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RESEARCH ARTICLE

HIGHLIGHTS IN IPMN: MINI-REVIEW

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ABSTRACT

Intra-ductal papillary mucinous neoplasms (IPMNs) of the pancreas are neoplasms that are characterized by ductal dilation, intra-ductal papillary growth, and thick mucus secretion. It was first defined by Ohashi et al. in 1982 .It has been reported that the prevalence of IPMNs were 13 to 20%. In general, compared with malignant pancreatic ductal adenocarcinoma, IPMNs have better prognosis. They can be devided in two groups: Main Duct IPMN (MD-IPMN) and Branch-Duct IPMN (BD-IPMN). The risk of malignancy is higher in patients with MD-IPMN or mixed-IPMN than the BD-IPMN type (70 versus 25%, respectively).

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INTRODUCTION

Intraductal papillary mucinous neoplasms (IPMNs) of the pancreas are neoplasms that are characterized by ductal dilation, intra-ductal papillary growth, and thick mucus secretion. IPMN accounts for less than 10% of all pancreatic neoplasms. IPMN is usually classified into the following three types: Main Duct (MD), Branch Duct (BD), and combined. They can be found in: the head (50%), the tail (7%), and the uncinate process (4%), with the remainder (39%).The reported incidence of malignancy varies from 57% to 92% in the main ductIPMN (MD-IPMN) and from 6% to 46% in the branch duct-IPMN (BD-IPMN) .The features of high-risk malignant lesions are: a mass lesion of >30 mm, enhanced solid component, and the main pancreatic duct (MPD) of size ≥10 mm. Magnetic resonance imaging (MRI) and endoscopic ultrasound (EUS) are primary investigations. In general, resection is recommended for most MD-IPMN, mixed variant, and symptomatic BD-IPMN. The 5-year survival of patients after surgical resection for noninvasive IPMN is reported to be at 77-100%, while for those with invasive carcinoma, it is significantly lower at 27-60%.(1)(2)

Pathogenesis

IPMN is a pancreatic exocrine tumor composed of intra-ductal papillary growth and mucin.

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Histologically, it is characterized by mucin-producing, long, columnar epithelial cell lesions that cover the dilated pancreatic ducts with a papillary structure. They are differentiated from the mucinous cystic neoplasms by the lack of ovarian stroma and a direct exposure of the pancreatic ductal system (Velez and Ganguly, 2014; Ersin et al., 2015). Pathologically, IPMNs may show different degrees of dysplasia that may extend to invasive carcinoma. According to the epithelial dysplasia grades, IPMNs may be classified as low-grade dysplasia (adenoma or benign), moderate grade dysplasia (border), and high-grade dysplasia (malignant). Malignant IPMNs may either be noninvasive (in situ) or invasive (papillary adenocarcinoma).Many authors describe the progression of IPMN adenoma to IPMN invasive carcinoma. Their evolution toward the carcinoma stage is slow and estimated to be 3-6.4 years. (Velez and Ganguly, 2014)

Clinical Presentation

A significant number of patients may be asymptomatic. Discomfort or pain, nausea and vomiting, weight loss, diabetes, and jaundice can appear. In the early phase, the hyperproduction of mucin obstructs normal pancreatic secretion, causing pain. Persistent occlusion of the Main Pancreatic Duct (MPD) pancreatic causes insufficiency and some may have persistent hyperamylasemia for many years. 20% of the patients with IPMN present with acute pancreatitis of mild to moderate severity. (Norman Oneil Machado et al., 2015) (Velez and Ganguly, 2014)

Diagnostic evaluations

CT/MRI are the most common techniques for the diagnosis of IPMN with a sensitivity and specificity >90%. CT/MRI/MRCP may reveal one or more cystic dilatations in the pancreas (branch type) or diffuse or segmental dilatation of the MPD (main duct type). EUS is a highly sensitive for small lesions with diameters from 0.3 to 0.5 cm. of poorly differentiated tumors. The following CT scan signs are useful in differentiating a benign IPMN from a malignant IPMN: [1) the presence or absence of mural nodules, 2) focal size of the lesion: A lesion greater than 30 mm, with mural nodules that strongly suggest malignancy, 3) enlargement and metastasis of the lymph nodes, and 4) MPD dilatation of >10 mm 4) a communication of the cystic mass to pancreatic duct (Norman Oneil Machado et al., 2015) It has been demonstrated that the increased carcinoembryonic antigen (CEA) level (.192 ng/mL) within the cystic fluid is an indicator of mucinous neoplasm. (Ersin et al., 2015)

Treatment

Surgical resection with lymphadenectomy is strongly recommended for all surgically fit patients with invasive MD-IPMN, while patients with benign IPMN may be observed. Consider resection of all the MD-IPMN patients with MPD >6 mm in a fit patient. For BD-IPMN a conservative management with follow-up in patients who do not have the risk factors predicting malignancy is recommended. (Norman Oneil Machado et al., 2015) (Velez and Ganguly, 2014). The risk of malignancy is higher in patients with MD-IPMN or mixed-IPMN than the BD-IPMN type (70 versus 25%, respectively). (Crippa et al., 2010) (D'Souza et al., 2013)

Conclusion

The mean frequency of malignancy in MD-IPMN is 61.6% (range 36-100%) and the mean frequency of invasive IPMN is 43.3% (range 11-81%).The mean frequency of malignancy in resected BD-IPMN is 25.5% (range 6.3-46.5%) and the mean frequency of cancer is 17.7% (range 1.4-36.%). According to the guidelines in the International Consensus on the Diagnosis and Treatment of IPMN, which was first established by Tanaka et al in 2006 and updated in 2012, the approach to patients with IPMN follow this resection criteria: the presence of symptoms, MD, or combined type with dilatation of MPD >10 mm, presence of mural nodules >5 mm in size, cytological findings and CEA concentration in pancreatic juice >110 ng/mL. (Norman Oneil Machado et al., 2015) (Velez and Ganguly, 2014) (Tanaka et al., 2006) Patients who are found to have BD-IPMN radiologically should be monitored every 3 to 6 months when the cyst is larger than 3 cm, and once every 2 to 3 years when the cyst is smaller than this size.1

Asymptomatic and multifocal BD-IPMNs may be monitored at intervals determined according to the size and morphology of the cyst.(5) The 5-year postsurgical survival rate is reported to be 77 to 100% for benign/preinvasive IPMN and 22 to 65% for malignant/invasive IPMN. (Salvia et al., 2004) (Rodriguez et al., 2007) (Niedergethmann et al., 2008)

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