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Solid-pseudopapillary neoplasms of the pancreas: A rarecause of abdominal pain

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Abstract

A solid papillary tumor of the pancreas is a rare neoplasm that occurs mainly in young women. It is a non-aggressive tumor with characteristic imaging features. We present the case of a 29-year-old female who was referred to the radiology department of our hospital to explore a long-standing abdominal pain. Imaging findings were consistent with a solid papillary tumor of the pancreatic tail. She underwent surgery and the diagnosis was confirmed after histological study.

Keywords: Solid-pseudopapillary neoplasms, SPT, pancreas, abdominal pain, US, CT, MRI

1. Introduction

A solid papillary tumor (SPT) of the pancreas is a rare neoplasm that is mainly encountered inyoung females. It was first described by Frantz in 1959 as a non-aggressive tumor **[1]**.

However, malignant forms have been described. Imaging modalities play a key role in identifying SPT of the pancreas, differentiating it from other pancreatic neoplasms, anddepicting potential signs that may suggest malignancy.

2. Case presentation

We report the case of a 29-year-old female who presented to the gastroenterology department of our hospital with episodic, long-standing abdominal pain localized to the left upper quadrant. The patient denied intestinal transit disorders and weight loss. No particular medicalor surgical history was found. Physical examination showed no anomalies. Laboratory test parameters were within normal limits. Abdominal ultrasound demonstrated a well-circumscribed, encapsulated mass in the region of the pancreatic tail, with heterogeneous mixed solid and cystic content, measuring 75x76mm **(Figure 1)**.

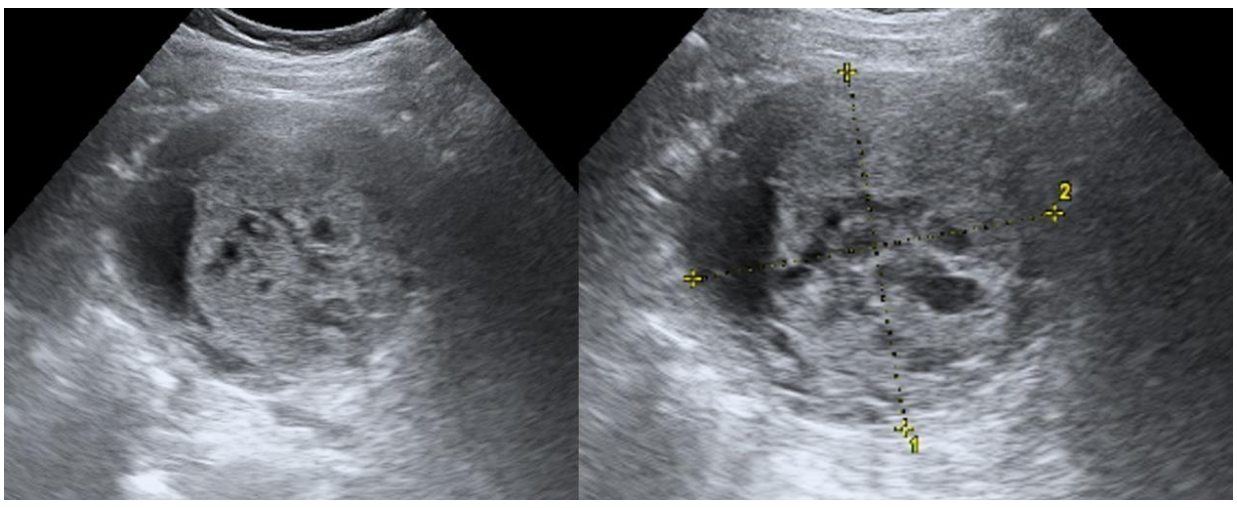

Figure 1: Abdominal ultrasound images demonstrating a well-circumscribed, encapsulated mass in the region of the pancreatic tail, with heterogeneous mixed solid and cystic content.

