

Cystic Neoplasm of the Pancreas or Pancreatic Pseudocyst – The Challenge Continues

Haroon Javaid Majid, Muhammad Shafi, Muhammad Arif Javed, Harun Majid Dar

ABSTRACT

Objective: To emphasize the necessity to differentiate between the pancreatic cystic neoplasms and pseudocysts so that serious errors in management are prevented.

Methodology: It was an observational study without randomization and was conducted at the Surgery Department of Sheikh Zayed Hospital, Lahore. The study was approved by the institutional research committee. It was a single unit study in which 11 patients with pancreatic cystic lesions who underwent surgical intervention over an 8 year time period were studied prospectively. Data analysis was done using SPSS version 23.

Results: The final diagnosis in these patients was mucinous cystadenocarcinoma in 2 patients, serous cystadenoma in 8 patients and indeterminate in one patient. Procedures performed were pancreaticoduodenectomy in one patient, distal pancreatectomy in 9 patients and simple enucleation in one patient. One patient died on the 5th postoperative day due to acute portal vein thrombosis secondary to a severe acute postoperative pancreatitis. Four (36.4%) of our patients with cystic tumors had been previously misdiagnosed as pancreatic pseudocysts and had been intervened upon at other hospitals.

Conclusion: We concluded that every effort should be made to distinguish between a pancreatic pseudocyst and a cystic tumor of the pancreas to avoid the serious mistake of draining rather than completely resecting a pancreatic cystic tumor which may have malignant potential or harbor a frank malignancy.

Keywords: *Pancreas. Pseudocysts. Cystic tumors.*

INTRODUCTION

The commonest cystic lesions of the pancreas are pseudocysts which may be the sequelae of acute/chronic pancreatitis or sometimes pancreatic trauma. Most acute pseudocysts may resolve spontaneously but a few may require intervention which is usually in the form of a drainage procedure.^{1,2} On the contrary, pancreatic cystic neoplasms require resection.¹

However, pancreatic cystic neoplasms may sometimes be mistaken as pseudocysts and inadvertently be subjected to a drainage procedure which is a serious error.¹ It is therefore, critical for a safe and successful outcome to differentiate between the two and make a correct diagnosis.

Due to advancements in endoscopic and cross-sectional imaging techniques, it is now possible to rapidly and precisely diagnose pancreatic cystic lesions, distinguish benign from malignant lesions and also determine the potential for malignant transformation.^{1,4,5} A multidisciplinary approach is essential to ensure the most appropriate management for each patient.¹¹

*Sharif Medical and Dental College
Sharif Medical City Road, Off Raiwind Road, Jati Umra,
Lahore 54000, Pakistan.*

*Correspondence: Dr. Haroon Javaid Majid
Consultant Surgeon and Associate Professor, Division of Surgery
Shaikh Zayed Medical Complex, Lahore
E-mail: hjmajid@gmail.com*

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Pancreatic cystic neoplasms may sometimes be mistaken as pseudocysts and inadvertently be subjected to a drainage procedure which is a serious mistake.^{1,3,4} This study was carried out to emphasize the necessity to differentiate between the two entities so that serious errors in management are prevented.

METHODOLOGY

It was an observational study without randomization and was conducted at the Surgery Department of Sheikh Zayed Hospital, Lahore. The study was approved by the institutional research committee. It was a single unit study in which all patients with pancreatic cystic lesions who underwent surgical intervention over an 8 years time period were studied prospectively. Patient medical records were later reviewed in retrospect also. Data collected included the patient's demography, the surgical procedure performed, the indication for intervention and the final histopathological diagnosis. All patients who presented with a pancreatic cystic lesion and underwent endoscopic intervention or percutaneous aspiration only were excluded from this study.

As the study was observational and without randomization and the data was presented anonymously during the last year of the study, the committee waived the patient's informed consent for inclusion into the study. However, routine consent for surgical intervention was taken from all patients as usual.

All patients with pseudocysts underwent surgical

internal drainage procedures (cystogastrostomy/cystoenterostomy). A biopsy of the cyst wall was simultaneously taken during all internal drainage procedures, whereas a sample of the aspirate collected during the same procedure was sent for cytologic analysis, mucin and tumor markers.

Some of the patients suspected to have cystic neoplasms underwent endoscopic ultrasound evaluation and aspiration for analysis of the aspirate cytology, mucin and tumor markers (CEA, Ca 19-9). Pancreatic resection was done for all the patients with cystic tumors.

Only the patients who underwent surgical resection for cystic tumors are discussed in this study.

STATISTICAL ANALYSIS

Data analysis was done using the Statistical Package for Social Sciences (SPSS version 23). Results were expressed as frequencies and percentages. A probability value (p-value) of ≤ 0.05 was considered statistically significant.

