ISSN 2689-8268 | Volume 3

American Journal of Surgery and Clinical Case Reports

Case Report Open Access

A Case of Intraductal Oncocytic Papillary Neoplasm with Histological and Immuhistochemistry Findings

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Received: 07 July 2021
Accepted: 19 July 2021
Published: 24 July 2021

Citation:

Moreira LR. A Case of Intraductal Oncocytic Papillary Neoplasm with Histological and Immuhistochemistry Findings. Ame J Surg Clin Case Rep. 2021; 3(8): 1-4

Keywords:

Intraductal Oncocytic Papillary Neoplasm; Immuhistochemistry

1. Introduction

Intraductal Oncocytic Papillary Neoplasm (IOPN) of the pancreas is defined as a grossly cystic epithelial neoplasm composed by an intraductal lesion with papillary architecture and characteristic oncocytic epithelium (World Health Organization - WHO, 2019). It was first described in 1996 by Adsay et al [1].

It used to be classified as a subtype of intraductal papillary mucinous neoplasm (IPMN), because both have similar morphological aspects (cystic pancreatic lesion due to dilatation of the ducts by an intraductal neoplasm) [2].

In 2019, WHO recognized as a distinct type of intraductal neoplasm. Studies have demonstrated that IOPNs are genetically distinct of IPMN. IOPN generally lacks the alterations commonly found in the other subtypes of IPMN, including mutations in KRAS and GNAS. In addition, histologically mucin production is minimal in IOPN and mucin expression pattern (immuhistochemistry findings) are different. There are few data on pathogenesis [2, 3, 4, 5].

It is a very rare entity, accounting for 4.5% of intraductal neoplasms of the pancreas. Approximately 70% occur in the head of the pancreas and has indolent behavior even if associated with invasive carcinoma [2, 6, 7].

The aim of this study is to present a case of IOPN with morphological characteristics and immuhistochemistry findings.

2. Materials and Methods

Available photographs and descriptions as well as histologic sections to assess pathological parameters.

3. Pathology Findings

A man, 88 years old with a mass in the in the body. of the pancreas. Our laboratory of pathology received distal pancreatectomy with clinical information on pancreas mass and jaundice.

Grossly, the tumor ranged 2,2 cm in greatest dimension. It was a complex mass with both solid and cystic components contained clear viscous fluid. There were friable papillary projections and solid areas within the cystically dilated duct as showed (figure 1). The lesion was located in the body of the pancreas.

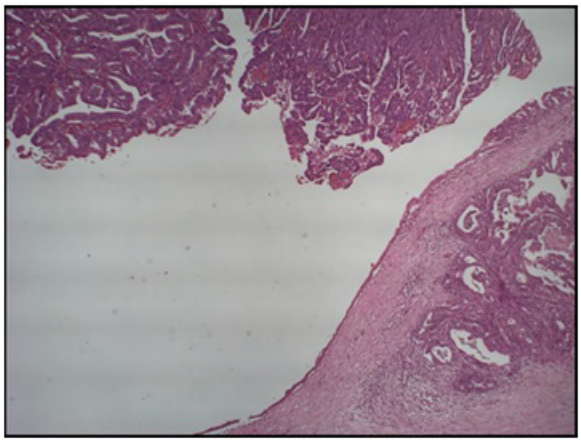

Figure 1: HE 40X. The papillary projections within the cystically dilated duct - IOPN (left) and invasive component in the stroma (right).

Microscopically, the cyst portion corresponded to ducts, which were distended by intraductal tumor complex and arborizing papillae with delicate fibrovascular cores. The papillae were lined by multiple layers of neoplastic cells with abundant granular eosinophilic cytoplasm and large, nuclei containing prominent nucleoli.

Scattered goblet cells were also identified. Cribriform structure and intraluminal mucin formation were not uncommon. Neutrophilic granulocytes may also be seen in some fields (figure 2).

The solid portion corresponds to invasive component, a carcinoma with infiltrative tubules (ductal adenocarcinoma) (figure 3).

Venous as well as lymphatic (small vessel) invasion was not identified. Perineural invasion was present. Extension beyond the pancreas (invasion of peripancreatic adipose - soft tissue) was detected. Tumor extension in this area does not affect staging, but should be noted in the pathology report. Lymph node metastasis were not identified.

Margins were uninvolved by neoplasia. A total of 22 lympho nodes were free of metastasis.

