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A study on various etiological and clinical factors for pseudo cysts of pancreas

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Abstract

The aim of our study was to detect the various ethiological factors for pancreatic pseudo cysts formation. Patients presenting with pancreatitis were further evaluated for pseudo pancreatic cyst. Characteristics along with location of cysts were compared and unusual location for pseudo pancreatic cyst studied.

Methodology: A prospective and observational study of 20 adult patients, (16 male patients and 4 female patients) with Acute and Chronic pancreatitis was undertaken from November 2018 to June 2019. CT scans of 20 patients with acute and chronic pancreatitis were reviewed. Of these in the patients with pseudocyst formation (16 of 20 patients), the location of intrapancreatic, peripancreatic and distal fluid collections in the setting of acute and chronic pancreatitis was studied.

Results: Incidence of pseudocyst formation was high in age group of 41-50 yrs. (40%). Male and female ratio is 4:1. In the present findings, incidence of etiology is the chronic pancreatitis 10 (55%). The commonest site incidence is lesser sac 9 (45%), and second commonest site is head region 5 (25%). There was no significant change in the levels of serum amylase values. We observed common symptoms like abdominal pain, nausea and vomiting.

Conclusion: Most common locations are the lesser sac. Chronic pancreatitis is the most common cause for the formation of pseudocysts. The incidence more in male than the females.

Keywords: Pancreatic pseudo cyst, etiology, lesser sac, chronic

Introduction

Cystic lesions of the pancreas are closed cavities containing liquid or semisolid material, which can either be neoplastic or non-neoplastic. Among the neoplastic cysts accounting for 10%–15% of all pancreatic cystic lesions the serous type is seen as benign, whereas the mucinous form tends to have malignant potential.

Pancreatic pseudo cyst formation is a common complication of pancreatitis. Commonly, it is seen in pancreatic and peripancreatic areas. Pseudo cyst may be asymptomatic or may present with variety of symptoms like abdominal pain, nausea, vomiting, and upper GIT bleeding.

Diagnosis of complications of pseudo cyst like infection, haemorrhage and cyst rupture can be diagnosed at earliest possible stage and reduce morbidity of patient. Mediastinal pancreatic pseudo cyst is a rare complication of acute or chronic pancreatitis^[1]. Some previous presented a review of 238 pseudo cysts and found only fourteen of them affecting the spleen^[2, 3, 4]. A dissecting pancreatic pseudo cyst can also rarely simulate primary renal disease or perinephric abscess. Study of location of pseudo cyst helps in further management of patient and guides exact surgical plane for better outcome of patient^[2]. Evaluation of location of pseudo cyst improves surgical drainage site. With the surgical techniques like internal drainage by cystojejunostomy, permanent resolution of cyst can be achieved. Most cases can be managed conservatively; however, surgical interventions such as splenectomy, distal pancreatectomy and percutaneous drainage are indicated in severe cases. Preserved pancreatic tissue can be exactly determined and salvageable tissue can be useful in future.

The aim of the present study is to investigate the various etiological factors for pancreatic pseudocysts at tertiary care centre.

Materials and Methods

Study site

The study was conducted in the Department of Surgery, tertiary care hospital, Hyderabad from November 2018 to June 2019.

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Patients with clinical history, laboratory findings and/or USG findings suggestive of pancreatitis were prospectively evaluated by supine position in a Siemens Somatom Emotion 6 Slice CT machine in suspended inspiration using a kVp of 130 and mAs of 100.

Inclusion criteria

The study population included all patients who were followed for chronic pancreatitis complicated by pseudo cysts between November 2018 to June 2019 in the Departments of Surgery, at the tertiary care hospital, Hyderabad. Only those pseudo cysts identified by CT scanning at diagnosis were included in the study. Pseudo cysts were only treated if they were the cause of symptoms or complications throughout the inclusion period.

Exclusion criteria

Patients with pseudo cysts were excluded from the study for the following reasons: no CT scan was performed within 15 days of the diagnosis of pseudo cysts; the chronic pattern or the alcoholic origin of pancreatitis was not certain; another cause of pseudo cysts (recent trauma, surgery, pancreatic cancer) was present; follow up of pseudo cysts was less than 45 days; or surgery unrelated to pseudo cysts was performed. Perspective and observational analysis of all patients included in this study was performed.

