

A case study of pancreatic cystadenomas in an old woman

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Abstract Serous cystadenoma of the pancreas is a rare, benign neoplasm that is often discovered incidentally during imaging studies for unrelated health concerns. These tumors are typically asymptomatic and characterized by multiple small cysts filled with clear serous fluid. Despite their benign nature, accurate diagnosis is crucial to distinguish them from other pancreatic cystic lesions, particularly those with malignant potential, such as mucinous cystadenomas, pseudocysts, and intraductal papillary mucinous neoplasms (IPMN). This report presents a case of a 67-year-old female who was referred for further evaluation of a pancreatic mass identified incidentally on a routine CT scan.

The patient was asymptomatic, with no gastrointestinal symptoms, and had a medical history significant for controlled hypertension and diabetes. A contrast-enhanced MRI confirmed a well-defined, multicystic lesion in the head of the pancreas, exhibiting typical imaging features of serous cystadenoma, including a "honeycomb" appearance without evidence of ductal dilation or surrounding tissue invasion. A comprehensive diagnostic approach, including imaging findings and laboratory results, led to the diagnosis of a serous cystadenoma. While these tumors are non-invasive and rarely cause symptoms, it is important to monitor them over time to ensure no change in size or behavior. This report also reviews the epidemiology, pathophysiology, clinical presentation, and management strategies for serous cystadenomas. The prognosis for patients with serous cystadenomas is excellent, with low risk of malignant transformation and recurrence following surgical removal. Regular follow-up imaging is typically recommended for monitoring.

Keywords: Serous cystadenoma, pancreas, imaging, benign tumor, case report

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I. Introduction

The advancement of imaging technologies, such as computed tomography (CT) and magnetic resonance imaging (MRI), has significantly improved the detection of pancreatic cystic lesions[1]. Among these lesions, serous cystadenomas are benign neoplasms typically characterized by multiple small cysts filled with clear serous fluid[2]. These tumors

are generally asymptomatic and often discovered incidentally during imaging studies conducted for unrelated medical conditions. While serous cystadenomas are non-invasive and carry a low risk of malignancy, distinguishing them from other cystic lesions with potential malignant features is essential for effective patient management[3]. Differentiating serous cystadenomas from other pancreatic cystic lesions, such as mucinous cystadenomas, pseudocysts, and intraductal papillary mucinous neoplasms (IPMNs), is crucial due to the varying clinical implications and treatment strategies associated with these conditions. Mucinous cystadenomas and IPMNs, for instance, have a higher potential for malignancy and require more intensive monitoring and management compared to benign serous cystadenomas[4]. This case report presents a 67-year-old woman diagnosed with a serous cystadenoma. Through a comprehensive review of her clinical presentation, diagnostic imaging findings, and management strategies, we aim to highlight the importance of accurate diagnosis and appropriate follow-up care in the management of serous cystadenomas. The report emphasizes how advanced imaging techniques can assist in distinguishing these benign lesions from other more concerning pancreatic cystic lesions, thus optimizing patient care and treatment outcomes.

II. Materials and Methods

1. Case Presentation

A 67-year-old female presented for further evaluation following the incidental discovery of a pancreatic lesion during a routine CT scan. The patient reported no gastrointestinal symptoms, including abdominal pain, nausea, or vomiting. Her medical history included well-controlled hypertension and diabetes, managed with pharmacological therapy. There was

no personal or family history of malignancy. On physical examination, the patient appeared well, with no palpable abdominal masses or signs of acute distress. Laboratory results were unremarkable, except for a mildly elevated lipase level, which did not correlate with symptoms suggestive of acute pancreatitis. Contrast-enhanced abdominal MRI revealed a well-defined, multicystic lesion located in the head of the pancreas, without ductal dilation or abnormal enhancement of surrounding tissues.

