

# Answer

## Ectopic Spleen in the Pancreatic Tail

**A**ccessory or ectopic spleen is present in at least 10% of the population and is most commonly (in 16% of cases) located near or in the tail of the pancreas.<sup>1</sup> The size may range from a few millimeters to several centimeters and may enlarge after splenectomy.<sup>2</sup> In splenosis after trauma, the implantation of splenic tissue may occur anywhere in the abdomen, pelvis, or chest.<sup>3</sup> Most patients are asymptomatic, and the pancreatic tumor is usually discovered incidentally during an imaging workup for other reasons.<sup>4</sup>

The identification of an accessory spleen is important because it may mimic lymphadenopathy or a tumor in the pancreas, adrenal gland, or kidney.<sup>2,5</sup> In addition, it can occasionally cause symptoms due to torsion, hemorrhage, spontaneous rupture, or cyst formation.<sup>3,6</sup> Furthermore, for a surgeon intending to remove all of the functional splenic tissue, the presence of accessory or ectopic splenic tissue should be confirmed before the surgery to spare the patient an incomplete operation.<sup>7</sup>

The possibility of an ectopic spleen should be considered when a mass in the pancreatic tail has computed tomographic densities and MR imaging signal intensities equal or similar to those of the native spleen. An ectopic spleen may be confused clinically with an islet cell tumor, a pancreatic adenocarcinoma, or even metastases.<sup>8</sup> On computed tomographic and MR imaging, the presence of an accessory or ectopic spleen is suggested by its characteristic location and appearance similar to the spleen on nonenhanced and enhanced imaging.<sup>9</sup> The pancreatic tumor enhances identically to the adjacent spleen on dynamic-enhanced imaging after gadopentetate dimeglumine administration, including early and late arterial phases and early and late venous phases. This unique and typical enhancing pattern provides the clue for the diagnosis of an ectopic spleen.

Traditional confirmation of functioning ectopic splenic tissue can be obtained by means of scintigraphy using technetium Tc 99m sulfur colloid or technetium Tc 99m-labeled heat-damaged red blood cells, but its poor spatial resolution may lead to misdiagnosis.<sup>8,10</sup> A recent study<sup>11</sup> used T2-weighted MR imaging to detect the accessory spleen with a reticuloendothelial system-specific contrast medium (superparamagnetic iron oxides in this case). This technique is superior to scintigraphy because it offers better anatomical resolution and exposes the patient to no irradiation.<sup>11</sup> With the increasing use of positron emission tomography, an accessory spleen could be misdiagnosed as a malignant tumor.<sup>12</sup>

In our case, the tentative diagnosis was islet cell tumor of the pancreatic tail; therefore, the distal pancreas and spleen were resected. The patient's symptoms resolved after surgery, suggesting that the symptoms may have been related to this lesion. However, the symp-

toms could have been unrelated because of the nonspecificity of the symptoms. The patient experienced an uneventful recovery and was discharged from the hospital on the eighth postoperative day.

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### REFERENCES

- Halpert B, Alden ZA. Accessory spleens in or at the tail of the pancreas: a survey of 2,700 additional necropsies. *Arch Pathol.* 1964;77:652-654.
- Dodds WJ, Taylor AJ, Erickson SJ, Stewart ET, Lawson TL. Radiologic imaging of splenic anomalies. *AJR Am J Roentgenol.* 1990;155(4):805-810.
- White JD, West AN, Priebat DA. Splenosis mimicking an intra-abdominal malignancy. *Am J Med.* 1989;87(6):687-690.
- Takayama T, Shimada K, Inoue K, Wakao F, Yamamoto J, Kosuge T. Intrapane-creatic accessory spleen. *Lancet.* 1994;344(8927):957-958.
- Hayward I, Mindelzun RE, Jeffrey RB. Intrapane-creatic accessory spleen mimicking pancreatic mass on CT. *J Comput Assist Tomogr.* 1992;16(6):984-985.
- Furukawa H, Kosuge T, Kanai Y, Mukai K. Epidermoid cyst in an intrapancreatic accessory spleen: CT and pathologic findings. *AJR Am J Roentgenol.* 1998; 171(1):271.
- Mortel  KJ, Mortel  B, Silverman SG. CT features of the accessory spleen. *AJR Am J Roentgenol.* 2004;183(6):1653-1657.
- Sica GT, Reed MF. Case 27: intrapancreatic accessory spleen. *Radiology.* 2000; 217(1):134-137.
- Harris GN, Kase DJ, Bradnock H, Mckinley MJ. Accessory spleen causing a mass in the tail of the pancreas: MR imaging findings. *AJR Am J Roentgenol.* 1994; 163(5):1120-1121.
- Chung SY, Ryo UY, Pinsky S. Evaluation of a patient with splenosis by various imaging modalities. *J Natl Med Assoc.* 1986;78(5):458-459, 463.
- Boraschi P, Donati F, Volpi A, Campori G. On the AJR viewbox: intrapancreatic accessory spleen: diagnosis with RES-specific contrast-enhanced MRI. *AJR Am J Roentgenol.* 2005;184(5):1712-1713.
- Pitini V, Navarra G, Cavallari V, Arrigo C. An accessory spleen wrongly recognised as relapse by positron emission tomography. *Eur J Haematol.* 2006;77(3): 270-271.

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