Definitions

The diagnosis of pseudo cysts was based on CT findings. A pseudo cyst was defined as a collection of liquid more than 10 mm in diameter, which was clearly distinct from the pancreatic parenchyma and the adjacent organs, and exhibited low density before intravenous injection of a contrast medium, which was not enhanced after injection. Multiple pseudo cysts were defined as at least two such lesions.

The diagnosis of chronic pancreatitis was based on the presence of at least one of the following criteria: pancreatic calcifications on abdominal plain X- ray, CT scan, ultrasound, or endoscopic ultrasound; anomalies of the pancreatic ducts at pancreatic retrograde endoscopy, which were at least moderate according to the international Cambridge classification; histological diagnosis of chronic pancreatitis with a biopsy or surgical specimen.

Data collection

CT examinations were performed on supine position in a Siemens Somatom Emotion Slice CT machine in suspended inspiration using a kVp of 130 and mAs of 100. The patients were scanned using our institution’s two-phase acquisition pancreatic protocol. The patients were instructed to drink 500 mL of water for negative opacification of the gastrointestinal tract immediately before imaging. The initial pancreatic phase (Late Arterial Dominant Phase) of the examination was performed over the upper abdomen from T11 to L3 vertebral body levels with a scanning delay of 40 seconds after the start of IV administration of 1.5 mL/kg of contrast material at an injection rate of 2 mL/sec.

The following clinical and biochemical data were recorded: symptoms related to pseudo cysts (Pain, fever, vomiting, abdominal mass); time elapsed from the diagnosis of chronic pancreatitis; recent acute pancreatitis which could account for the development of pseudo cysts. Pancreatic enzymes were also analyzed (Serum amylase).

Laboratory tests

The white blood cell count is increased to value of 12,000/ mm³

in approximately half of the patients. Patient’s hypermylasemia is encountered in 60-80% of cases.

Liver function tests

The serum bilirubin is elevated in approximately 10% of patients usually as a results of the intra pancreatic portion of the common bile duct. Hypoalbuminemia is common. Isoenzymes analysis of serum amylase reveals a higher than 15% aged amylase in patients with pseudo cysts but not in patients with pure acute pancreatitis without a pseudocysts. After the pseudo cysts are surgically drained, the proportions return to normal.

Chest x ray

This may show elevation of diaphragm or pleural effusion.

Abdominal X-Ray examination

Plain film of the abdomen reveal a mass lesion, calcification etc. Upper GI barium series- will be abnormal with evidence of a mass lesion or displacement of the stomach and other viscera in 50-75% of patients. There may be delayed emptying and narrowing of the duodenal sweep due to pressure of the cyst.

Ultradiological findings

Ultrasonography is extremely helpful and accurate in making the diagnosis, in evaluating cysts wall thickness and in following the cysts during expectant management. It has been found to be 90% accurate and 98% specific when the pancreas could be visualized.

ERCP

ERCP demonstrates abnormalities of the pancreatic duct in upto 90% of the patients with pseudo cysts. Nearly 2/3 of pseudo cysts communicate with pancreatic duct. Obstruction of the pancreatic duct, compression of the cysts, or changes consistent with chronic pancreatitis are frequently noted. ERCP is very helpful in managing chronic pseudo cysts arising in the setting of chronic pancreatitis. ERCP is an invasive procedure that can be potentially aggravate pancreatitis or introduce infection(10-15%) into the pseudo cysts in spite of the use of prophylactic antibiotic, Thus ERCP should be performed within 48 hrs of the proposed study.

Angiography

Celiac and superior mesenteric angiography is generally not useful for the diagnosis of pseudo cysts nor should it be necessary in the pre-operative evaluation of pseudocysts. In patients who have had bleeding complications from pseudocysts, however or in those who have portal hypertension, it may provide valuable information that can alter the surgical approach. The finding of spleen vein thrombosis with left-sided portal hypertension is an indication for splenectomy in patients undergoing operation for drainage of pseudocysts. Angiography also helps in clarifying the presence of pseudo aneurysm formation in the cysts wall which is present in nearly 11% of the patients. Stretching of intrapancreatic arteries almost always means pseudo cysts. Angiography is also useful therapeutically in the control of bleeding from pseudocysts.

