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The many faces of pancreatic serous cystadenoma: Radiologic and pathologic correlation☆

L.C. Chu[a,*], A.D. Singhi[b], R.R. Haroun[a], R.H. Hruban[c], E.K. Fishman[a]

[a] *The Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins Hospital, 600 North Wolfe Street, Halsted B168, 21287 Baltimore, MD, USA*
[b] *Department of Pathology, University of Pittsburgh Medical Center, 15213 Pittsburgh, PA, USA*
[c] *The Sol Goldman Pancreatic Cancer Research Center, The Department of Pathology, Johns Hopkins Hospital, 401 North Broadway, 21231 Baltimore, MD, USA*

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Abstract Pancreatic serous cystadenoma can be categorized into microcystic, honeycomb, oligocystic, and solid patterns based on imaging appearance. The presence of typical computed tomography (CT) features helps to differentiate serous cystadenomas from other cystic and solid pancreatic masses. Cases with atypical features present a diagnostic challenge as they can mimic malignant neoplasms. This article reviews pathophysiology, prevalence, CT features, mimickers and recommendations for management of pancreatic serous cystadenoma.

The prevalence of pancreatic cystic lesions on abdominal imaging has been reported to be between 2.6% to 19.6% [1—3]. Pancreatic serous cystic neoplasms account for approximately 16% of primary cystic pancreatic neoplasms. Although magnetic resonance (MR) imaging is frequently used for characterization of cystic pancreatic lesions [4,5], computed tomography (CT) remains the first line imaging modality due to more widespread availability. Most serous cystic neoplasms are benign and represent pancreatic serous cystadenomas (SCAs). Serous cystadenoma is a benign neoplasm composed of glycogen-rich epithelial cells that form innumerable small thin-walled cysts containing serous fluid [6,7].

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* Corresponding author.
E-mail address: lindachu@jhmi.edu (L.C. Chu).

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Microscopically, they appear as single layer of cuboidal or flattened cells lining the small cysts and have round nuclei and abundant clear cytoplasm. Features of atypia or dysplasia are absent (Fig. 1) [7]. Endoscopic ultrasound and fluid aspiration may be helpful in differentiating serous cystadenoma from other pancreatic cystic lesions. The presence of mucin and carcinoembryonic antigen > 192 ng/mL in the fluid aspirate have high specificity for discriminating mucinous from nonmucinous lesions [8,9]. Fluid aspirate amylase < 250 U/L excludes pancreatic pseudocysts [8]. Cytologic evaluation after endoscopic ultrasound fine needle aspiration can establish the diagnosis in about 50% of patients, with pathognomonic findings of bland cuboidal glycogen and staining cells [9].

Approximately 40% of pancreatic serous cystadenoma arise from the pancreatic head and uncinate process and 60% arise from the pancreatic body and tail [3]. These neoplasms have a predilection for middle-aged and older women and are usually discovered incidentally [3]. Up to 60% of patients are asymptomatic. Alternatively, patients may present with non-specific symptoms such as abdominal pain, abdominal mass, and rarely jaundice [3].

Classically, pancreatic serous cystadenomas have been described as multilobulated multiloculated cystic masses with central stellate scars and calcifications (Table 1). However, serous cystadenomas have a wide spectrum of CT appearance, ranging from unilocular cystic masses to hypervascular solid masses, which can mimic other benign and malignant pancreatic masses. Serous cystadenomas can be morphologically classified as polycystic (or microcystic), honeycomb, oligocystic, and solid patterns [10].

In this article, we present the different CT appearances of serous cystadenomas correlated with gross pathology images to maximize the diagnostic certainty of this benign entity and prevent unnecessary surgical interventions and review current management recommendations.

Patterns of pancreatic serous cystadenoma

Microcystic pattern

The microcystic pattern, or polycystic pattern, is present in 1—2% of all exocrine pancreatic tumors and in 70% cases of

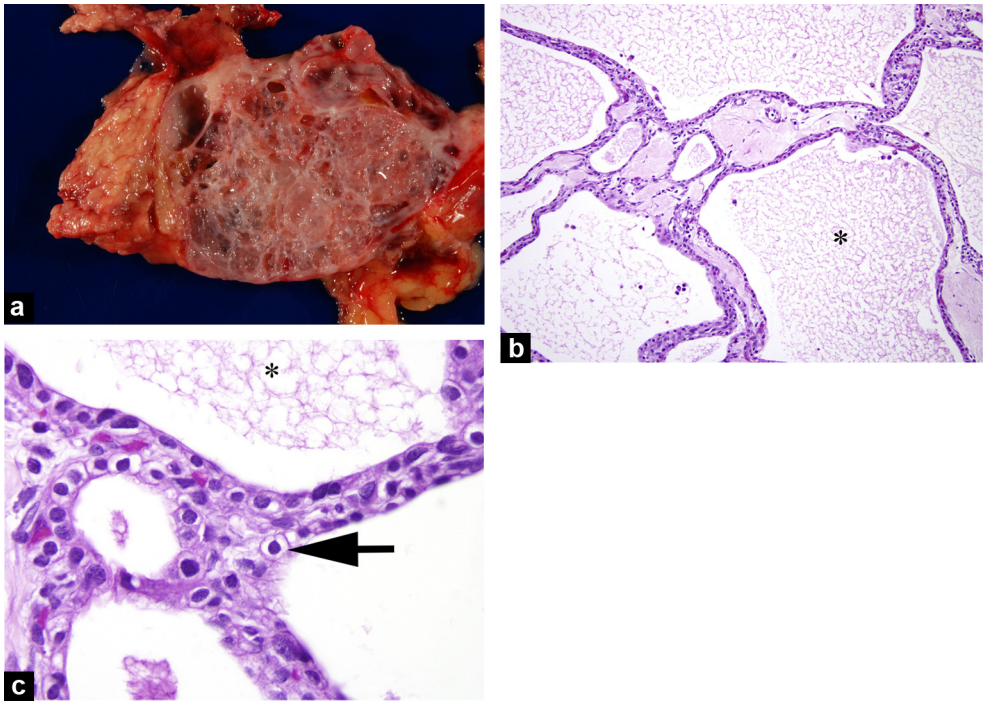

Figure 1. Serous cystadenoma: a: gross pathology photograph shows spongiform appearance of the serous cystadenoma with numerous microcysts; b: low power; c: high power histopathologic slides show numerous tightly packed small cysts (*) lined by cuboidal cells with clear cytoplasm and small round uniform nuclei (arrow).

Table 1 Typical versus atypical features of pancreatic serous cystadenoma.

Typical features	Atypical aggressive features
Central scar ± calcifications	Pancreatic parenchymal atrophy
Lobulated external contour	Dilatation of pancreatic duct and/or common bile duct
No communication with pancreatic duct	Vascular invasion
Absence of aggressive features	Invasion of adjacent structures

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