>
<td>11</td>
</tr>
<tr>
<td>Portal vein resection</td>
<td>1</td>
</tr>
<tr>
<td>Spleen preserving procedures</td>
<td>7</td>
</tr>
<tr>
<td>Hospital stay (median days [range])</td>
<td>8 [3-40]</td>
</tr>
<tr>
<td>Blood transfusion (median units [range])</td>
<td>0 [0-6]</td>
</tr>
<tr>
<td>Morbidity (all complications)</td>
<td>30.1%</td>
</tr>
<tr>
<td>Mortality</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Pancreatic resections for cystic disease
Peninsula HPB Unit (Dec 2006-present, n=73)

![Bar chart showing the percentage of different types of cysts at pathology. The categories are IPMN, MCN, SCA, PSEUDOCYST, and OTHER. IPMN has the highest percentage at around 40%, followed by MCN at about 35%, SCA at around 20%, PSEUDOCYST at about 15%, and OTHER at the lowest percentage.]
Pancreatic resections for cystic disease
Peninsula HPB Unit (Dec 2006-present, n=73)

Cancer / dysplasia pathology (%)

- ADENOCARCINOMA
- HGD
- MGD
- LGD
Surveillance –
So how do we decide who, what tests, how often?

- At presentation:
  - Is the patient fit for pancreatic surgery?
  - Are there indications for surgery on the original imaging?
  - Can we establish a likely diagnosis with MRI / CT
  - Serum Ca19-9
  - If there is uncertainty about diagnosis / surgery / surveillance the patient should *probably* have EUS if the cyst is >3cm?

- Then we have to decide how often and what test…….
AGA SECTION

American Gastroenterological Association Institute Guideline on the Diagnosis and Management of Asymptomatic Neoplastic Pancreatic Cysts

Santhi Swaroop Vege, Barry Ziring, Rajeev Jain, Paul Moayyedi, and the Clinical Guidelines Committee

\[1\]Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, Minnesota; \[2\]Division of Internal Medicine, Sidney Kimmel College of Medicine, Thomas Jefferson University, Philadelphia, Pennsylvania; \[3\]Texas Digestive Disease Consultants, Dallas, Texas; \[4\]Division of Gastroenterology, Hamilton Health Sciences, McMaster University, Hamilton, Ontario, Canada

This article has an accompanying continuing medical education activity on page e12. Learning Objective: At the conclusion of this exercise, the learner will understand the approach to counseling patients regarding the optimal method and frequency of radiologic imaging, indications for invasive tests like endoscopic ultrasonography (EUS) and surgery, select patients for follow-up after surgery, decide the duration of such follow-up, and decide when to stop surveillance for those with and without surgery.
Are any of the following “high-risk stigmata” of malignancy present?
i) obstructive jaundice in a patient with cystic lesion of the head of the pancreas, ii) enhancing mural nodule \( \geq 5 \) mm, iii) main pancreatic duct \( \geq 10 \) mm

Yes

Consider surgery, if clinically appropriate

No

Are any of the following “worrisome features” present?

Clinical: Pancreatitis a
Imaging: i) cyst \( \geq 3 \) cm, ii) enhancing mural nodule < 5 mm, iii) thickened/enhancing cyst walls, iv) main duct size 5-9 mm, v) abrupt change in caliber of pancreatic duct with distal pancreatic atrophy, vi) lymphadenopathy, vii) increased serum level of CA19-9, viii) cyst growth rate > 5 mm / 2 years

If yes, perform endoscopic ultrasound

Are any of these features present?

i) Definite mural nodule(s) \( \geq 5 \) mm b
ii) Main duct features suspicious for involvement c
iii) Cytology: suspicious or positive for malignancy

Yes

No

What is the size of largest cyst?

<1 cm

CT / MRI in 6 months, then every 2 years if no change

1-2 cm

CT / MRI 6 months x 1 year yearly x 2 years, then lengthen interval up to 2 years if no change

2-3 cm

EUS in 3-6 months, then lengthen interval up to 1 year, alternating MRI with EUS as appropriate. Consider surgery in young, fit patients with need for prolonged surveillance

>3 cm

Close surveillance alternating MRI with EUS every 3-6 months. Strongly consider surgery in young, fit patients

“In revisions of international consensus Fukuoka guidelines for the management of IPMN of the pancreas” Pancreatology. Volume 17, Issue 5, September–October 2017, Pages 738-753
Indications for surgery in IPMN.

