

# Pathologic Quiz Case

## An 87-Year-Old Woman With a Mass in the Tail of the Pancreas

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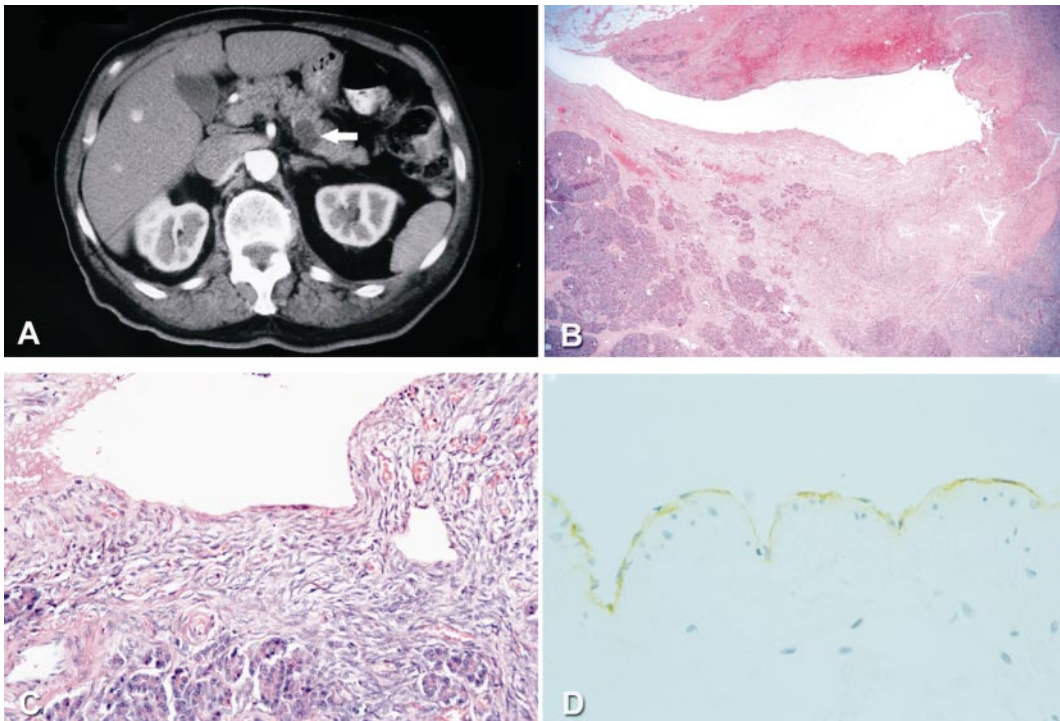
An 87-year-old woman suffered a fall and several fractured ribs. In the course of her treatment and work-up, a 1.5-cm mass was identified between the body and tail of the pancreas (Figure, A, arrow). It appeared unilocular and clear with no apparent septation or solid component. The rest of the organ was unremarkable; no other lesions were identified aside from fractured ribs. The patient had no abdominal symptoms relating to the pancreatic mass. Her past medical history included hypothyroidism, diabetes mellitus, and cardiac arrhythmia. She had a functioning pacemaker in place and had undergone a hysterectomy years prior to this admission. There was no history of weight loss, and the patient did not consume alcohol nor was she a smoker.

The patient underwent a laparoscopic distal pancreatectomy and splenectomy and tolerated the procedure well.

The spleen measured  $11 \times 9 \times 3$  cm, was a typical slate gray color, and the cut surface was pulpy red and unremarkable. The pancreas was lobulated, yellow, and measured  $6.5 \times 3.5 \times 1.5$  cm. Externally there was an ill-defined, nodular area toward the distal portion measuring 2.5 cm, which upon sectioning revealed an 0.8-cm unilocular cyst containing watery fluid. The remaining pancreas was unremarkable.

Histologic sections of the cyst revealed a thickened and hemorrhagic wall almost totally devoid of lining (Figure, B). Upon close examination of the cyst, there were rare flattened cells sporadically lining the lumen and surrounded by a spindly, basophilic stroma that partially surrounded but did not infiltrate the adjacent pancreatic tissue (Figure, C). This adjacent bland spindle cell proliferation was histologically reminiscent of ovarian stroma and had prominent, slightly dilated vascular channels that appeared to drain into the large cystic mass. Mucin was not identified within the cyst, nor was there any epithelium. In addition, a smaller cyst was seen adjacent to the large cyst, with preserved endothelial cells. The flattened cells seen lining the large cyst and adjacent cyst stained positive for factor VIII RA (Figure, D). The ovarian-like stroma was strongly positive for estrogen and progesterone receptors by immunohistochemistry.