Abdominal CT examination demonstrated a well-encapsulated mixed density lesion of the pancreatic tail, with cystic central component and the peripheral hyperdense solid portion that slightly enhances on post-contrast images **(Figure 2)**. There were no signs of adjacent organs and vessels invasion. No other lesion was found, particularly in the liver. Abdominal MRI was then performed for a better characterization, and it showed a well-defined lesion of the pancreatic tail, with a double component; central cystic and peripheral solid portion, surrounded by a hypointense rim on T1-W and T2-W sequences **(Figure 3)**. The solid component was hypointense on T1-W and T2-W images and demonstrated a marked heterogenous enhancement on T1 FAT-SAT post-contrast sequences **(Figure 4)**.

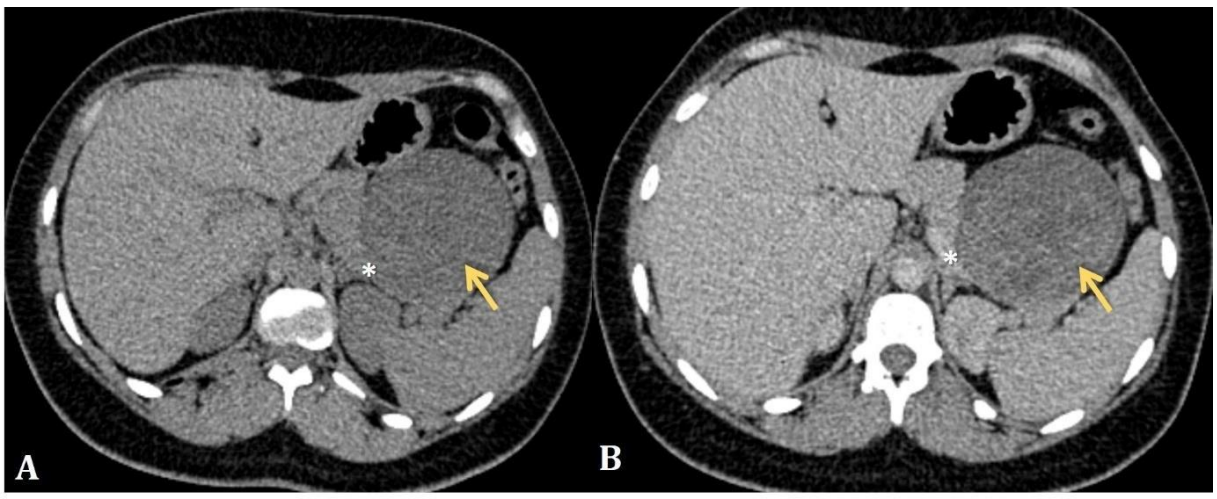

Figure 2: Axial non-enhanced (A) and post-contrast (B) abdominal CT images demonstrating a well-encapsulated mixed density lesion (yellow arrow) of the pancreatic tail (asterix), with cystic central component and peripheral hyperdense solid portion that slightly enhances on post-contrast images.

