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Novel biomarkers for the management of the intraductal papillary mucinous neoplasms of the pancreas

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Objectives: Presentation of the value of biomarkers in the evolution and management of the Intraductal Papillary Mucinous Neoplasms (IPMN) of the Pancreas.

Background: IFMN are thought to evolve from low grade dysplasia to high grade up to invasive carcinoma. The excision of lesions prior to the development of pancreatic cancer can prevent progression to incurable disease; as their progression can be as poor as pancreatic adenocarcinoma after the development of IPMN to aggressive cancer. In particular, the exclusion of high grade dysplasia IPMN is considered to provide survival benefit. IPMNs are challenges, as the identification of high grade dysplasia and early invasive cancer and the time and the frequency of the progression to malignancy, have not yet been determined. On the other hand, pancreatectomy is associated with a risk of significant morbidity and mortality of 20-30% and 2-4%, respectively. The diagnostic methods include computed tomography (CT), magnetic resonance imaging (MRI), magnetic resonance cholangiopancreatography (MRCP), and endoscopic ultrasound (EUS). Fine needle biopsy with ultrasound imaging (EUS-FNA), consists the most promising method is endoscopic as it allows the analysis of the cystic fluid with biomarkers.

Results: To date, in clinical practice, we use two biomarkers, carcinoembryonic antigen (CEA) and carbohydrate antigen 19-9 (CA19-9). Biomarkers such as: KRAS, GNAS and BRAF mutations, hTERT and Hedgehog proteins expression, MUC expression, S100 expression, DNA methylation, CDKN2A and p53 inactivation, BRG1 inactivation/expression, STK11 mutation, mAb Das-1 activity, abnormal MicroRNA expression and intra- and peritumoral inflammation will play an important future role in identifying those patients who benefit from an early surgical operation and those who will benefit from the careful wait-and-go approach.

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