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Pancreatic Solid and Cystic Neoplasms

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Solid pancreatic neoplasms include pancreatic ductal adenocarcinoma (PDAC), pancreatic neuroendocrine tumor (PNET), solid pseudopapillary tumor (SPT), lymphoma, and metastasis (1). PDACs in the pancreatic head presenting with jaundice are typically seen as a hypoechoic mass with dilated pancreatic and bile ducts. PNETs are well-defined hypoechoic masses with increased vascularity (2). A few studies reported that contrast-enhanced ultrasound could help differentiate solid pancreatic lesions; pancreatic carcinomas frequently showed hypoenhancement and NETs predominantly showed hyperenhancement (3, 4). SPTs are well-defined lesions with variable echogenicity. A predominantly solid, predominantly cystic, or mixed solid and cystic mass can be seen. Calcifications may be present at the periphery of the mass. Primary pancreatic lymphoma usually appears as a bulky homogeneous hypoechoic mass. Enlarged peripancreatic and periaortic lymph nodes may be seen on ultrasound (5). Metastases appear as solid hypoechoic masses within the pancreatic parenchyma.

Cystic pancreatic neoplasms include serous cystic neoplasm (SCN), mucinous cystic neoplasm (MCN), SPT, cystic PNET, branch duct and main duct intraductal papillary mucinous neoplasm (IPMN), and ductal adenocarcinoma with cystic degeneration (6, 7). Microcystic SCNs can be seen as a hypoechoic mass with internal echoes, while oligocystic type may demonstrate individually identifiable cysts. Unlike SCNs, MCNs tend to have fewer (<6) and larger (>2 cm) cysts, and they lack external lobulations (6). The malignancy rates associated with MCNs range from 10% to 17% (8). While the term cystic PNET was originally attributed to large tumors

arising from a solid lesion that had undergone cystic degeneration, more recent literature describes a distinct smaller cystic subtype of PNETs (6). Branch duct IPMNs appear as a cluster of small cysts with lobulated margins and septa or unilocular cysts. Main duct IPMNs are characterized by segmental or diffuse dilatation of the main pancreatic duct caused by the tumor's mucin production. The reported detection rates of pancreatic cystic lesions with transabdominal ultrasound ranged from 58.5% to 88.3% (9, 10). Lesions in the pancreatic body are easiest to detect (9). While the detection rate for cysts in the uncinate process showed a significant increase using correlative CT, MRI, or endoscopic ultrasound images, those in the tail showed the least improvement using correlative images (10).

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