INCIDENTAL PANCREATIC CYSTS – TYPES, TESTS AND TREATMENTS

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EDITORIAL

Advancements in the quality of cross sectional imaging, alongside the increase in availability and use of computed tomography (CT) and magnetic resonance imaging (MRI), have all contributed to the detection of more incidental pancreatic cystic lesions. Gore et al., state the incidence of an incidental cystic pancreatic mass on abdominal CT ranges between 1.2-2.6% and between 13.5-19.9% on abdominal MRI (1).

The nature of cystic pancreatic masses varies from benign (serous cystadenomas [SCs]), inflammatory (pancreatic pseudocysts), indolent lesions to potentially cancerous lesions (intraductal papillary mucinous neoplasms [IPMNs]), and mucinous cystic neoplasms [MCNs]) and highly malignant cancers (cystadenocarcinomas). Due to this broad risk profile, there is a need for careful investigation and to establish an accurate diagnosis.

All patients with a cystic pancreatic mass should be subjected to a detailed clinical history and a thorough physical examination. A history of abdominal trauma or one suggestive of recent pancreatitis, especially with evidence of alcohol abuse or gallstone disease, increases the likelihood that the lesion is a pseudocyst.

Imaging modalities utilized for characterization of cystic pancreatic lesions include: CT (with intravenous contrast), MRI (with intravenous contrast), magnetic resonance cholangiopancreatography (MRCP) and endoscopic ultrasound (EUS). CT provides 56-85% accuracy when used to characterize pancreatic cysts, and morphological features on imaging are used to aid diagnosis as outlined in Table 1 (2). MRI often provides greater diagnostic prowess compared to CT. It depicts the internal structure and cystic elements of pancreatic lesions more clearly and the use of MRCP aids the assessment of pancreatic duct involvement (3).

An adjunct to imaging characterization of pancreatic cysts is cyst aspiration fluid obtained during endoscopic ultrasound. Nevertheless, the ability to perform this investigation may be limited by small, inaccessible cysts. Considerably raised amylase levels (>250 u/L) in the aspirate suggest the presence of a pseudocyst, while MCNs and IPMNs can be diagnosed by high levels (>192 ng/mL) of carcinoembryonic antigen (CEA), high fluid viscosity and a high mucin content. In addition, SCs are found to have abundant levels of glycogen (2,4) (Table 1).

Cysts with a solid component are also considered to have a high malignant potential and so are preferably managed with surgical resection. Cyst size is another important consideration when contemplating a management plan; the exception being in the management of main duct or mixed variant IPMNs where resection should always be advocated regardless of the size due to the almost indefinite risk of malignancy (5).

Guidelines published by the American College of Radiologists suggest that side branch IPMN and MCN cysts with a diameter <3 cm can generally be managed with serial MRI/MRCP, whereas MCNs and side-branch IPMNs >3 cm, and SCs >4 cm; should be considered for surgery. Cysts <2 cm, with no evidence of growth on a MRI 1 year after diagnosis, are likely to be benign and follow up is not warranted. Follow-up MRI scans every 6 months, annually or every 2 years, should be encouraged for 2-3 cm side-branch IPMNs, MCNs and SCs respectively (4). Conversely, many clinicians in the UK would argue that patients found to have a 2-3 cm SC should not be subjected to any follow up.

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**Table 1**

<table>
<thead>
<tr>
<th>Cyst Features</th>
<th>Pseudocyst (SCs)</th>
<th>Serous Cystadenoma</th>
<th>Mucinous Cystadenoma (MCNs)</th>
<th>Intraductal Papillary Mucinous Neoplasm (Main Duct)</th>
<th>Intraductal Papillary Mucinous Neoplasm (Side Branch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyst Shape</td>
<td>Variable</td>
<td>Lobulated</td>
<td>Oval</td>
<td>Bunch of Grapes</td>
<td>Present</td>
</tr>
<tr>
<td>Cyst Wall</td>
<td>Present (usually thin but can be thick if infected)</td>
<td>Present (thin)</td>
<td>Present (most commonly thick)</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Cyst Location</td>
<td>Unilocular</td>
<td>Microcystic</td>
<td>Macrocystic (2-3 cm)</td>
<td>Macrocystic (&gt;6 cm)</td>
<td>NA</td>
</tr>
<tr>
<td>Communication with the Main Pancreatic Duct</td>
<td>Uncommon</td>
<td>Absent</td>
<td>Absent</td>
<td>Usually present as a channel</td>
<td>Present</td>
</tr>
<tr>
<td>Central Scar within the cyst</td>
<td>Absent</td>
<td>Central</td>
<td>Peripheral</td>
<td>Uncommon</td>
<td>Uncommon</td>
</tr>
<tr>
<td>Aspirate Amylase</td>
<td>High (&gt;250 u/L)</td>
<td>Usually low</td>
<td>Variable</td>
<td>High (&gt;192 ng/mL)</td>
<td>High (&gt;192 ng/mL)</td>
</tr>
<tr>
<td>Aspirate CEA</td>
<td>Low</td>
<td>Low</td>
<td>High (&gt;192 ng/mL)</td>
<td>High (&gt;192 ng/mL)</td>
<td>High (most common)</td>
</tr>
<tr>
<td>Aspirate Viscosity</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Aspirate Mucin</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Aspirate Glycogen</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

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Received: November 21, 2017, Accepted: November 22, 2017, Published: November 26, 2017

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The inherently low malignant potential of SCs means that follow up may not be cost-effective; and as clear UK guidelines do not exist, the role of surveillance in SCs is ambiguous.

In addition to cyst type and size, other risk factors for malignant transformation do exist. The presence of local lymphadenopathy, non-enhancing nodules, a thickened, irregular cyst wall or histological dysplasia make one worry that MCNs and side-branch IPMNs have a greater malignant potential (2,3). Specific to side-branch IPMNs, pancreatic duct dilatation > 6mm is a predictor of malignant potential; and specific to MCNs, the presence of cyst calcification and a high (>400 ng/mL) aspirate CEA level increases malignant risk (1,6). On the other hand, aspirate CEA levels have no correlation to the malignant potential of IPMNs (7).

In summary, when treating and formulating a management plan for cystic pancreatic lesions, it is important to establish a correct diagnosis. A focused history and thorough clinical examination aid differentiation of a pseudocyst from a true pancreatic cyst. Radiological cyst characteristics and fluid aspirates allow differentiation between the numerous subtypes of true pancreatic cysts. Surgical treatment is warranted for symptomatic cysts, those with a solid component, all main duct IPMNs, cysts > 3 cm and those with features suggestive of a higher malignant potential. Cysts that do not fulfill criteria for surgical referral can serially be monitored with cross sectional imaging.

REFERENCES
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