

Original Research Article

Morphologic features in cystic lesions of pancreas-a retrospective analysis

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ABSTRACT

Background: Cystic lesions of pancreas consist of a broad spectrum of reactive, benign and malignant conditions. The most common among cystic pancreatic lesions is pseudocyst of pancreas. Cystic tumours of pancreas are less common than solid one's accounting for less than 1% according to some studies. Literature review showed only a few extensive studies on cystic lesions of pancreas, especially from South India.

Methods: Our research is a descriptive histopathological analysis of 38 cases of cystic lesions of pancreas, done in the department of pathology of our institution, over a period of 5 years.

Results: We received a total of 38 cases of cystic lesions of pancreas. The age distribution ranged from 17 to 77 years. Male to female ratio was 24: 14. There were neoplastic and non neoplastic entities. Pseudocyst of pancreas was the most common cystic lesion (12 cases). Benign neoplasms included serous cystadenomas, mucinous cystadenomas and lymphangiomas. Ductal adenocarcinomas with cystic degeneration and adenocarcinomas with mucinous component were some of the malignant cystic lesions.

Conclusions: Cystic pancreatic lesions accounted for 24% of all the pancreatic lesions received in our institution during the period of this study. 24 cases (63%) were benign lesions and 14 cases (37 %) were malignant. Though cystic lesions of pancreas especially neoplasms are less frequent than solid neoplasms, it is important to study their diagnostic features since the management differs. Imaging studies may be similar in some cystic lesions. A proper clinicoradiological correlation and detailed investigational work up will aid in the correct diagnosis.

Keywords: Cystic, Lesions, Neoplasms, Pancreas

INTRODUCTION

Cystic lesions of pancreas can be neoplastic or non neoplastic. Though cystic neoplasms are less in pancreas compared to solid ones, it is important to study the different cystic lesions since some neoplasms may mimic pseudocysts of pancreas.¹ The novel diagnostic methods have helped in early detection of cystic neoplasms and lesions of pancreas. Moreover, advances in surgery and better post-operative care may be able to explain the increase in number of many resection specimens with cystic lesions of pancreas. In some cases, it can be difficult to classify a cystic lesion especially if there is

superadded infection and suppuration. Moreover, in small biopsies also it may be challenging unless adequate diagnostic features are present. The purpose of this study is to analyze the histopathological features of various cystic pancreatic lesions in a tertiary care hospital in central Kerala over a span of 5 years. We have also tried to categorize the different lesions based on their morphological features.

METHODS

The present study is a descriptive analysis of 38 cases of cystic lesions of pancreas received in the pathology

department of government medical college, kottayam, a tertiary care centre in south India, over a period of 5years from Jan 2012 to Dec 2016. All pancreatic lesions with cystic component were included in the study. The Hematoxylin and Eosin slides were analysed and serial sections were taken in relevant cases. The clinical details, imaging findings and other relevant investigational findings were retrieved from the data entered in the registers.

Inclusion criteria

All pancreatectomies and incisional biopsies with cystic components received in the histopathology lab during the period of January 2012 to December 2016

Exclusion criteria

Cases without proper data and inadequate material were excluded.

Data analysis

The data was entered in Microsoft excel, further statistical analysis was done using SPSS 16 software and frequency tables were calculated.

RESULTS

Out of 158 pancreatic lesions, a total of 38 cases of cystic lesions of pancreas were received in our department during this study, conducted over a period of 5years. The age range varied between 17 to 77. Males were more commonly affected (63%), with a male:female ratio being 24:14. Predominant cystic areas were seen in 68.4%, whereas 31.6% cases showed both cystic and solid areas. There were 24 cases (63%) in the benign category and 14 cases in the malignant category (37 %) (Table 1).

Table 1: Cystic lesions of pancreas.

Types	Cases
Benign	24 cases
Malignant	14 cases

Table 2: Benign cystic lesions of pancreas.

