Case Report

Mature Cystic Teratoma of Pancreas

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Abstract

Mature cystic teratoma (MCT) of the pancreas is an extremely rare benign tumor. We report a case of a mature cystic teratoma of the pancreas confirmed on histopathology in a 41-year-old male. Ultrasonography, computed tomography, and MRCP revealed evidence of a large cystic lesion at the head of the pancreas. The entire mass was excised. Microscopic examination revealed the diagnosis of benign mature cystic teratoma (dermoid cyst). Complete surgical resection of the cyst is necessary for definitive treatment.

Keywords: Mature cystic teratoma; Pancreas; MRCP; Surgery; Pathology.

Introduction

Teratomas are congenital developmental abnormalities that originate from germ cells and can be derived from any of the three germinal layers. They occur mainly along the midline of the body, as it is the germ cell migration route during embryogenesis. They develop from misplaced germ cells during embryonic development. The lesion can have a variety of structures, from undifferentiated to differentiated, including bone, cartilage, hair, teeth, sweat, or sebaceous glands [1, 2]. The cranium, mediastinum, omentum, retroperitoneum, and sacrococcygeal region are the most frequent sites for their occurrence [3]. They are usually benign and well-differentiated lesions. Mature cystic teratoma (MCT) of the pancreas is an extremely rare benign tumor [4]. In this study, we report a case of mature cystic teratoma of the pancreas confirmed on histopathology in a 41-year-old male.

Case Presentation

A 41-year-old male patient was admitted to PGIMS, Rohtak with the chief complaint of abdominal pain for 2 months. The pain was insidious in onset, progressive in nature, mild in intensity, radiating to the back, and not relieved by positional change. The pain was associated with vomiting and retrosternal burning which radiated to the scapular region. There was no history of jaundice, loose stools, constipation, fever, melaena, or any significant loss of weight. There was no significant

medical history. On physical examination, the abdomen was soft and non-tender. Laboratory findings showed increased levels of serum CEA (4.9 ng/ml) and normal levels of serum CA19.9.

Ultrasonographic examination revealed evidence of a large cystic lesion measuring 4.8 x 3.4 cm at the head of the pancreas with echoes and debris in it and no flow on color Doppler. A CECT scan revealed a well-defined, non-enhancing, hypodense, unilocular cystic lesion measuring 5.1 x 4.2 x 4.0 cm, abutting the head of the pancreas and posterior wall of the stomach, showing an internal fat-fluid level, possibly a chylous mesenteric cyst.

On MRCP, a large cystic lesion of the head of the pancreas measuring 4.9 x 4.8 x 4.7 cm was present with an internal fat-fluid level and a small dependent 1 x 0.7 cm mural nodule. The lesion was well-defined, well-marginated, not communicating with the main pancreatic duct, and abutting the portal vein, common bile duct, and posterior wall of the stomach. The differentials provided were 1) Intrapancreatic mature cystic teratoma 2) pseudocyst of the pancreas.

The patient underwent Whipple's surgical procedure, but in our department, we received the cystic part only. Intraoperatively, a cystic lesion was found measuring 5 x 5 cm in the lesser sac, superiorly related to the posterior surface of the stomach and caudate lobe of the liver, inferiorly to the superior border of the pancreas, on the right side with the medial surface of the duodenum C-loop, on the left side with the body of the pancreas, and posteriorly with the portal vein and celiac plexus. There was no evidence of any significant abdominal lymphadenopathy.

We received an already cut-open unilocular cystic structure only, measuring 3.5 x 3 x 1 cm (Fig. 1). Grey-white cheesy material was present inside the cavity, and the wall thickness varied from 0.1 to 0.4 cm (Fig. 2). On microscopic examination, a cyst lined by mature stratified squamous to columnar epithelium and sebaceous glands was seen along with normal pancreatic tissue (Fig. 3, 4, 5). No immature tissues or malignant transformation were observed. The histomorphological features were consistent with a benign mature cystic teratoma (dermoid cyst).

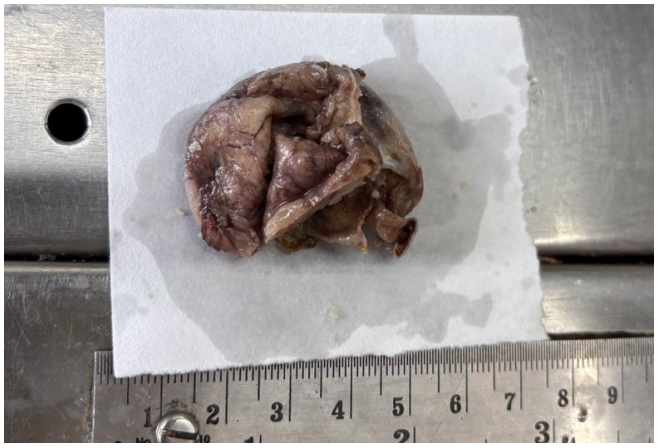

Figure 1: Gross: An already cut open cystic structure measuring 3.5 x 3 cm.