Table 1: Demographic data of the patients

Age (Yrs)	Number
0-10	1
11-20	0
21-30	2
31-40	5
41-50	8
51-60	4

In the present study, total study population is 20. Most common age group is 41-50 yrs.

Table 2: Sex ratio of the patients

Sex	Number	Percentage
Male	16	80%
Female	04	20%

In the present study, male and female ratio is 4:1 out of 20 patients.

Table 3: Site incidence of the pseudo cysts

Site of the pseudo cysts	Number	Percentage
Lasser sac	9	45%
Head	5	25%
Body	4	20%
Body & tail	2	10%

The above table showed that, the most common site is lasser sac 9 (45%) and followed by second most common site is head region of pancreas 5 (25%).

Table 4: Incidence of etiology of pseudocysts

Common cause	No of cases
Chronic pancreatitis	10
Acute pancreatitis	05
Trauma	04
Idiopathic	01

In the present study, most of the patients suffered with chronic pancreatic it's a commonest cause for the formation of pseudocysts.

Table 5: Levels of serum amylase enzyme (N=20)

Serum amylase	No. Of Pts
0-200	02
201-400	08
401-600	02
601-800	00
801-1000	00
1001-1200	06
1201-1400	02

During estimation of serum amylase levels, there was no variation in levels of serum amylase enzyme either in diagnosis or in follow-up after treatment.

Table 6: Symptoms and signs

Common	Uncommon
1. Upper and abdominal pain 2. Nausea & Vomiting 3. Anorexia 4. Weight loss 5. Jaundice 6. Upper abdominal tenderness 7. Upper abdominal mass	1. Fever -Sepsis 2. Diarrhoea 3. Ascites 4. Vericeal bleeding 5. Intra-abdominal hemorrhage 6. Lower limb edema

In the present study, upper abdominal pain, nausea, vomiting were the common features. Intra-abdominal pain haemorrhage and vericeal bleeding are the uncommon finding of the pseudo cysts of pancreas.

Discussion

The identification of factors associated with the outcome of pseudo cysts is of obvious clinical importance as pseudo cysts

may regress spontaneously or persist without symptoms, and not require treatment, or result in symptoms or complications that make treatment mandatory^[5]. The aim of this prospective study was to determine which of the pseudo cysts occurring during the course of chronic pancreatitis warrant treatment.

Three of the morphological factors studied appeared to be associated with a spontaneously favourable outcome by univariate analysis. Indeed, small sized pseudo cysts, intra pancreatic pseudo cysts, and pseudo cysts located in the pancreatic head were likely to regress without treatment. However, many parameters were studied and statistical significance could have been reached by chance due to multiple comparisons. We thus performed multivariate analysis using the parameters selected during the first step. To our knowledge, this has not been performed previously to identify the factors associated with choice of treatment. Intra pancreatic pseudo cysts and pseudo cysts smaller than 4 cm in diameter were the only independent factors accounting for 20% of the total variance.

The population in this study was as homogeneous as possible and multiple CT scans were performed in each patient for accurate comparisons. Most other studies have used several imaging techniques in the same patients including endoscopic retrograde cholangiopancreatography, intra operative findings^[6] upper gastrointestinal barium series^[7] angiography^[8] or clinical findings^[9]. Imaging techniques with high sensitivity, such as abdominal ultrasound or CT scan, increase diagnostic accuracy^[10]. All our patients had confirmed chronic pancreatitis. Unlike the present study, in previous studies in the literature the aetiology of chronic pancreatitis has included alcoholic, hereditary, tropical, and hypercalcaemic pancreatitis^[11]. Furthermore, few studies have included only pseudo cysts occurring during chronic pancreatitis.

Persistent asymptomatic pseudo cysts have been reported in 19% and 16% of patients by Yeo *et al.*^[12] and Vitas and Sarr,^[13] respectively. In our study, 10 pseudo cysts (50% of the total population) remained asymptomatic.

Pseudo cysts occurring during chronic pancreatitis are located in the pancreatic head in 34.4–67.6% of patients.^[14] In this study, 45% of pseudo cysts were located in the lesser sac, and 25% of them head region.

Conclusion

Out of 20 patients with Acute and Chronic pancreatitis, 10 patients had pancreatic pseudocyst formation and most common locations are the lesser sac and the head region.

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