Original Research Article

Etiology, clinical presentation and management of pancreatic pseudocyst

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ABSTRACT

Background: The clinical presentation of pseudocyst is varied among individuals and so does the spectrum of management ranging from resolution to open or minimal access/ endoscopic drainage procedures. This study aims to review the various etiological factors, mode of clinical presentation of pseudocyst in relation to age and sex, and to study various modalities of investigation & management of pseudocysts.

Methods: In this prospective study, 31 diagnosed patients of pseudocyst of pancreas were included who underwent different biochemical and radiological investigations. The study duration was 2 years from November 2016 to October 2018 carried out at a tertiary care hospital and the management and outcome of these patients were studied.

Results: Males (93.54%) were the predominating gender suffering from pseudocyst and alcohol consumption (70.96%) was the most common etiological factor. 67.74% of patients had pseudocyst formation after recurrent attacks of pancreatitis. 20 patients (64.51%) patients were managed conservatively with complete resolution of pseudocyst in 10 patients. In rest of the 11 patients, 7 patients underwent open internal drainage, 2 patients underwent endoscopic internal drainage and pancreatic duct stenting; in one patient, external drainage was performed and another patient distal pancreatic resection was done.

Conclusions: Pseudocyst of pancreas is predominantly seen in males with alcohol consumption being the commonest etiological factor. Spontaneous resolution of pseudocyst occurs in most of the patients and symptomatic patients can be managed by intervention by open/endoscopic internal drainage with or without pancreatic stenting and external drainage should be reserved for infected pseudocysts.

Keywords: Endoscopic drainage, Internal drainage, Pancreatitis, Pseudocyst

INTRODUCTION

Pseudocysts usually arise following an attack of acute pancreatitis, but can develop in chronic pancreatitis or after pancreatic trauma.¹ It must be differentiated from peripancreatic fluid collections that occur with high frequency in the acute phase of acute pancreatitis. Most of them disappear by the fourth week of illness, a fraction of these persist and become pseudocysts.² Formation of a pseudocyst requires 4 weeks or more after an attack of acute pancreatitis during which the inflammation around

the collection matures along with pancreatic secretions and granulation tissue to form a well defined fibrous walled collection with or without rupture of a pancreatic duct.³ These cysts usually regress with time or may persist as an asymptomatic collection. Sometimes, the cyst may become secondarily infected, rupture or shows internal bleeding due to formation of pseudoaneurysms. Radiological imaging in form of CT abdomen undoubtedly scores over ultrasonography in providing detailed structural anatomy of pancreas and its surrounding and can demonstrate additional pathology,

including pancreatic duct dilatation and calcifications, common bile duct dilatation, and extension of the pseudocyst outside the lesser sac. Treatment for pseudocyst includes conservative treatment, to watch for spontaneous resolution. Other treatment modalities include surgical and endoscopic management. The present study has been carried out to evaluate the various etiologies, clinical presentations, investigative procedures, treatment modalities and complications of pseudocyst of pancreas.

METHODS

The present study was carried out in a rural tertiary care hospital at Nagpur, India from November 2016 to October 2018. 31 cases presenting with palpable or non palpable abdominal lump, with clinical suspicion of pancreatic pseudocyst and confirmed on USG abdomen/CT abdomen containing fluid in relation to pancreas were included in the study. All true cysts of pancreas, neoplastic cystic swelling of pancreas, hydatid cyst of pancreas and congenital cyst of pancreas diagnosed on ultrasonography/CT were excluded from the study. Biochemical parameters included were total blood counts, serum amylase and lipase, blood sugar, liver and kidney function tests. Ultrasonography and Computed Tomography (Contrast Enhanced) was done in all patients. 20 patients (64.51%) were managed conservatively and in rest of the 11 patients, surgical intervention was done. Conservative medical management included the use of analgesics such as opioids (injection or tablet Tramadol) and non steroidal anti-inflammatory drugs, antiemetics, and intravenous fluid as per requirement, for symptomatic relief of the patient conditions. Patients who underwent conservative management were followed up every 6-8 weeks till completion of the study, with the help of physical per abdomen examination and ultrasonography. In patients in whom the cyst was larger than 6cm and had a mature wall (wall thickness >6 mm which was diagnosed on Computed tomography scan), intervention was done directly without the observational trail as per the "Rule of 6" (pseudocyst of size >6 cm with wall thickness of >6 mm and present for >6 weeks).

Statistical analysis

The study being an observational prospective study, descriptive statistics was applied. Basics demographic data like age was presented as mean, standard deviation and range. Simple Tables were used to describe the demographic as well as clinical features, investigative findings and management results.

RESULTS

The mean age of occurrence of pseudocyst of pancreas was 36.41±9.73 years with a range of 18-65 years and the disease seemed to occur more commonly in fourth decade. The disease was more common in males

(93.55%) with a male to female ratio of 14.5:1. The most common risk factor for pseudocyst of pancreas was alcohol induced pancreatitis seen in 22 patients (70.96%) followed by gall stone induced pancreatitis in 5 patients (16.12%).

The commonest symptom was abdominal pain which was present in 28 patients (90.32%), followed by anorexia which was present in 23 patients (74.19%). The most common clinical sign in the study was a palpable abdominal lump which was seen in 15 patients (48.38%), followed by ascites which was present in 10 patients (32.25%). 21 patients (67.74%) had pseudocyst formation in the setting of chronic pancreatitis where as 10 patients (32.25%) developed pseudocyst as a sequel of acute pancreatitis.