Types	Cases
Pseudocyst pancreas	12
Infected cysts	4
Serous cystadenoma	2
Mucinous cystadenoma	2
Cystic lymphangioma	2
Haemangioma	2
Total	24 cases

The benign lesions were further classified into non neoplastic lesions and neoplastic lesions. Pseudocysts of pancreas and infected cysts constituted the non neoplastic

group. Benign neoplasms included both epithelial type (serous cystadenomas and mucinous cystadenomas) and mesenchymal type (lymphangiomas and hemangiomas). The malignant ones were cystic degenerations in ductal adenocarcinoma and mucinous carcinomas. The most common cystic lesion was Pseudocyst (12 cases). The cases in benign category is shown in (Table 2).

There were 12 cases of pseudocysts which constituted the most common benign lesion. The age group varied from 34 to 70years with greater predilection in males. All cases had history of pancreatitis. But in some cases due to the sudden presentation and imaging findings mimicking cystic neoplasms, inappropriate surgical excision was done. The gross specimen of all showed cystic areas. The size ranged from 1.5cms to 26cms. Some cases showed features of pancreatitis (inflammatory infiltrate, acinar atrophy and fibrosis) in the adjacent pancreatic tissue with focal dysplastic changes of pancreatic duct lining in 2 cases. Morphology of a case of pseudocyst is shown (Figure 1a).

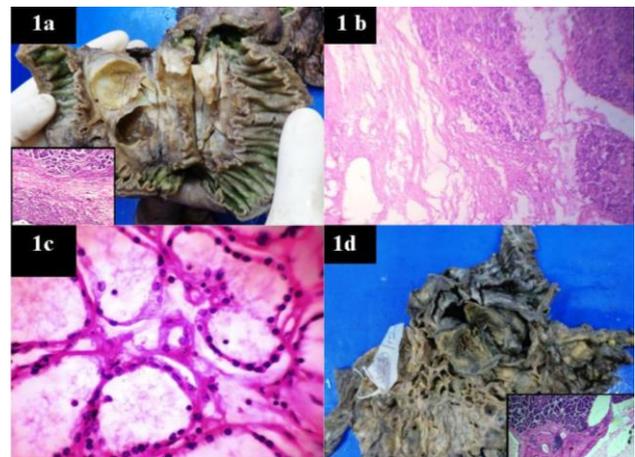


Figure 1: shows gross and microscopic features of benign cystic lesions of pancreas. 1a. Gross specimen of pseudo cyst showing a well-circumscribed cystic lesion in the pancreas. Inset -photomicrograph showing a cystic lesion without any definite lining. H & E 100X. 1b. Microscopy of serous cystadenoma showing a cystic neoplasm with pancreatic tissue in the periphery. H & E 40X. 1c. Higher magnification of serous cystadenoma showing cystic spaces lined by clear cells. H & E 400X. 1d. Gross specimen of cystic lymphangioma pancreas showing a multiloculated cystic lesion. Inset shows cystic spaces lined by endothelial cells with intervening stroma showing lymphoid tissue. Pancreatic acini are seen in the periphery. H & E 400X

Of the 4 cases of infected cysts, two showed suppuration and the third case showed necrosis and focal suppuration. One patient had septicaemia also. All patients were diabetic and presented with fever and abdominal discomfort. The fourth case of infected cyst occurred as a part of perforation peritonitis involving the duodenum.

Serous cystadenomas-there were 2 cases of serous cystadenoma, first one was a microcystic serous cystadenoma in a 70year old female. A distal pancreatectomy with splenectomy was done. The tumour size was 10cms. The second case was an oligocystic serous cystadenoma in a 44-year-old male, located in the head of pancreas. Microscopy of both showed cystic spaces lined by clear cells (Figure 1b and 1c). There were 2 mucinous cystadenomas. Both were in females, showed cystic areas and were located in the body of pancreas.