RESULTS

The total number of patients who underwent surgical intervention for cystic lesions of the pancreas in our unit between January 2011 and December 2018 was 34. This included 23 patients who had pancreatic pseudocysts (male: 15 and female: 8; age range: 17 to 62 years, mean age: 32 years) and 11 patients with cystic tumors.

Only the patients who were subjected to surgical resection for cystic tumors are discussed further in this study. All the 11 patients with cystic tumors of the pancreas were females. The mean age of the patients was 35 years with the age range of 21-52 years. The final diagnosis in these patients was mucinous

cystadenocarcinoma in 2 patients and serous cystadenoma in 8 patients. The final pathological diagnosis in one patient was indeterminate although no clear evidence of malignancy was found.

Cystic tumors in our series of patients occurred in the body and tail regions of the pancreas in 9 patients. In one patient large tumor was located in the head of pancreas and tumor was present on the neck of pancreas in one patient. A history of acute pancreatitis was present in a case of mucinous cystadenocarcinoma and in another patient with a serous cystadenoma.

Four (36.4%) of our patients with cystic tumors had been previously misdiagnosed as pancreatic pseudocysts and had been intervened upon at other hospitals. Two patients with tumors located in the body of the pancreas had already undergone open surgical cystoenterostomy along with cholecystectomy, one patient with a cystic tumor in the tail had a percutaneous aspiration and another patient with a large tumor in the head of the pancreas had been opened and closed and declared irresectable.

The tumor location, the final pathology, previous procedures performed and the procedures performed by us in all our patients is summarised in Table 1.

Postoperative complications included wound infection in 4 patients which required part of the wound to be laid open. One patient developed a pancreatic fistula after a distal pancreatectomy which resolved after 3 weeks of conservative management. Another patient had a prolonged postoperative ileus.

There was one mortality among our patients with cystic tumors. This patient underwent enucleation of a cystic tumor over the neck of the pancreas and succumbed to acute portal vein thrombosis secondary to a severe acute postoperative pancreatitis.

The average duration of stay in the hospital was 17 days (Range: 11- 27 days).

Table 1: Showing Tumor Location Pathology & Procedures Performed

Tumor Location on the Pancreas	Final Pathology	Previous Procedures Performed	Procedures Performed at Sheikh Zayed Hospital	Number of Patients (n=11)
Body	Mucinous Cystadenocarcinoma	Cystoenterostomy + Cholecystectomy	Distal Pancreatectomy with resection of attached small bowel loop	1
	Serous Cystadenoma	Cystoenterostomy + Cholecystectomy	Distal Pancreatectomy with resection of attached small bowel loop	1
Body/Tail	Serous Cystadenoma	Percutaneous Aspiration	Spleen preserving Distal Pancreatectomy	1
Head	Serous Cystadenoma	Open and Close	Pancreaticoduodenectomy	1
Neck	Serous Cystadenoma	Nil	Enucleation	1
Body	Serous Cystadenoma	Nil	Distal Pancreatectomy	5
Body	Mucinous Cystadenocarcinoma	Nil	Distal Pancreatectomy	1
Total				11

DISCUSSION

In this manuscript we have made an effort to highlight how easily a cystic tumor of the pancreas may be misdiagnosed as a pseudocyst, leading to errors in decision making and wrong intervention with serious consequences.¹

True cysts of the pancreas are usually neoplastic lesions with malignant potential or are frankly malignant and their diagnosis requires a high degree of suspicion.³ Cystic neoplasms of the pancreas may be discovered incidentally and asymptomatic or they may cause a spectrum of nonspecific symptoms.¹ For example, a cystic neoplasm should be suspected if there is a history of unexplained recurrent episodes pancreatitis.^{1,4,5} A cystic lesion which is discovered in relation to an attack of pancreatitis is usually thought to be a pseudocyst and often a drainage procedure is carried out by the unwary which leads to dissemination of the disease and unforgiving sequelae. This grave mistake may be avoided if a high index of suspicion is maintained and the essential precautions are stringently adhered to. It is obligatory that all available information is carefully analyzed before treating a pancreatic pseudocyst which may actually turn out to be a cystic neoplasm.^{1,6}

Radiologic features of pancreatic cystic neoplasms include a thick wall, internal septa, mural nodules, papillary projections and solid components may be obvious. Other features of cystic neoplasms like lobulated margins, cyst complexity, and wall calcification should point to the diagnosis.^{1,3,5,7-10} With the slightest suspicion regarding malignant potential, surgical resection is recommended.⁵