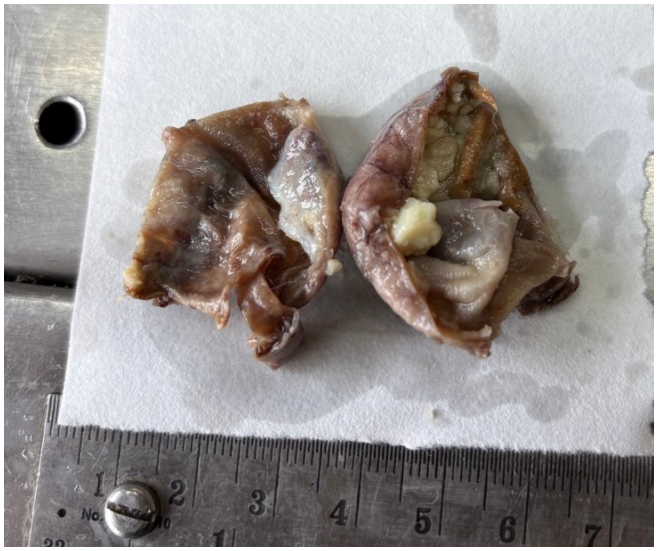

Figure 2: Gross specimen: Shows opened up cystic cavity with grey-white material present in the cavity.

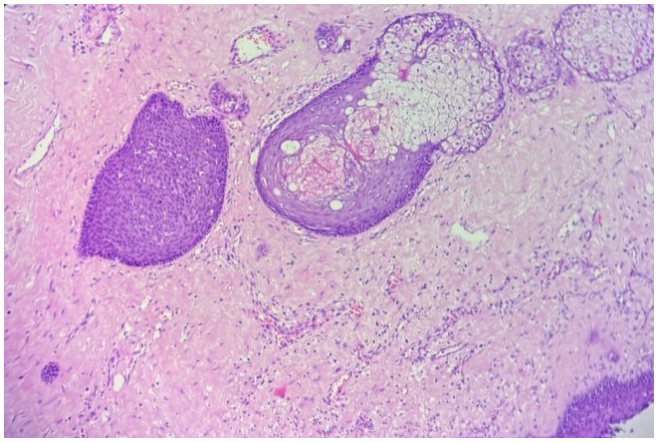

Figure 3: Microscopic examination (100x): Shows stratified squamous epithelium with underlying sebaceous glands.

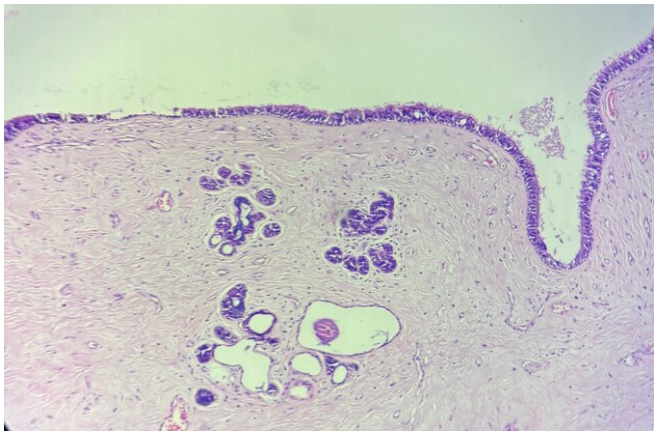

Figure 4: Microscopic examination (100x): Shows mature stratified squamous and columnar epithelium with sebaceous glands.

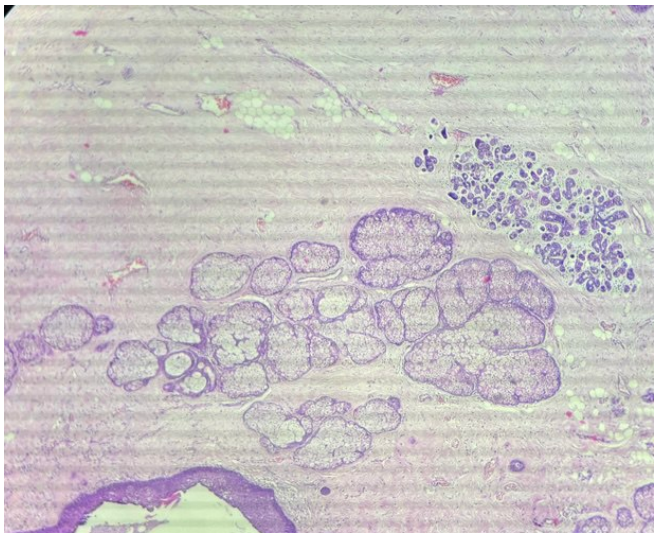

Figure 5: Microscopic examination (100x): Shows atrophic pancreatic acini.

Discussion

A mature teratoma is a congenital tumor, developed from pluripotent cells that can regenerate tissues from the ectoderm, endoderm, or mesoderm. The tumor may occur along the pathway of germ cell migration to their appropriated organs during embryogenesis. The most common sites involved are the ovary and testes, but it can occur in median or paramedian positions like the cranium, mediastinum, omentum, retroperitoneum, and sacrococcygeal region. The pancreas is one of the most uncommon locations [5]. Mature and immature are the two subtypes of teratoma. Mature teratomas can be solid or cystic. A cystic teratoma is known as a dermoid cyst [6].