We came across 2 cases of lymphangiomas and hemangiomas each in our study. One of the 2 cases of lymphangiomas we received was in a 21-year-old male and due to the huge size (40cms) and clinicoradiological differentials of cystic neoplasm/pseudo cyst, an exploratory laparotomy was done. Gross specimen showed a multiloculated cystic lesion in pancreatic tissue (Figure 1d). Microscopy showed cystic spaces lined by endothelial cells with lymphoid tissue in the intervening stroma (Figure 1d inset). The relative frequencies of benign lesions are shown in (Figure 2).

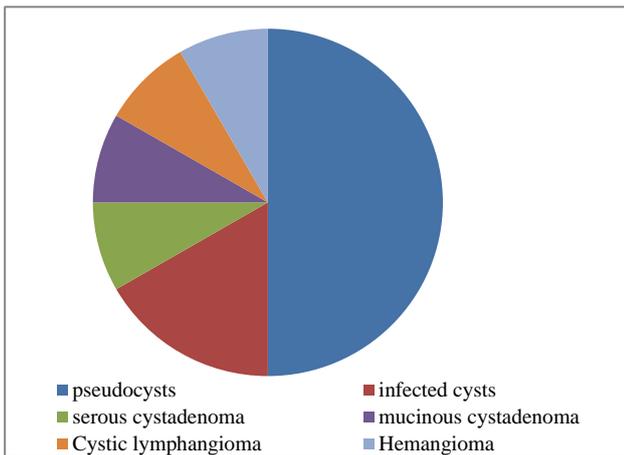


Figure 2: Relative frequencies of benign cystic lesions of Pancreas.

Malignant cystic lesions comprised 37% of the total cystic lesions of pancreas, there were 14 cases. The different neoplasms we received are shown in (Figure 3). Ductal adenocarcinomas accounted for the majority (5 cases).

DISCUSSION

Cystic lesions of pancreas consist of a broad spectrum of reactive, benign and malignant conditions. They may be classified into non neoplastic and neoplastic cysts. Dietrich et al has classified pancreatic cystic lesions into simple retention cysts (true lining), pseudocysts (no lining) and neoplastic cysts.¹

The most common cystic pancreatic lesions is pseudocyst of pancreas.² The pancreatic cystic lesions may also be categorized into unilocular cysts (pseudocysts, intraductal

papillary mucinous neoplasms), multilocular macrocysts (mucinous cystic neoplasms), microcysts (serous cystadenomas), cysts with solid component (ductal adenocarcinomas with cystic degeneration, solid pseudopapillary tumour).³ Mesenchymal lesions (lymphangiomas, hemangiomas) and metastatic tumours also come under the differentials of cystic lesions of pancreas.

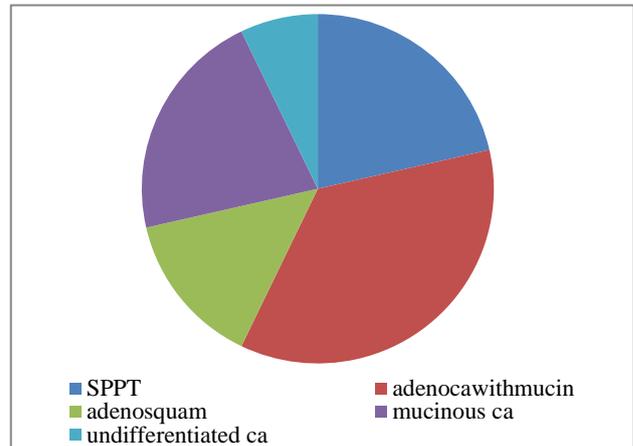


Figure 3: Relative frequencies of malignant cystic lesions of Pancreas.