Out of 31 patients, 6 patients had complications due to pseudocyst of pancreas. Infected pseudocyst and pleural effusion was present in 2 cases each (6.41%). Rupture of the pseudocyst in the abdominal cavity was seen in 1 patient (3.22%) and cystopleural fistula was seen in another patient (3.22%) that progressed to empyema of left pleural cavity. Conservative management was done in 20 patients (65.11%) and in rest of the 11 patients, surgical intervention was done as shown in Table 1.

Table 1: The management modalities used for treatment of pseudocyst of pancreas.

Management	n=31	Percentage (%)
Conservative	20	64.51
Cysto-gastrostomy	6	19.35
ERCP Stenting	1	3.22
Pancreatic duct stenting with decortication of left pleura	1	3.22
Cysto-jejunostomy	1	3.22
Distal Pancreatectomy with excision of pseudocyst with Splenectomy	1	3.22
External Drainage	1	3.22

Residual postoperative pain (>6-12 weeks) was present in 3 patients (27.27%) who underwent surgical intervention and infection was seen in 2 patients (18.18%). Regular clinical and ultrasonography follow up was done of the 20 patients that were managed conservatively till completion of this study. Out of the 20 patients, 10 patients (50%) had complete resolution of the pseudocyst while in other 5 patients (25 %) there was no change in the size of cyst and another 5 patients (25%) showed increase in size of pseudocyst of pancreas. These patients were further followed up to observe if there was further increase in size along with maturation of wall (wall thickness) or if the patient became symptomatic in which case intervention was planned. This group of patients were having pseudocyst of size more than 6cm and therefore complete resolution had not occurred.

DISCUSSION

Pseudocysts are formed in the vicinity of pancreas due to inflammatory response following an attack of pancreatitis with release of pancreatic secretions that excavates and are walled off by fibrous and granulation tissue surrounding adjacent organs. As pseudocyst matures, the thickness of wall may increase or decrease and often the liquid contents of the pseudocyst gradually get reabsorbed with resolution of cyst. However, persistence of a pseudocyst indicates communication with the pancreatic ductal system.⁴ On observing decade wise distribution, pseudocysts of pancreas were commonly observed in 4th decade of life with male gender predominance. The most common risk factor for pseudocyst of pancreas was alcohol induced pancreatitis seen in 22 patients (70.96%) followed by gall stone induced pancreatitis in 5 patients (16.12%). According to a meta-analysis done by Samokhvalov et al, alcohol metabolism plays a significant role in it as it is associated with the production of reactive oxygen species via acetaldehyde pathway and fatty acid ethyl esters via non-oxidative route which in turn cause injury to acinar cells and activate stellate cells.⁵ Since the quantities of alcohol metabolites and their impact directly correlate with the amounts of alcohol consumed, the relationship between alcohol consumption level and the risk of pancreatitis is monotonic and hence the leading cause. In our study, 21 patients (67.74%) had pseudocyst formation in the setting of chronic pancreatitis where as 10 patients (32.25%) developed pseudocyst as a sequel of acute pancreatitis. In a study by Habashi et al, the pathogenesis of pseudocysts formation due to pancreatitis seems to stem from disruptions of the pancreatic duct followed by extravasation of pancreatic secretions.⁶ Two thirds of patients with pseudocysts have demonstrable connections between the cyst and the pancreatic duct such as blockage of a major branch of the pancreatic duct by a protein plug, calculus or localized fibrosis as seen in chronic pancreatitis in which there is abnormal pancreatic parenchymal disease and multiple strictures throughout the pancreatic duct and the one other third, is an inflammatory reaction present in the setting of acute pancreatitis. Ascites was found to be present in 10 patients (32.25%). One patient presented with cystopleural fistula. As described in a study by Koide T et al, a cystopleural fistula expands mainly in two directions i.e., anterior disruption of a pancreatic pseudocyst with drainage into the peritoneal cavity results in ascites, and posterior disruption causes a retroperitoneal fistula that may track inferiorly into the pelvis or superiorly through the oesophageal and/or aortic hiatus, leading to the thoracic cavity, generally emerging as a left pleural effusion. 20 patients (64.51%) patients were managed conservatively with complete resolution of pseudocyst in 10 patients, while in rest of the patients the cyst remained of either same or with slight increase in size.⁷ In rest of the 11 patients, 7 patients underwent open internal drainage, 2 patients underwent endoscopic internal drainage and pancreatic duct stenting, in one

patient, external drainage was performed and another patient distal pancreatic resection was done. According to study done by Usatoff et al, pseudocyst present for more than 6 weeks seldom resolve spontaneously and the incidence of complications associated with pseudocyst in a setting of chronic pancreatitis can be as high as 55%.⁸ Hence early intervention can be advocated in chronic pancreatic pseudocyst in the confident expectation of finding a mature cyst capable of holding sutures. Surgery is still the treatment of choice for treating pancreatic unresolved and complicated pseudocysts. The results are encouraging with low morbidity and mortality rates. Laparoscopic and endoscopic management has been reported with very favourable results, but long-term follow-up is necessary to compare it with open techniques.⁹

CONCLUSION

Pseudocyst of pancreas is predominantly seen in males with alcohol consumption being the commonest etiological factor. The commonest location is around the head of pancreas with abdominal pain as presenting symptom and abdominal lump as clinical sign. Spontaneous resolution of pseudocysts occurs in most of the patients and symptomatic patients can be managed by intervention by open/endoscopic internal drainage with or without pancreatic stenting and external drainage should be reserved for infected pseudocysts.

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