A pancreatic mature cystic teratoma cavity mainly contains both cystic and solid components, like hair, teeth, bone, cartilage, or dermal appendages like hair follicles, sweat glands, and sebaceous material [5]. The age of presentation ranges between 2-74 years with a median age of 34.7 years with a slight male preponderance. The most common site in the pancreas is the body or the head. In our patient, the site was the head of the pancreas.

Most of the patients are asymptomatic at the time of diagnosis or present with nonspecific gastrointestinal symptoms like abdominal pain, nausea, vomiting, fever, and back pain. Laboratory tests like serum levels of CEA and CA19.9 have been used for cystic neoplasms of the pancreas. Their levels are within normal limits in MCT of the pancreas. But in our patient, CEA levels were slightly raised (4.9 ng/ml). Raised levels of CEA can be due to the mucinous component present in the cyst, as we received the cyst content separately labeled as ”mucinous.”

Radiologically, the appearance of MCT depends upon its composition. Fat, fat-fluid levels, and calcifications are features that are highly suggestive of MCT. On ultrasound, it appears as a well-defined cystic mass without any septae. Calcific areas with high intensity show acoustic shadowing [6].

Findings on CT and MRI are highly specific. CT is more sensitive for calcifications, while MRI can provide better visualization of fat content [7, 8]. In this study, a fat-fluid level was present on MRCP, which gave the possibility of intrapancreatic mature cystic teratoma.

EUS-guided FNA can also provide the diagnosis preoperatively. It facilitates accurate diagnosis by distinguishing teratomas from pseudocysts, serous, or mucinous cystadenoma. The cytological finding of a teratoma includes mature squamous cells, keratin debris, and inflammatory cells. Cystic fluid can be used for analysis of CEA or amylase levels [5].

The differential diagnosis of a pancreatic cystic lesion includes pseudocyst, mucinous or serous cystadenoma, intraductal papillary mucinous neoplasm (IPMN), and solid pseudopapillary tumor. A pseudocyst has no true epithelial lining. A mucinous cystadenoma has a mucinous lining, and the subepithelial stroma may resemble ovarian stroma. A serous cystadenoma has serous, clear cells with hyperchromatic round nuclei. IPMN is a cystic lesion with a mucinous lining connecting to native pancreatic ducts. Solid pseudopapillary tumors have degenerative pseudopapillary or loosely cohesive cellular arrangements with nuclear grooving and hyaline globule aggregation. Lymphoepithelial cysts lack epidermal appendages such as hair follicles and sebaceous glands [6].

Complete examination of the cyst wall after surgery makes an accurate diagnosis. Histological analysis is crucial to detect potential premalignant immature tissue. Malignant transformation is rare and occurs in about 1-2% of cases [9].

Conclusion

Mature teratoma of the pancreas is an extremely rare benign neoplasm. Preoperative imaging and FNA may be useful to lead to a diagnosis; however, malignant potential cannot be ruled out. Complete surgical resection of the cyst is necessary for definitive treatment.

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Competing Interests: The authors declare no conflict of interest.

References

1. Scheele J, Barth TF, Straburg J, Juchems M, Kornmann M, Henne-Bruns D. Dermoid cyst of the pancreas. Int J Colorectal Dis. 2010;25:415-6.
2. Koomalsingh KJ, Fazylov R, Chorost MI, Horovitz J. Cystic teratoma of the pancreas: presentation, evaluation and management. Jop. 2006;7(6):643-6.
3. Andrade-Rojas JJ, Lizardo-Thiebaud MJ, Andrade-Orozco G, Contreras-Loera L, Garza-Hinojos NL, De Anda-Gonzalez MG. Mature Cystic Teratoma in the Head of the Pancreas: An Unexpected Finding. World J Med Case Rep. 2021;2(3):55-61.
4. Kim H, Koh Y. Mature cystic teratoma of the pancreas: A rare cystic neoplasm. Open Med. 2019;14(1):872-4.
5. Ben Ameur H, Boujelbene S, Abdelhedi C, Gheriani O, Beyrouti MI. Mature cystic teratoma of the pancreas. Updates Surg. 2012;64(4):311-4.
6. Albayrak A, Yildirim U, Aydin M. Dermoid Cyst of the Pancreas: A Report of an Unusual Case and a Review of the Literature. Case Rep. 2013;2013(1):375193.
7. Daghfous A, Baraket O, Ayadi S, Bedioui H, Heifa A, Jouini M et al. Mature teratoma of the pancreas diagnosed by fine-needle aspiration. Arab J Gastroenterol. 2011;12(2):92-3.
8. Strasser G, Kutilek M, Mazal P, Schima W. Mature teratoma of the pancreas: CT and MR findings. Eur Radiol. 2002;12:S56-8.
9. Takai M, Kanemura M, Kawaguchi H, Fujiwara S, Yoo S, Tanaka Y et al. Mucinous adenocarcinoma of the intestinal type arising from mature cystic teratoma of the ovary: a rare case report and review of the literature. J Ovarian Res. 2012;5(1):41.