Immuhistochemicallly, IOPN showed strong and diffusely label for EMA (MUC 1) and MUC6 labeling. There was lack of MUC2 expression (which is present in intestinal-type IPMNs) (figure 4, 5, 6).

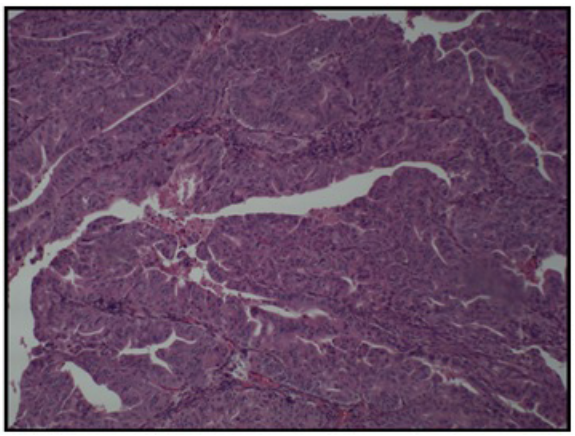

Figure 2: HE 100X. The papillae component was lined by multiple layers of neoplastic cells with abundant granular eosinophilic cytoplasm and large nuclei containing prominent nucleoli. Neutrophilic granulocytes may also be seen.

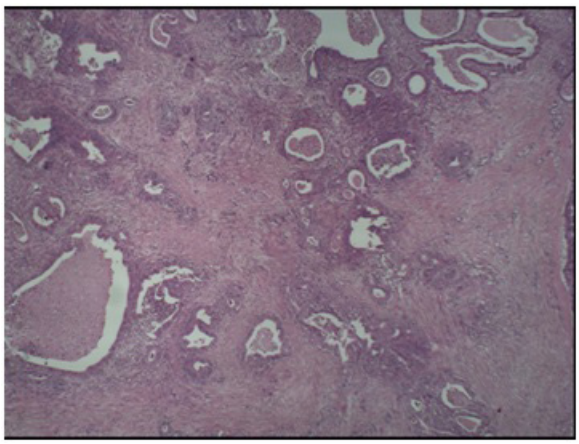

Figure 3: HE 100X. The solid portion corresponds to invasive component, a carcinoma with infiltrative tubules (ductal adenocarcinoma)

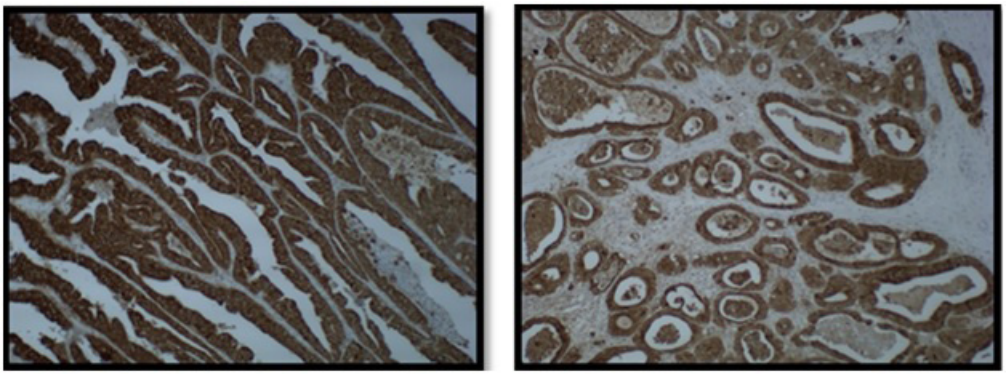

Figure 4: MUC 1 (EMA) 100X. Immuhistochemicallly, IOPN (right) and ductal invasive component (left) showed strong and diffusely label for EMA (MUC 1).

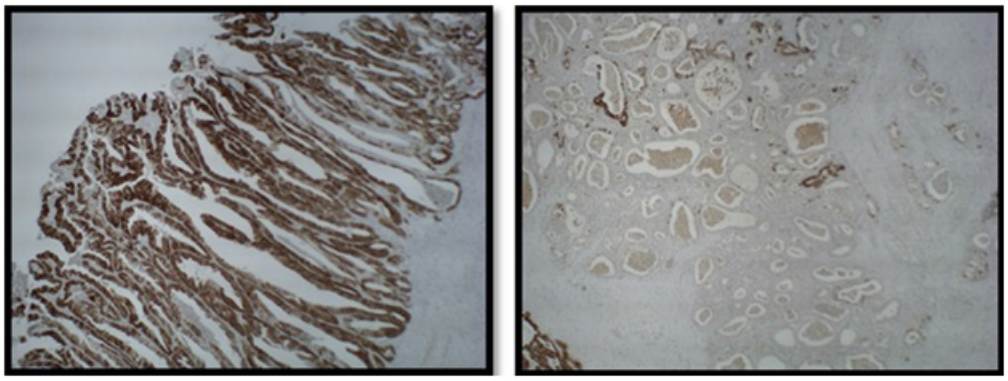

Figure 5: MUC 6 40X. Immuhistochemicallly, IOPN (right) showed strong and diffusely label for MUC 6 and ductal invasive component (left) showed focal label for MUC6.