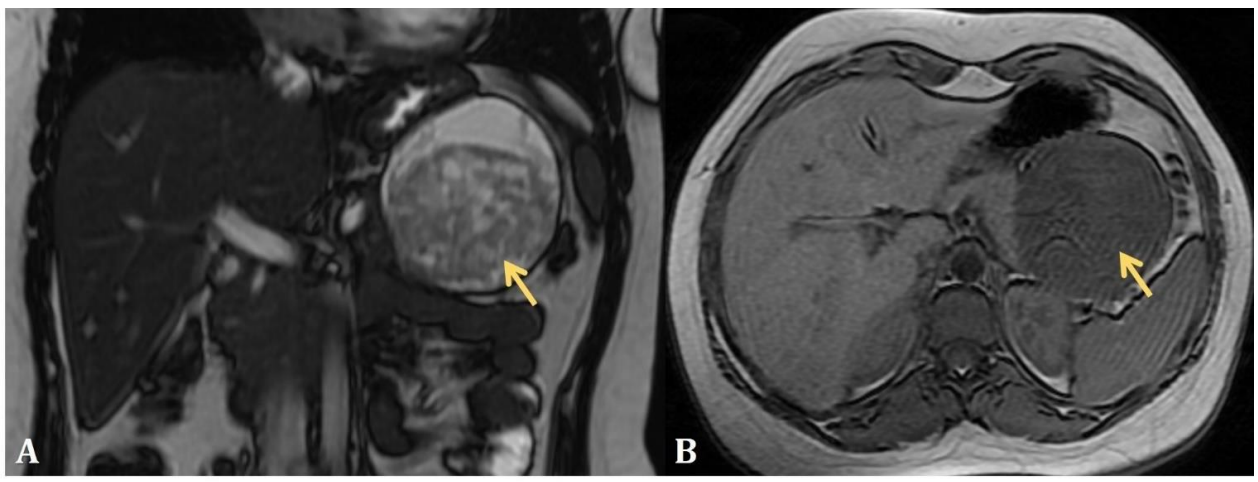

Figure 3: Coronal T2-W (A) and axial T1-W (B) abdominal MRI images showing a well- defined lesion of the pancreatic tail (yellow arrow), with a central cystic and peripheral solidportion, surrounded by a hypointense rim.

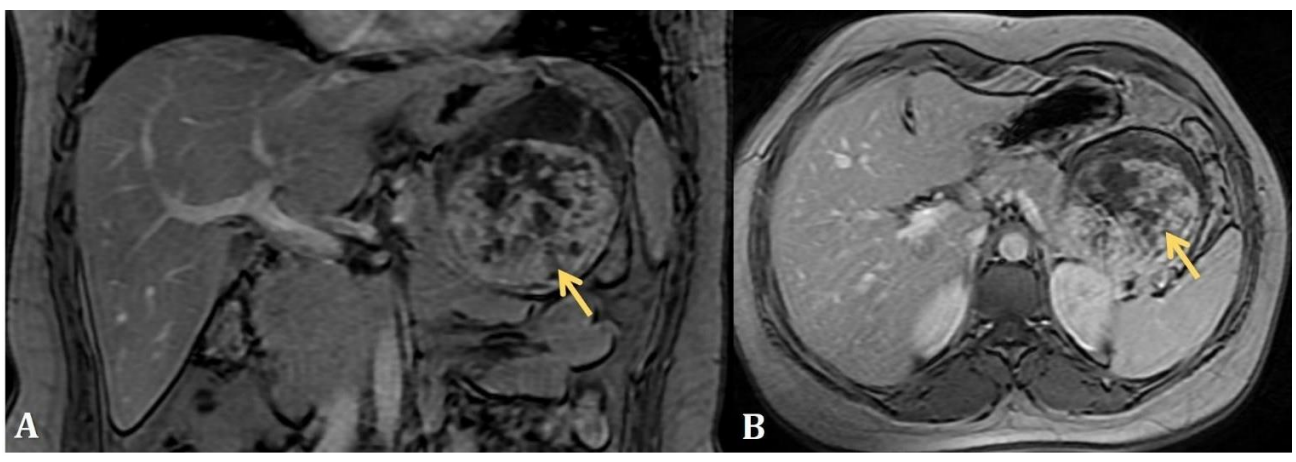

Figure 4: Coronal (A) and axial (B) T1 FAT SAT post contrast abdominal MRI images showing theenhancement of the solid component (yellow arrow).

The patient was then addressed to the surgery department, and a caudal pancreatectomy withsplenectomy was performed, as the mass was large and abutting the splenic vein. The postoperative course was unremarkable, and the patient was discharged 2 days later.

Pathological examination findings were consistent with a solid pseudopapillary tumor of thepancreas with no evidence of capsule invasion. Hence the diagnosis of a benign solid pseudopapillary tumor of the pancreas was retained.

3. Discussion

A solid papillary tumor (SPT) of the pancreas is a rare entity that represents 6 % of all exocrinepancreatic neoplasms **[2]**. It usually has a low potential for malignant transformation; however, malignant characteristics are present in 20 % of cases. This tumor has been referredto with different nomenclatures and is now classified by the WHO as an epithelial tumor under the Borderline subcategory **[3]**.