The European Study Group on Cystic Tumours of the Pancreas Gut 2018;67:789-804
<65 years at presentation

- Reimage q1y x 5.1,2

  - Stable over initial 5 years
  - Reimage q2y x 2.1,2
  - Interval growth

  - STOP if stable over MINIMUM 9 years
  - Cyst is still <1.5 cm
  - Cyst is ≥1.5 cm
  - Reimage q1y or EUS / FNA
  - Move to Figure 2 or EUS / FNA
  - STOP if cyst <1.5 cm over MINIMUM 10 years

<1.5 cm Incidental pancreatic cyst

65-79 years at presentation

- Reimage q2y x 5.1,2

  - STOP if stable over 10 years

  - Interval growth

  - Cyst is still <1.5 cm
  - Cyst is ≥1.5 cm
  - Reimage q1y or EUS / FNA
  - Move to Figure 2 or EUS / FNA
  - STOP if cyst <1.5 cm over 10 years

1. While single follow-up of tiny “white dot” lesions at 2 years is appropriate, the need for further follow-up and length of follow-up, if stable, is unknown. Some radiologists do not report these lesions for patients with advanced age (>75-80 years of age).

2. Imaging follow-up with contrast-enhanced MRI or pancreas protocol CT.

3. Growth defined as 100% increase in longest axis diameter (on axial or coronal image) for cysts <5mm, and 50% increase for cysts ≥5mm and <15mm. No growth = stable.

4. Following growth, imaging follow-up or EUS/FNA may be performed. In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts. After EUS/FNA, further work-up is result-dependent (see Figure 2B).

5. Some may choose to continuously follow cysts detected in patients <65-years-old until those patients reach 80.

6. If the patient reaches 80 years before the end of follow-up, follow-up should generally stop. If the patient is close to – but not yet – 80 years when the cyst is first detected, then when the patient reaches 80 years, Figure 4 can be used to guide further management.

*Appearance of any mural nodule, wall thickening, dilation of MPD ≥7mm, or extrahepatic biliary obstruction/jaundice should prompt immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.
So which guideline should one follow? For now, I believe common sense should prevail in the context of patient individualization. Strict adherence to current guidelines is appropriate for approved prospective validation studies. In my opinion, the most pressing issue is the cyst size threshold for EUS assessment, as few will argue that the presence of any other worrisome or high risk feature warrants EUS. Our group recommended 1.5 cm [7]. Lee et al. and the Fukuoka guidelines recommend 2 cm as a size threshold [3, 5] and the AGA recommends 3 cm [4]. Which shall it be? Medicine is still not a perfect science. But it’s time for the evaluation of pancreatic cystic lesions to become a more precise science, to allow for the evolution of real evidence-based guidelines.

But……he’s an American Gastroenterologist and gets paid to do EUS!
Pancreatic Cyst Surveillance Program

Memorial Sloan Kettering experts have found that surgery isn’t necessary for most people with pancreatic cysts, as long as the cysts are relatively small and aren’t causing symptoms. Instead, careful surveillance testing can be safe and effective.

Each person’s situation is unique. But in general, MSK experts recommend surveillance when the risk of the operation to remove the cyst is greater than the chance that the cyst contains cancer or will soon become cancerous.

Call the Hepatobiliary Service at 646-497-9070 to schedule an appointment at our clinic at 160 East 53rd Street for Tuesdays and Fridays.

We may also recommend ongoing surveillance for people who’ve had surgery to remove a type of cyst that can return over time called an intraductal papillary mucinous neoplasm, or for people who had surgery in which not all of the pancreas was removed.

How Pancreatic Cyst Surveillance Works

Pancreatic cyst surveillance is treated much like an annual colonoscopy screening. Your team will regularly test the cyst to look for changes that could signal cancer. The goal is to find these early, when the cysts are easier to effectively remove.

During your first one or two visits, you’ll meet with a pancreatic surgeon or a gastroenterologist. After that, you’ll meet regularly with our specialized nurse practitioner, who works closely with the pancreatic care team as a whole.

Participants visit us every six months to a year for monitoring and screening with regular CT and MRI imaging tests.

Your Nurse Practitioner

Nurse practitioner Jennifer Flood-Caldwell collaborates with surgeons and gastroenterologists to care for people with pancreatic cysts.
So – what can we do in the South west?

- We're working in the NHS, not Memorial Sloan Kettering
- Limited resource – CT, MRI, EUS.
- Should we have a network protocol – Uses an amalgamation of the guidelines – Based on our experience – Is realistic and accepts perhaps we are under-resourced.
The plan

- We are looking at data from Plymouth MDT discussion of pancreatic cystic lesions

- Results from resection of cystic lesions – how are we doing so far?

- We will create a pathway which will be circulated to Peninsula MDTs for discussion and then agree a protocol.

- Is it possible to create a “regional” database? How do we capture the data?
Thank you

• Questions / Discussion