Whenever a surgical drainage procedure is carried out for a pseudocyst, simultaneous multiple cyst wall

biopsies are mandatory.^{1,2}

Cyst fluid analysis for mucin and tumor markers should be employed whenever possible especially in doubtful cases to provide the correct diagnosis before internal drainage procedures. Cyst fluid aspiration could be done under transcutaneous ultrasound, endoscopic ultrasound or CT guidance and analyzed for cellular atypia, mucin and tumor markers (CEA, CA19-9). The most important of these is mucin (usually present in mucinous cystic tumors and intraductal papillary mucinous neoplasia), followed by elevated levels of CA 19-9, with cytologic analysis being the least important.^{1,5}

In 4 of our cases, an inappropriate procedure had already been performed as a result of a faulty diagnosis. In one of these patients, the cystic neoplasm had been mistaken for a pseudocyst and a cystoenterostomy had been carried out. This patient presented to us with a ventral incisional hernia. A biphasic CT of this patient raised strong suspicion of an underlying cystic tumor of the pancreas (Figure 1). Analysis of the aspirate retrieved by an endoscopic ultrasound revealed high mucin and Ca 19-9 levels. Histopathological evaluation of the resected tumor revealed a mucinous cystadenocarcinoma (Figure 2). The patient was promptly referred for adjuvant therapy and she remains in follow up after 2 years without signs of recurrence or metastasis.

Another patient underwent pancreaticoduodenectomy at our center after she was opened and closed and declared irresectable at another tertiary center. Histopathology later revealed a serous cystadenoma (Figure 3 & 4).



Figure 1: Biphase CT-Scan of the Patient Showing Cystic Tumor of Pancreas



Figure 2: Gross Appearance of Mucinous Cystadenocarcinoma

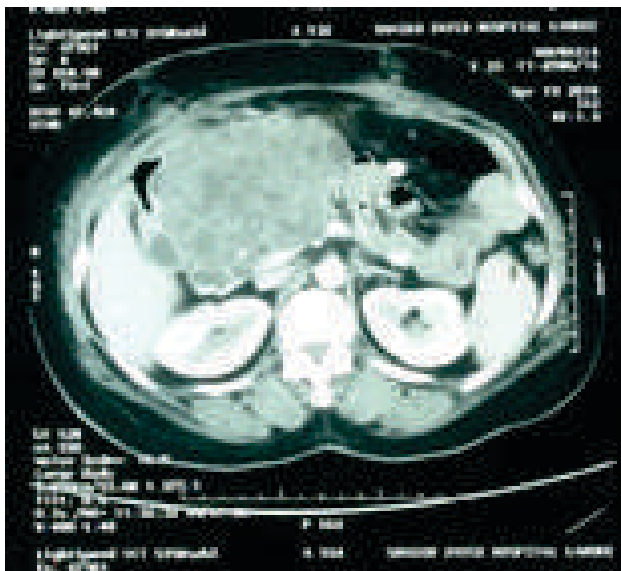


Figure 3: CT-Scan of a Patient Showing Serious Cystadenoma

Cystic pancreatic tumors are being encountered and more frequently identified.¹² Information gained by endoscopic ultrasound with cytology and fluid examination combined with the clinical history, laboratory results and other cross-sectional imaging studies (e.g. CT, MRI and MRCP) facilitate the early detection of a cystic tumor, define its type and distinguish it from pseudocysts, so that the safest and most appropriate treatment plan should be followed.^{12,13}

CONCLUSION

Our study concluded that a large percentage (36.4%) of patients with cystic tumors of the pancreas were misdiagnosed as pancreatic pseudocysts. Therefore, no stone should be left unturned to distinguish between a pancreatic pseudocyst and a cystic tumor of the pancreas to avoid the grave mistake of draining rather than completely removing a pancreatic cystic tumor.

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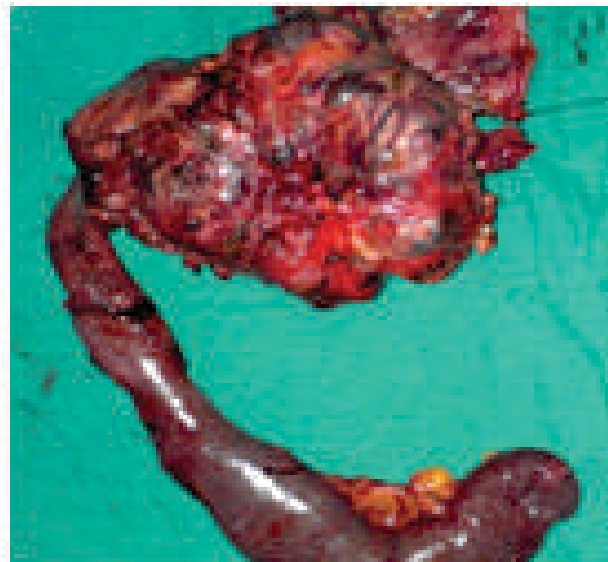


Figure 4: Gross Appearance of Serious Cystadenoma

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