SPT mainly occurs in females in the second to fourth decades of life. The most common presenting symptom is vague abdominal pain. The mean size of the tumor is 6–8 cm **[3]**, withthe most common involved localization being the pancreatic body and tail (55–60 %) **[4]**.

When they are typical, imaging features of SPT help in assessing the diagnosis, in fact; hemorrhagic degeneration confers the heterogenous appearance with varying solid and cysticcomponents, hence; depicting blood products helps differentiate SPT from other pancreatic neoplasms **[5]**.

Ultrasonography is the first-line imaging technic used to explore the abdominal cavity. Itusually demonstrates a well-defined mass with heterogeneous aspects due to its mixed components **[3]**.

Abdominal CT usually shows a well-encapsulated mixed density lesion, with peripheral solidportion and cystic central component.

hemorrhagic degeneration presents as zones of high attenuation within the cystic portion. Following IV contrast administration, the capsule and the solid part demonstrate similar enhancement as the pancreatic gland on both arterial and portal phases. This feature helps differentiate SPT from pancreatic adenocarcinoma that is hypoattenuating in the venous phase and neuroendocrine tumors that are hyperattenuating in the arterial phase **[6]**. SPT typically displaces adjacent structures rather than invading them. Peripheral calcifications are described in 30 % of cases **[7]**. The presence of metastasis, pancreatic duct dilations, extracapsular invasion, and vessel encasement may be suggestive ofsolid pancreatic carcinoma **[5,8]**.

MRI typically demonstrates a well-defined lesion with heterogeneous signal intensities reflecting the complex nature of SPT tumors. It usually shows variable signal intensity on T1-W-W images, high signal intensity on T2-W images, with a surrounding hypointense rim on bothT1 and T2 weighted sequences. Hemorrhagic degeneration presents as areas of high signal onT1-W images and low signal on T2-W images. On post-contrast images, lesions demonstrate heterogeneous peripheral enhancement or, less often, complete homogeneous enhancement during arterial phase, with progressive but incomplete enhancement during portal venous and equilibrium phases. Compared with the lesion, the surrounding capsule shows earlier and more intense enhancement **[9]**.

Metastases are rare, as they occur in 5 % to 10 % of the cases. Liver and lymph nodes are commonly affected. However, mesentery, momentum, peritoneum, and lungs can also be involved **[4]**.

Central, stippled, and eggshell calcifications have been reported in the literature **[5]**.

SPT male to female ratio is 1:9.5 **[6]**, hence; solid pseudopapillary tumors should be the differential diagnostic consideration of a pancreatic mass with encapsulation and cystic andsolid components, even in men **[5]**.

The main differential diagnosis to SPT is nonfunctioning islet cell tumors as they both sharesome features, such as hypervascularity, cystic change, and a well-defined border. However, the cystic components of nonfunctioning islet cell tumors present an intermediate signal intensity on T1-W images and increased signal intensity on T2-W images, whereas the presence of blood products confers high signal intensity to the cystic portions of SPT hyperintense on T1- and T2-W images. Moreover, nonfunctioning islet cell tumor is found more often in elderly patients and has no female predominance **[5]**.

Surgical resection is the treatment of choice for SPT of the pancreas. Complete excision withnegative surgical margins is imperative. The tumor location defines the type of pancreatectomy to be performed **[10]**.

4. Conclusion

SPT of the pancreas is a rare entity whose diagnosis can be challenging. It must be suspected whenever a well-circumscribed heterogeneous pancreatic mass is encountered in a female patient. Cross-sectional imaging modalities play a key role in the characterization of these tumors and depicting eventual malignancy features that may impact the management procedure.

Conflicts of Interest: The authors declare that there is no conflict of interest regarding the publication of this paper.

Authors' Contributions: All authors contributed equally to this work.

Patient Consent to publication: Informed patient consent was obtained.

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