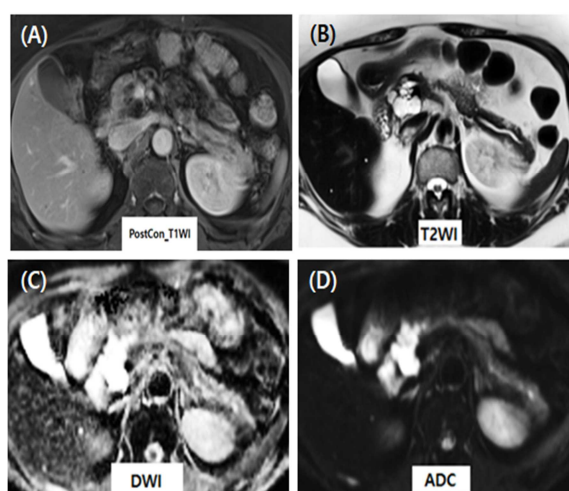


Fig. 1 MRI of a 67-year-old woman. (A) T1-weighted contrast-enhanced image, (B) T2-weighted image, (C) Diffusion weighted image, (D) Apparent Diffusion Coefficient image

2. Imaging Findings

MRI demonstrated multiple small cystic lesions in the head of the pancreas, exhibiting high signal intensity on T2-weighted imaging. Importantly, no aggressive features were present, such as solid components, significant enhancement, or surrounding tissue invasion.



Fig. 2 MR imaging shows multiple T2 hyperintense lesions in the pancreatic head without associated main pancreatic duct dilatation.

The cysts showed no abnormal diffusion restriction on apparent diffusion coefficient (ADC) maps, helping rule out malignant pancreatic lesions. Additionally, there was no enlargement of the main pancreatic duct, which would be indicative of IPMN or other malignant entities.

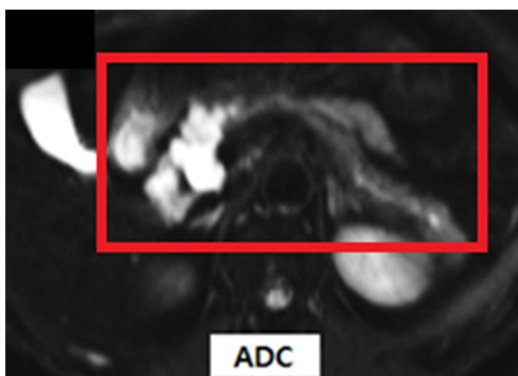


Fig. 3 There is no abnormal diffusion restriction, as the ADC (apparent diffusion coefficient) map shows high diffusion values on T2, indicating penetration. The mass remains within the pancreatic head without aggressive invasion or engulfment of adjacent vascular structures.

The imaging features were consistent with a diagnosis of serous cystadenoma, exhibiting the characteristic "honeycomb" appearance. Given the benign nature of the lesion, no immediate intervention was recommended, and the patient was advised to undergo regular follow-up imaging to monitor any changes.

3. Differential Diagnosis

The differential diagnosis for cystic pancreatic lesions includes several conditions, each with distinct imaging characteristics:

Serous Cystadenoma: Typically presents as a multicystic lesion with a "honeycomb" appearance filled with clear serous fluid. These lesions lack solid components and exhibit no significant enhancement. They rarely show ductal dilation or invasion of surrounding structures[5].

Mucinous Cystadenoma: Usually presents as a unilocular or multilocular cystic lesion with thicker walls and internal septations. These lesions have a higher malignancy potential compared to serous cystadenomas and require careful imaging evaluation to distinguish the two[6].

Pseudocysts: Often resulting from previous episodes of pancreatitis, pseudocysts present as well-defined cystic lesions, typically with a history of pancreatic inflammation or injury, which is absent in serous cystadenomas[7].

Intraductal Papillary Mucinous Neoplasm (IPMN): IPMNs affect the main pancreatic duct and its branches, presenting as cystic lesions with ductal dilation and papillary growth. These lesions have an increased malignancy risk, and the presence of ductal involvement should raise suspicion[8].

In patient, the absence of ductal involvement, solid components, and the typical "honeycomb" appearance on imaging made serous cystadenoma the most likely diagnosis.

III. Discussion

1. Pathophysiology

Serous cystadenomas are benign pancreatic tumors that arise from epithelial cells lining the ducts of the

pancreas. These tumors are characterized by multiple small cysts filled with clear, serous fluid. Unlike other pancreatic neoplasms, such as mucinous cystadenomas or IPMNs, serous cystadenomas have no malignant potential. They do not invade surrounding tissue or metastasize, making them low-risk lesions. These tumors are typically well-encapsulated and composed of a single layer of cuboidal or flattened epithelial cells[9].

