

Intraductal Papillary-Mucinous Tumor of the Pancreas: The Clinical Research Continues

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Intraductal papillary-mucinous tumors constitute a relatively new and increasingly reported disease of the pancreas and are characterized by intraductal papillary growth and thick mucin secretion; copious quantities of mucin fill the main and/or branch pancreatic ducts and cause ductal dilatation. Intraductal papillary-mucinous tumors have malignant potential and exhibit a broad histological spectrum, ranging from adenomas to invasive carcinomas. Malignant forms of intraductal papillary-mucinous tumors are associated with a lower incidence of lymph node metastasis than ductal adenocarcinoma, are usually confined to the peripancreatic region and have a more favorable prognosis. Lymph node dissection is unnecessary for benign lesions or carcinoma *in situ* and limited resection, such as duodenum-preserving excision of the pancreatic head and tumor enucleation, is a reasonable option even if there are no definitive data on this latter option. Some benign and asymptomatic intraductal papillary-mucinous tumors may be followed up without surgical treatment. Accurate assessment of the likelihood of malignancy is therefore required for the appropriate management of intraductal papillary-mucinous tumors.

A possible pre-operative assessment evaluation of these tumors with imaging techniques has been recently explored by Japanese researchers [1]. In this study the authors compared the effectiveness of thin-section helical CT imaging, MR imaging with

gadolinium-enhanced dynamic technique and MR cholangiopancreatography (MRCP) in the examination of patients with intraductal papillary mucinous tumors. The helical CT, the dynamic MR imaging and the MRCP of 25 intraductal papillary mucinous tumors were compared with endoscopic retrograde cholangiopancreatography (ERCP) and surgical findings. The duodenal papilla was identified by helical CT and dynamic MR imaging in 11 (44%) and 20 (80%) of the 25 patients, respectively ($P < 0.05$). The main pancreatic duct was visualized on helical CT, dynamic MR imaging, and MRCP in all patients. Twenty-six cystic lesions were depicted in 21 patients: 25 (96%) on helical CT, 24 (92%) on dynamic MR imaging, and 26 (100%) on MRCP, respectively. A communicating duct between the main pancreatic duct and the cystic lesion was visualized on helical CT, dynamic MR imaging, and MRCP in 14 (54%), 11 (42%), and 15 (56%) lesions, respectively. The papillary projections corresponding to 3 mm or larger papillary neoplasms were depicted on helical CT and MR imaging in 7 patients (25%). The results of this study showed that MR imaging was equal or slightly superior to thin-section helical CT in the evaluation of intraductal papillary mucinous tumors. To better define the malignancy of these tumors is the association of a new imaging technique such as endoscopic ultrasonography with the cytologic aspirate of the mass during the same examination was recommended.

In this regard, a paper coming from Minneapolis, U.S.A, is of particular interest [2]. The authors reviewed and analyzed for follow-up all clinically and ultrasonographically suspected intraductal papillary-mucinous tumors aspirated during a 17-month period. They identified 18 cases of suspected intraductal papillary-mucinous tumors in patients ranging from 52 to 87 years in age. All patients had dilated pancreatic ducts, with 3 showing sonographically apparent intraductal papillary lesions; 5 had adjacent cystic or solid pancreatic masses. Cytologic preparations showed thick, glistening, viscid, abnormal mucus in all cases. Aspirates from 13 lesions (72%) were acellular or sparsely cellular, but entrapped single or loosely cohesive neoplastic cells were identified in 16 cases (89%). Goblet cell morphologic features were common (6/18, 33%), but papillary clusters and dysplastic changes were infrequent (3/18, 17%). Confirmatory histologic follow-up was available for only 4 patients (22%). They concluded that, although endoscopic ultrasound-guided fine-needle aspiration has important limitations, gross and cytologic findings can aid in confirming the suspected diagnosis, and integration of complete clinical, sonographic, and cytologic information may be the best way of reaching the most accurate diagnosis possible. However, a clear distinction between benign and malignant intraductal papillary-mucinous tumors with modern imaging remains difficult and features that are reliably predictive of malignancy have not been identified. Furthermore, predictive factors specific for invasive tumors have not been examined.

For this reason a Japanese group attempted to establish the predictive factors for malignancy and invasive carcinoma in intraductal papillary-mucinous tumors [3]. They studied 62 patients with intraductal papillary-mucinous tumors who underwent surgical treatment, with histological confirmation of adenoma in 28, carcinoma *in situ* in 14 and invasive carcinoma in 20. The tumors were of the main duct type in 14 patients, branch duct type in 32, and combined type in 16. A

multivariate analysis of 17 potential predictive factors (age, sex, symptoms, pain, body weight loss, jaundice, diabetes, acute pancreatitis, extrapancreatic malignancy, extrapancreatic neoplasm, serum CEA, serum CA19-9, tumor location, tumor diameter, mural nodule, diameter of the main pancreatic duct, patulous papilla) was carried out and two independent predictive factors for malignancy were identified: mural nodules and a main pancreatic duct diameter of 7 mm or more. Mural nodules in the main duct or combined type, and mural nodules and tumor diameter of 30 mm or more in the branch duct type were particularly indicative of malignancy. Mural nodules, jaundice and main duct or combined type were predictors of invasive carcinoma. The authors concluded that the above factors should be considered in the diagnosis of intraductal papillary-mucinous tumors to facilitate appropriate management.

At the end of this brief clinical review of the recent articles published regarding intraductal papillary-mucinous tumors of the pancreas, we can conclude that additional valuable information has been added to our knowledge of this new and rare pathology; however, these new advances in diagnosis need to be confirmed possibly by larger, multicenter studies involving a larger number of patients.

Keywords Cytology; Diagnostic Imaging; Endosonography; Magnetic Resonance Imaging; Neoplasms, Cystic, Mucinous, and Serous; Pancreas; Pancreatic Neoplasms; Pathology; Tomography, Spiral Computed

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