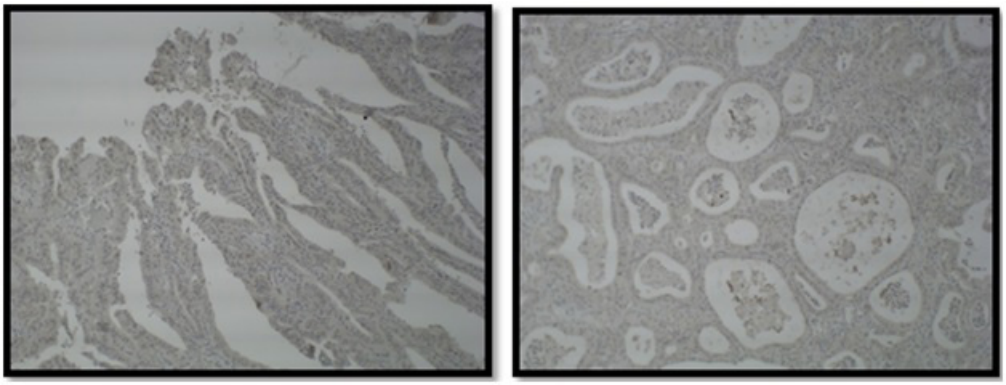

Figure 6: MUC 2 40X e 100X. Immuhistochemicallly, IOPN (right) and ductal invasive component (left) showed lack expresssion for MUC2. A feature that makes is not seen in IPMN, but it is a finding of IOPN.

4. Discussion

Intraductal oncocytic papillary neoplasm (IOPN) of the pancreas is a rare tumor, it accounts for 4.5% of intraductal neoplasms of the pancreas [6]. The majority (70%) of IOPNs occurs in the head in late adulthood [1, 2, 5].

IOPNs is radiologically described as a (multi) cystic or a complex/partially cystic pancreatic mass, whereas others was simply reported as a mass [5].

Grossly, IOPN ranges from 1 to 14 cm (median = 4.5 cm - 5,5 cm) in greatest dimension. Patient age ranged from 36-87 years (mean: 59 years). It is described as multilocular or unilocular cyst, some containing papillary projections or solid nodules. The multilocular and heterogenous gross appearance corresponds to ducts, which were variably distended by intraductal tumor, whereas other unilocular cysts represented ducts dilated due to downstream tumoral obstruction. There is little intarductal mucin [2, 5].

The microscopic features are oncocytic cells, often with large nucleoli, arborizing papillary architecture in a lumen formation, which can focally lead to a cribriform architecture and minimal mucin production. [3, 4, 5].

The main differential diagnosis is Intraductal Papillary Mucinous Neoplasm (IPMN). IPMN doesn´t have oncocytic features. The CDX2 and MUC2 expression and KRAS mutations are common in IPMN.

IOPNs lack the intestinal differentiation and have different mucin expression patterns from IPMN. IOPNs show strong MUC6 labeling and lack CDX2 and MUC2 expression, which is present in intestinal-type IPMNs [2, 3, 4].

The molecular aspect of IOPN is paucity of KRAS mutations. Instead, there is often KRAS mutations in ductal neoplasms, including a high percentage of IPMNs and the majority of ductal pancreatic carcinomas.

They exhibit indolent behavior even if associated with invasive carcinoma. An invasive component can occur in 29% - 61% of the cases and may appear in different patterns including infiltrative tubules and carcinoma with mucinous and oncocytic features [5, 7].

In our case, margins were uninvolved by neoplasia. A total of 22 lympho nodes were free of metastasis. Unfortunately, the follow-up was lost.

Marchegiani et al reported median overall survival of 130 months, despite reporting higher invasion and recurrence rates [7].

In summary, we report a case of IOPN with morphologic and immunolabelling aspects that makes this disease a distinct entity recognized by W.H.O in 2019.

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