In the neoplastic category, cystic tumours of pancreas are less common than solid one’s accounting for less than 1% cases, but this may vary in different centres and some studies show upto 15% of cystic pancreatic tumours.⁴ However imaging based population studies suggests an overall prevalence of 2%, but that becomes five times higher on individuals of more than 70-year-old.⁵

We received a total of 38 cases of cystic pancreatic lesions which accounted for 24% (38/158) of all the pancreatic lesions received in our institution during the period of this study. Of this 42% (16/38) were non neoplastic and 58% (22/38) were neoplastic. Pseudocysts accounted for the single largest group of cystic pancreatic lesions constituting 31% of the total cystic lesions and 50% of benign cystic lesions. Benign cystic lesions of pancreas included both neoplastic and non neoplastic entities.

Benign lesions

Pseudocysts

These lesions lack a lining epithelium, are usually seen associated with pancreatitis and may be located anywhere in the pancreas. They can be unilocular or multilocular and may affect both sexes.³ Pseudocysts are localized fluid collections representing sequestered pancreatic secretions. In our study, there were 12 pseudo cysts accounting for 31.6% of the total cystic lesions and 50% of benign cysts of pancreas. Male: female ratio was 11:1. All patients had associated pancreatitis. The sites affected

were body of pancreas (6), head (4) and 2 cases in tail of pancreas. Majority of the cases were cyst wall biopsies but in 2 cases whipples surgery was done due to the large size and imaging findings mimicking neoplasm. Distal pancreatectomy with splenectomy was done in one of the cases which was located in the tail of pancreas. Management of pseudocysts is based on the symptoms. In asymptomatic cases follow up is advised, however surgical resection or drainage is needed in those with symptoms.⁶ Infected cysts accounted for 10.5% of the total cystic lesions and 17% of the benign cystic lesions of pancreas. Such infected cysts and abscesses can be a complication of pancreatitis and presence of gas on imaging may be helpful to diagnose abscess cavity.⁷

Serous cystadenomas

Serous cystadenomas come under the true cysts and are cystic neoplasms with a definite lining epithelium composed of cuboidal cells. Benign serous cystadenomas are further classified into microcystic, oligocystic and solid types. Serous cystadenomas affect elderly females and are usually located in the head of pancreas. They have a good prognosis. We received 2 cases accounting for 5.3% of the total cystic lesions and 8% of the benign cystic lesions in our study. The first case was a microcystic serous cystadenoma in 70-year-old lady involving the body and tail of pancreas. The second case was an oligocystic serous cystadenoma in 44-year-old male located in the head of pancreas.

Mucinous cystadenomas also constituted 8% of benign lesions (2 cases) and 5.3% of total lesions in our study. These neoplasms are found in body and tail of pancreas. They are septated cystic lesions which may be uniloculated or multiloculated. Compared to serous cystadenomas, mucinous cystadenomas are thought to have inferior prognosis since there is chance of malignant transformation. Though mucinous cystadenomas are usually benign, they may be borderline or malignant depending on the degree of atypia.⁷ One of our cases showed dysplastic changes however there was no features of invasion. Extensive sampling is needed to detect insitu or invasive carcinoma since it may focal in an otherwise benign mucinous cystadenoma.⁸

Lymphangioma Cystic lymphangioma is a benign mesenchymal neoplasm and some cases may mimick pseudo cysts of pancreas.⁹ Hemangiomas are rare mesenchymal lesions in pancreas. Both cystic lymphangiomas and hemangiomas accounted for 8% of benign cystic lesions of pancreas and 5.3% of the total cystic pancreatic lesions.

Malignant lesions

Solid pseudopapillary tumour, there were 3 cases, constituting 21% of the malignant cystic lesions and 7.9% of total lesions. Solid pseudopapillary tumours are exclusively seen in females and are low grade malignant

lesions, considered to have a good prognosis. They are usually well circumscribed lesions with microscopy showing papillary pattern

Adenocarcinomas with mucin secretion

Though pancreatic adenocarcinomas are usually solid, cystic change may be found in a minority of cases. Paik et al has suggested that solid pancreatic tumors may present with cystic degeneration. Ductal adenocarcinomas rarely undergo cystic degeneration, up to 1.6% in one series. Typically, such tumours grow to a large size (mean of 7cm) before undergoing cystic degeneration.¹⁰ In our study, cystic changes were seen in adenocarcinomas with extensive mucinous areas. Also, large tumours may undergo necrosis and this may result in cystic areas on gross. There were 5 cases in our study accounting for 13.2 % of the total cystic lesions of pancreas and 36% of the malignant cystic lesions.