2. Epidemiology

Serous cystadenomas account for approximately 1–2% of all pancreatic tumors. They are most commonly diagnosed in older women, with a female-to-male ratio of about 4:1. These tumors predominantly occur in individuals over the age of 60, with the highest incidence in those aged 60-70 years. While serous cystadenomas can develop anywhere in the pancreas, they are most often found in the body and tail, although they can also occur in the head of the pancreas, as in this case[10].

3. Clinical Presentation

The majority of patients with serous cystadenomas are asymptomatic, with the lesions often discovered incidentally during imaging studies for unrelated conditions. Some patients may experience nonspecific abdominal symptoms, such as discomfort or bloating, though it is unclear whether these symptoms are directly related to the cystadenoma. Large tumors or those located near vital structures may cause symptoms, such as pain, nausea, or jaundice, but these presentations are rare[11]. In the patient, the lesion was asymptomatic, and the discovery was incidental.

4. Imaging Features

Imaging is crucial in diagnosing serous

cystadenomas and differentiating them from other pancreatic cystic lesions. On CT and MRI, serous cystadenomas typically appear as well-defined, multicystic lesions filled with clear serous fluid. The characteristic "honeycomb" or "vesicular" appearance is often visible on T2-weighted images. There are no solid components, and the cysts show minimal enhancement after contrast administration. There is typically no ductal dilation or tissue invasion[12].

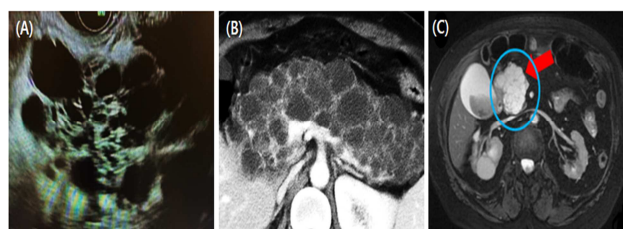


Fig. 4 Characteristics of pancreatic cystadenoma by imaging. (A) Endoscopic ultrasound (EUS): EUS provides high-resolution images and is useful for evaluating the internal features of a cyst and guiding a biopsy if necessary, (B) CT scan: A characteristic "honeycomb" appearance is often seen, with multiple small, well-circumscribed cysts. The lesions are usually homogeneous and lack solid components, (C) Contrast-enhanced MRI: Magnetic resonance imaging (MRI) can provide detailed images and is useful in confirming the diagnosis. Serous cystadenomas appear as polycystic lesions with clear fluid contents. Endoscopic ultrasound (EUS) is also a valuable tool, providing high-resolution images and guiding biopsy when necessary. However, in most cases, the diagnosis can be made through imaging alone, and biopsy is rarely required[13].

5. Management and Treatment

For asymptomatic serous cystadenomas with no concerning features, treatment is generally conservative. These lesions usually do not require surgery, and periodic imaging is recommended to monitor for any changes. Surgical intervention is considered for symptomatic cases or when there is uncertainty about the diagnosis, particularly if imaging features suggest a more aggressive lesion[14]. Surgical options, such as pancreaticoduodenectomy or distal pancreatectomy,

depend on the tumor's location. If surgery is not required, follow-up imaging at regular intervals is recommended to ensure the lesion remains stable and does not undergo malignant transformation, though the risk of malignancy in serous cystadenomas is extremely low[11, 14].

6. Prognosis

The prognosis for patients with serous cystadenoma is excellent, owing to the benign nature of these tumors. These lesions do not undergo malignant transformation, and once surgically removed, they have a low recurrence rate. Most patients experience a normal post-resection recovery, with long-term survival comparable to the general population[15].

IV. Conclusion

Serous cystadenomas are benign pancreatic lesions often detected incidentally during imaging for unrelated conditions. In our case, the lesion was asymptomatic, and the imaging features supported a diagnosis of serous cystadenoma. These tumors are low-risk, and management typically involves conservative monitoring with follow-up imaging. Accurate diagnosis is essential to differentiate serous cystadenomas from other cystic pancreatic lesions, particularly those with malignant potential. Understanding the clinical presentation, imaging characteristics, and management strategies of serous cystadenomas is critical for optimizing patient care.

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Conflict of Interest

The authors declare that they have no conflicts of

interest.

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