Pancreatic intraductal papillary mucinous neoplasms of the side branches: Value of MR imaging and MR cholangiopancreatography in the follow-up

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Authors: S. Salemi, P. Boraschi, F. Donati, R. Gigoni, V. Perrone, M. Del Chiaro, U. Boggi, C. Bartolozzi, F. Falaschi; Pisa/IT
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Purpose

Intraductal papillary mucinous neoplasms (IPMN) of the pancreas are traditionally considered potentially malignant lesions, but cross-sectional studies suggest that exclusive branch-duct involvement is associated a lower risk of carcinoma and a favourable prognosis than main pancreatic duct involvement. The intraductal papillary mucinous neoplasms side branches (BD-IPMNs) of the pancreas smaller than 30 mm and no mural nodules can be followed up without surgery. The purpose of this exhibit is to establish the actual role of MR imaging and MR Cholangiopancreatography (MRCP) in the follow-up of branch-duct-type pancreatic intraductal papillary mucinous neoplasms.
Methods and Materials

Twenty-seven patients with diagnosis of BD-IPMNs who had cysts less than 30mm in diameter without mural nodules, underwent initial and follow-up MRI and MRCP at 1.5T-device. The phased-array coil was used for both excitation and signal reception. Ten minutes before MR examination, 300 ml of water were used as an oral contrast agent in an attempt to improve the visualization of the duodenum. Scopolamine methylbromide (Buscopan® 20 mg/ml; Boehringer Ingelheim) was intramuscularly administered immediately before starting the examination in order to avoid peristaltic artefacts. The imaging protocol began with axial T2-weighted, respiratory-triggered, fat-suppressed, fast spin-echo sequence and/or single-shot T2-weighted fast spin-echo sequence. After acquisition of axial T1w/T2w sequences MR cholangiopancreatography (MRCP) was performed by means of coronal breath-hold, thin and thick-slab, single-shot T2-weighted fast spin-echo sequences (effective echo time, 1052 msec; thickness, 2, 10 and 50 mm; field of view, 35-45 cm; matrix size, 256x256 pixels; 0.5 signal averaged; acquisition time, 1-2 seconds for every image).

The follow-up period ranged from 12 to 73 months and the follow-up intervals between 6 and 14 months. The maximum diameter of cystic lesion, the presence of associated main pancreatic duct (MPD) dilatation and/or filling defects within cystic lesion were analyzed by two radiologists in conference.
Cysts were located in the pancreatic head in 6 cases, in the body-tail in 9 cases and involved the entire gland in the remaining 12 cases. In 18 patients (66.6%) no significant change of the pancreatic findings was identified on follow-up MRI and MRCP (Fig 1 on page ; Fig 2 on page ), whereas in 2 cases the cyst size decreased (Fig 3 a,b on page ; Fig 4 a,b on page ). A slight tumor enlargement (mean diameter increase of 16.4%; range:10-30%) without associated MPD dilatation or filling defects was observed in 6 patients (22.2%) (Fig 5 on page ). Only in one patient we detected a filling defect within cystic lesion that was confirmed at surgery.
Conclusion

The management of pancreatic intraductal papillary mucinous neoplasms has been controversial. Bernard et al argue that IPMTs should undergo limited resection in branch duct types smaller than 30 mm without mural nodules. Matsumoto et al. says that branch duct types my be treatable with limited resection or careful observation.

Endoscopic retrograde cholangiopancreatography (ERCP) and computer tomography (CT) has been no report concerning serial changes in IPMTs shown by MRI and MRCP, which is the best choice among imaging modalities for assessing these lesion.

Some published experiences have reported low positron emission tomography (18FDG-PET) sensitivity in detecting malignant tissue presence in cystic lesions but its value in managing IPMN not yet demonstrated.

The treatment controversy is mainly based on the fact that BD-IPMNs encompass a wide range of histologic findings, from apparently benign to overtly malignant, and foolproof prediction of malignancy is not possible.

There have many reports concerning the imaging findings to determine the likelihood of malignancy, an acceptable predictive sings of malignant of BD-IPMNs are the cyst size (greater than 30 mm in diameter), the presence of associated MPD dilation and/or the presence of filling defect within the lesion have.

Interesting change in MRCP findings were observed in 4/27 cases of our study: only in 2 patients MRI and MRCP revealed an indicator of malignancy in the cystic lesion, tumor enlargement greater than 30 mm and a filling defect within cyst respectively and in 2 cases MRCP show tumor size decreased on follow-up.

In several of our cases, branch-duct type IPMT reported or slight tumor enlargement (diameter cyst lesion less 30 mm) or no significant change in the long follow-up period.

The BD-IPMNs grow slowly over time and a conservative approach seems to be justified in clinical management; however, a larger series of patients and a longer follow-up is required to confirm the safety of this MR protocol.
References


Personal Information

Simonetta Salemi, MD
2nd Unit of Radiology, Department of Oncologic and Radiological Sciences
Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
Phone: +39.050.996782
Fax: +39.1782211474;
e-mail: simo.salemi@tiscali.it

Piero Boraschi, MD
2nd Unit of Radiology, Department of Oncologic and Radiological Sciences
Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
e-mail: p.boraschi@do.med.unipi.it

Francescamaria Donati, MD
2nd Unit of Radiology, Department of Oncologic and Radiological Sciences
Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
e-mail: fra.donati@katamail.com

Roberto Gigoni, MD
2nd Unit of Radiology, Department of Oncologic and Radiological Sciences
Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
e-mail: robertogigoni@virgilio.it
Perrone Valerio, MD
General and Transplantation Surgery- Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
vgperrone@libero.it

Del Chiaro Massimo, MD
General and Transplantation Surgery- Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
m.delchiaro@ao-pisa.toscana.it

Boggi Ugo, MD
General and Transplantation Surgery- Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
u.boggi@patchir.med.unipi.it

Fabio Falaschi, MD
2nd Department of Radiology - Pisa University Hospital
Via Paradisa 2, I-56124 Pisa, Italy
e-mail: f.falaschi@ao-pisa.toscana.it

Carlo Bartolozzi, MD
Professor and Chairman
Diagnostic and Interventional Radiology - University of Pisa
Via Roma 67, I-56125 Pisa - Italy
e-mail: bartolozzi@do.med.unipi.it