Adenosquamous carcinoma accounted for 5.3% of total lesions and 14% of the malignant cysts, there were 2 cases. Mucinous carcinoma constituted 7.9% of total cases and 21% of malignant cystic lesions. Of the 3 cases, one was a mucinous cystadenocarcinoma. The other 2 were mucinous adenocarcinomas with signet ring cells.

Undifferentiated carcinoma accounted for 2.6% of total lesions and 7% of malignant lesions There was only a single case. The cystic change could be due to the large size of the tumour (10cm) resulting in central necrosis and cystic change. The increase in number of neoplastic pancreatic cysts may be explained as a result of increased use of high resolution abdominal imaging, in asymptomatic individuals without a prior history of pancreatic disease.¹¹

CONCLUSION

The diagnosis of cystic lesions of pancreas is challenging since some of these diverse entities have similar clinical and radiological features. Solid pseudopapillary tumours, ductal adenocarcinomas, neuroendocrine neoplasms and mesenchymal neoplasms (lymphangiomas) are some lesions which may mimick a pseudocyst of pancreas. Further cystic degeneration in retroperitoneal neoplasms and non neoplastic lesions of adjacent organs (duodenal diverticulum) may masquerade as cystic lesions of pancreas.

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Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Dietrich CF, Janssen C. Benign and malignant cystic tumors of the pancreas. In: Dietrich CF, editor. *Endoscopic ultrasound-an introductory manual and atlas.* 1st ed. New York:Thieme;2006:208-29.
2. Kloppel G, Maillet B. Pseudocysts in chronic pancreatitis:a morphological analysis of 57 resection specimens and 9 autopsy pancreata. *Pancreas.* 1991;6:266-74.
3. Khan A, Khosa F, Eisenberg RL. Cystic lesions of the pancreas. *AJR Am J Roentgenol.* 2011;196(6):W668-77.
4. Adsay NV. Cystic lesions of the pancreas. *Mod Pathol.* 2007;20:71-93.
5. Pulvirenti A, Marchegiani G, Malleo G, Borin A, Allegrini V, Bassi C, et al. Cystic Neoplasm of the Pancreas. *Ind J Surg.* 2015;77(5):387-92.
6. Karoumpalis I, Christodoulou DK. Cystic lesions of the pancreas. *Annals of Gastroenterology: Quarterly Publication Hellenic Soci Gastroenterol.* 2016;29(2):155-61.
7. Demos TC, Posniak HV, Harmath C, Olson MC, Aranha G. Cystic lesions of the pancreas. *AJR Am J Roentgenol.* 2002;179:1375-88.
8. Wilentz RE, Albores-Saavedra J, Zahurak M, Talamini MA, Yeo CJ, Cameron JL, Hruban RH. Pathologic examination accurately predicts prognosis in mucinous cystic neoplasms of the pancreas. *Ame J Surg Pathol.* 1999;23(11):1320.
9. Cicy PJ, Sansho EU, Lekshmi P, Umman P, Varghese S, Kurian JS. Giant cystic lymphangioma of pancreas-a rarity. *World J Pathol.* 2014;4:72-6.
10. Paik KY, Choi SH, Heo JS, Choi DW. Solid tumors of the pancreas can put on a mask through cystic change. *World J Surg Oncol.* 2011;9:79.
11. Farrell JJ. Prevalence, Diagnosis and management of pancreatic cystic neoplasms: current status and future directions. *Gut and Liver.* 2015;9(5):571-89.

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