Radiologic differential diagnosis for AIP

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Curriculum Vitae

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Imaging including CT and MRI plays crucial roles in the diagnosis and evaluation of treatment of autoimmune pancreatitis (AIP). Especially for the diagnosis, differentiation from pancreatic ductal adenocarcinoma is very important issue. In this lecture, I would like to review the imaging findings of AIP first and explain the imaging features that can be helpful for differentiating AIP from pancreatic ductal adenocarcinoma.

Imaging features can be divided into two groups; parenchymal imaging and ductal imaging. For parenchymal imaging, CT and MRI are better than transabdominal US. On US, diffusely enlarged pancreas with decreased echogenicity can be found as the typical finding of AIP. Echogenic interlobular septa may be visualized on EUS. Parenchymal involvement of AIP can be diffuse, focal or multifocal. Diffuse involvement is classical form and diffuse enlargement of pancreas parenchyma ("sausage-like appearance"), the absence of normal pancreatic clefts ("featureless pancreas") and minila peripancreatic infiltration are known imaging features. Peripheral hypodense rim (peripheral halo) can be found in 30-80% of patients. Enhancement pattern is variable and peripancreatic veins may be narrowed. On MRI, capsule-like peripancreatic rim can be seen as a low signal halo in T1 and T2 weighted images and it reflects the collection of inflammatory cells and fibrosis. Peripancreatic stranding and pseudocyst and fluid collection are rare. In focal type of AIP, the pancreatic head is more frequently involved than body/tail. Localized enlargement of pancreas parenchyma with delayed enhancement, low signal intensity on T1WI, iso or high signal on T2WI are known imaging findings of focal pancreatitis. Diffusion restriction is another imaging feature. AIP can be manifested as multifocal lesions in pancreas parenchyma, and lymphoma should be included for the differential diagnosis in this case. In ductal imaging, ERCP is mandatory for the diagnostic criteria in Japan and Asian countries. But, MRCP can be accepted by ICDC (international consensus diagnostic criteria for autoimmune pancreatitis). MRCP sometimes can overestimate the main pancreatic ductal narrowing and has inferior spatial resolution compared to ERCP. However, MRCP has its strength in non-invasiveness, no radiation, low failure rate and concomitant parenchymal imaging. Ductal imaging features in AIP include the presence of long (more than 1/3 length of the main pancreatic duct) or multifocal stricture without marked upstream dilatation. Also, intrahepatic bile duct stricture can be found in up to 90% of AIP patients. Enhancement of narrowed bile duct wall with tapered narrowing is the common finding. Extrapancreatic bile duct involvement is also not rare and imaging features are similar to those of sclerosing cholangitis (IgG4 related sclerosing cholangitis).

Differential diagnosis of focal AIP from pancreatic cancer is sometines difficult. Delayed persistent enhancement, speckled pattern of enhancement, less restricted diffusion and the presence of peripancreatic rim are imaging features favoring AIP than pancreas cancer. In ductal imaging, AIP usually shows longer, multifocal and tapered stricture, no upstream dilatation and intact side branches. "Penetrating duct sign" is also known as an imaging finding more frequently found in AIP than pancreatic cancer.