**What is your diagnosis?**



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## Pathologic Diagnosis: Pancreatic Lymphangioma With "Ovarian-like" Stroma

Cystic masses of the pancreas represent a diagnostic and therapeutic challenge. While uncommon, they have generated a hefty amount of literature during the past 30 years. Differential diagnoses range from neoplastic to nonneoplastic and include serous and mucinous epithelial cysts, many of which are often either fully malignant or of low-grade malignant potential; developmental cysts; posttraumatic, parasitic, and pseudocysts; and vascular anomalies. Among the vascular proliferations encountered in the pancreas, lymphangiomas are far more common than hemangiomas, but account for only 1% of all lymphangiomas and less than 1% of all mesenchymal neoplasms of the pancreas.<sup>1</sup> Mucinous and other cystic epithelial neoplasms of the pancreas can present as asymptomatic masses on specialized radiographic studies, much like vascular tumors would.<sup>1</sup> The main difference is that many cystic epithelial neoplasms, particularly the mucinous lesions, while often quite bland appearing, may be biologically aggressive.<sup>2</sup> As such, fine-needle aspiration is not generally recommended for such cystic neoplasms for fear of potential seeding under treatment, leading to recurrence or even dissemination.<sup>3</sup>

Since the sentinel paper of Compagno and Oertel,<sup>4</sup> it has been shown repeatedly that mucinous cystic neoplasms of the pancreas are not totally innocuous tumors and indeed may be predisposed to recurrence and even metastasis. This has led to the recommendation of thorough examination of the entire cyst and adjacent structures as well as thorough analysis of the histogenesis of the cyst wall lining.<sup>3</sup> From the beginning, one common feature always associated with mucinous cystic neoplasms of the pancreas, particularly in female patients, has been the presence of "ovarian-like" stroma. Indeed, some have suggested that this stroma is present in virtually all such neoplasms and that a diagnosis of mucinous cystic neoplasms is almost always predicated on the identification of such stroma. Some studies have associated such neoplasms with diabetes mellitus. Several theories have been put forth regarding the nature and pathogenesis of this peculiar ectopic stroma. Ovarian-like stroma has been described in mucinous cystic neoplasms of the biliary tract, and it has been suggested that it may represent ectopic ovarian stroma. This would indicate that such mucinous epithelium represents transformation of ovarian coelomic epithelium.<sup>5</sup> Others have speculated, based on immunohistochemical findings, that the stroma has a smooth muscle phenotype. Yet others suggest that this represents metaplastic transformation of epithelium.<sup>6</sup> Of interest, regardless of how this stroma comes into being, it is usually estrogen and progesterone positive and is seen almost exclusively in women.<sup>7</sup>

Recently, a case report of ovarian-like stroma was described in association with a lymphangioma of the pancreas.<sup>8</sup> While unusual and to date unheard of, the histo-

logic evidence was reasonably compelling. The possible theories associated with the presence of such ectopic-appearing stroma in a lymphangioma, however, can be accepted if one were to believe the genesis of lymphangiomas. This would assert that lymphangiomas originate as spaces within primitive mesenchyme.<sup>8</sup> As such, this stroma would represent pluripotential mesenchyme that differentiates according to gender, which would explain why this stroma is often positive for female hormone receptors and is seen virtually exclusively in females. However, this would also refute exclusivity to mucinous cystic neoplasms. Perhaps the pluripotential mesenchyme is present more ubiquitously than previously appreciated and simply starts to differentiate upon stimulation by the growth or proliferation of a "mass" in the adjacent region. This uncommitted mesenchyme would then differentiate according to gender. However, this theory is speculative and in need of validation. The importance of this case is in recognizing salient differential diagnoses of cystic masses of the pancreas. It is important to realize the potential pitfalls in diagnosis and the clinical sequelae associated with each diagnosis. The need for thorough examination is underscored. To date, most of the literature indicates that the presence of ovarian-like stroma in cystic masses of the pancreas is an indication of mucinous cystic neoplasms.<sup>5</sup> Such was the initial impression in this case. These neoplasms are often malignant or are of low malignant potential. Lymphangiomas, on the other hand, are overwhelmingly benign. In this case, the presence of endothelial-lined cells in the main cyst and adjacent cyst was felt to support a diagnosis of lymphangioma. Ovarian-like stroma is not a finding exclusive to mucinous cystadenomas and can be seen in other lesions, such as lymphangiomas. Careful examination and appropriate ancillary studies may help support the diagnosis.

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