Evaluation of autoimmune pancreatitis with MR imaging: A comparative study with helical CT

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INTRODUCTION

Autoimmune pancreatitis (AIP) is a relatively rare type of chronic pancreatitis caused by an autoimmune mechanism [1-4]. The clinical and imaging features of this entity may be misleading and suggest the presence of a malignant tumor [2,3]. Reasonable imaging technique can reflect imaging characteristics of AIP, and avoid unnecessary surgical operation. The goal of this study is to elucidate the MR imaging characteristics in patients with AIP, and to evaluate the role of MR imaging in the diagnosis of this entity in comparison with helical CT.

METHODS

Dynamic helical CT, conventional MR imaging and dynamic MR imaging were performed in 6 patient with autoimmune pancreatitis proved histopathologically or clinically. MR imaging was performed at 1.5 T MR scanner (TwinSpeed Excite, GE System), and a phased array coils was used to receive MR signal. The pulse sequences included fat suppressed FSE T2WI, pre- and postcontrast fat suppressed spoiled GRE T1WI, and 3D fast recovery FSE MR cholangiopancreatography (MRCP). All data were reviewed by 3 radiologists in consensus. Images were analyzed for appearances of pancreas, biliary and pancreatic ducts, and other findings. The results from MR images were compared with that from helical CT. Surgical operation was performed in one case, and follow-up images were available in the other 5 patients who accepted steroid therapy or “Xiongdan” capsule (Traditional Chinese Medicine, TCM).

RESULTS

Diffusion (5 patients) or focal (1 patient, accepted surgical operation) enlargement of the pancreas were excellently showed on both helical CT and MR images (Fig A-C). Capsulelike rim around the enlarged pancreas was demonstrated in 3 patients on CT images, 5 patients on precontrast MR images (Fig B, C), 6 patients on postcontrast MR images. On precontrast fat-suppressed SPGR T1WI, enlarged pancreas showed relatively hypointense in all 6 patients. Reduced perfusion was found in enlarged pancreas on arterial phase helical CT and dynamic MR images, and the pancreatic parenchyma showed delayed enhancement. The capsulelike rim was isodense on precontrast CT, isointense or mildly hypointense on precontrast T1WI (Fig C), moderately hypointense on T2WI (Fig B), and delayed enhancement on postcontrast T1WI. MRCP showed irregular stenosis of pancreatic duct in 4 patients and stricture of distal common bile duct in 2 patients. At follow-up, CT and MRI abnormalities resolved after steroid therapy in 4 patients and after TCM therapy in 1 patient (Fig D).

DISCUSSION AND CONCLUSION

AIP is a relatively rare type of chronic pancreatitis that may be caused by an autoimmune mechanism, and often associated with other autoimmune diseases [2-4]. AIP is different from common chronic pancreatitis characterized by irreversible morphologic and functional changes [1-3]. Recognition of AIP is very important, because it is reversible when diagnosed and treated correctly [1,2,4]. However, the entity do not showed characteristic clinical features. Some patients, just like a patient in this study, accept unnecessary operation, because the clinical features and misleading and suggest malignant tumor of the pancreas. In recent years, imaging methods have provided us with more and more imaging findings to suggest AIP, including capsulelike rim around the pancreas, diffuse irregular stricture of the pancreatic duct, diffuse or focal enlargement of the pancreas along with hypointensity on T1-weighted MR images and delayed enhancement on dynamic CT and MR images.

To our knowledge, MR imaging has not been compared with dynamic helical CT in demonstrating imaging features of AIP in previous report. In this study, MR imaging is superior to helical CT in showing capsulelike rim (6 patients versus 3 patients) (Fig A-C) and stricture of the pancreatic duct (4 patients versus 0 patient), and equal to helical CT in showing swelled pancreas and delayed enhancement of the pancreatic parenchyma (6 patients versus 6 patients).

Imaging methods have played an important role not only in characterizing AIP, but also in evaluating the therapy effect of AIP. In this study, follow-up CT and MRI were available in 5 patients, and imaging abnormalities resolved after steroid therapy in 4 patients and after TCM therapy in 1 patient.

In conclusion, our results indicate that MR imaging and helical CT can not only show some characteristic imaging features of AIP, but also evaluate therapy effect of the entity. Our results also indicate that MR imaging is superior to helical CT in demonstrating capsulelike rim and diffuse irregular stricture of the pancreatic duct in patients with AIP.

REFERENCE

1. Sahani DV, et al. Radiology. 2004; 233(2):345-52.
2. Eerens I, et al. Eur Radiol. 2001; 11(8):1401-4.
3. Ito K, et al. Eur J Radiol. 2001; 38(2):78-93
4. Irie H, et al. Am J Roentgenol. 1998; 170(5):1323-7.

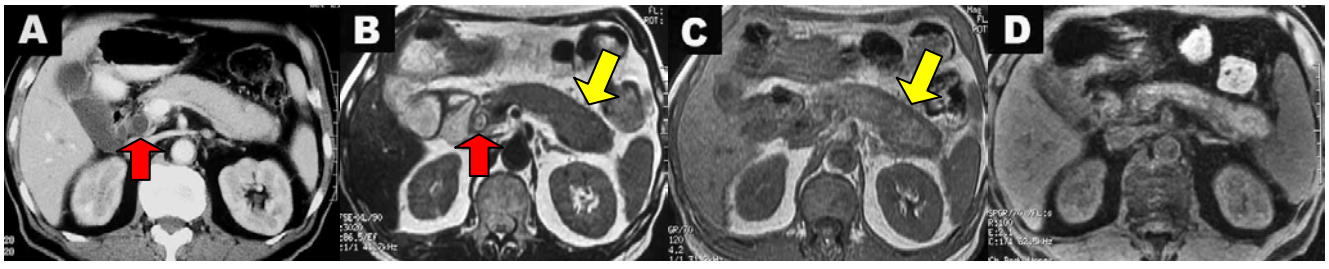

Figure A-D. Autoimmune pancreatitis in an 84-year-old man. Diffuse enlarged pancreas was showed on enhanced CT (A), FSE T2WI (B), and SPGR T1WI (C). A capsulelike dark rim (yellow arrows) around the pancreas was clearly demonstrated on FSE T2WI (B) and SPGR T1WI (C), but not on enhanced CT (A). Imaging abnormalities resolved on follow-up fat suppressed SPGR T1WI after 4 months of TCM therapy. Dilated bile duct (red arrows) was showed on Fig A and B.