

Pancreatic Pseudocyst – The surgical Management and its outcome in a group of 10 cases

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ABSTRACT

BACKGROUND

The pancreatic pseudocyst represents the main late complication (3-6 weeks) of severe acute or chronic pancreatitis, with complication incidence of 10-15% of the cases described in the literature, which increases proportionally with the severity of pancreatitis.

AIM

To study aimed to know the outcome of percutaneous USG guided drainage of pancreatic pseudocyst.

MATERIAL AND METHOD

The study conducted a retrospective study on 10 patients diagnosed with pancreatic pseudocyst between January 2020 and December 2022 and who were admitted to the Department of General Surgery of MKCG, MCH, Berhampur, Odisha where the hospitalization charts and their intraoperative protocols were analysed.

The inclusion criteria were all the patients diagnosed with pancreatic pseudocyst in the period between 2020 and 2022, with an altered general condition, locoregional compression or the occurrence of pseudocyst complications, and the exclusion criteria were the patients with a good general condition and uncomplicated pseudocyst.

RESULTS

The results showed that the efficiency of the external drainage of the pancreatic pseudocyst by inserting drainage tubes in the left lumbar area was favourable, with the persistence of evacuating the contents of the pseudocyst for a longer time of about 3 months, but with the decrease of the flow until its disappearance. The biochemical tests performed every 3 months

did not show the recurrence of a pancreatic reaction whose main role is the formation and maintenance of the pseudocyst.

CONCLUSION

The identification of a pancreatic cystic lesion is a challenging diagnosis, and the abdominal ultrasound is usually sufficient, but specifying the nature of the cyst is much more difficult. The type of pancreatic cystic lesion decisively determines the strategy and the operative tactics, and the errors of the therapeutic conduct can have severe effects on the prognosis, including the vital one. The modern therapeutic attitude pays more attention to the surgical procedures that preserve the pancreas, and one of these is the imaging-guided percutaneous drainage for critical patients who cannot undergo surgery.

KEYWORDS: PANCREATIC, PSUEDOCYST, PERCUTANEOUS DRAINAGE, ULTRASOUND, EXTERNAL DRAINAGE.

INTRODUCTION

The pancreatic pseudocyst represents the main late complication (3-6 weeks) of severe acute or chronic pancreatitis, with complication incidence of 10-15% of the cases described in the literature, which increases proportionally with the severity of pancreatitis [1-3]. The Atlanta International symposium on Acute Pancreatitis (Georgia,1993) accepted and define and classify fluid collections by proposing following anatomical -clinical entities [1,2,8]

Pancreatic & peripancreatic necrosis occur early in the evolution of Acute Pancreatitis and consist of diffuse or focal areas of non-viable pancreatic tissue, which may be sterile or contaminated [1]

Acute fluid collection (The false pseudocyst) appears early in evolution of severe acute pancreatitis (within first 2 weeks) as an inflammatory reaction induced by necrosis of the pancreas and peripancreatic tissue, having a plasma like electrolyte composition and a low concentration of pancreatic enzymes, and over 50% of the cases resorb with the resolution of acute pancreatitis [2,8]

Pancreatic abscess presents circumscribed intra-abdominal collections, usually located in vicinity of the pancreas, containing purulent fluid and very little necrotic tissue, appeared after the bacterial over population of both necrosis and the false pancreatic pseudocyst [1]

The pancreatic pseudocyst represents a fluid collection rich in pancreatic enzymes, without its own epithelial wall, delimited by the neighbouring viscera and/or granulation tissue [7,8]. The formation and persistence of the pseudocyst is based on the existence of a permanent communication with the pancreatic canalicular system, and the spontaneous resorption of the pseudocyst is impossible as long as this communication persists [1,7,8]

The aim of the study is to evaluate the usefulness of the USG guided percutaneous drainage of the pancreatic pseudocyst in well-selected cases and to determine the type of location of the pseudocyst that allows surgery to be performed.

MATERIALS AND METHODS

We conducted a retrospective study on 10 patients diagnosed with pancreatic pseudocyst between January 2020 and December 2022 and who were admitted to the Department of General Surgery of MKCG, MCH, Berhampur, Odisha where the hospitalization charts and their intraoperative protocols were analysed.

The inclusion criteria were all the patients diagnosed with pancreatic pseudocyst in the period between 2020 and 2022, with an altered general condition, locoregional compression or the occurrence of pseudocyst complications, and the exclusion criteria were the patients with a good general condition and uncomplicated pseudocyst.

The study analysed the demographic data, the clinical signs upon admission, the post operative outcomes and their complications. The Excel Software was used to process and analyse the statistical data.

RESULTS

The patients included in the study group were aged between 50 and 70 years, with the mean age of 65.3+/-8.1 years (Table-1). Most patients were from urban areas (7 patients, 70%), with gender ratio M:F of 4:1.

Table 1.1. The general data of the patients included in the study group		Number of patients (%)
Gender		
	Male	8(80%)
	Female	2(20%)
Age		
	50-60 years old	5(50%)
	60-70 years old	3(30%)
	Over 70 years old	2(20%)
Origin		
	Urban	7(70%)
	Rural	3(30%)
Aetiology of Pancreatitis		
	Biliary aetiology	3(30%)
	Alcoholic aetiology	4(40%)
	Metabolic/food	1(10%)
aetiology		
	Postoperative aetiology	1(10%)
	Idiopathic aetiology	1(10%)
Location of pseudocyst		

Cephalic	2(20%)
Corporeal	1(10%)
Caudal	2(20%)
Tail	5(50%)

The aetiology was established according to the clinical. Laboratory and imaging examinations. The most frequent causes were alcoholic and biliary aetiology 40% and 30% respectively, followed by metabolic, postoperative and idiopathic aetiology.

Since the declaration of COVID-19 pandemic in our country on march 15th, a RT-PCR test was run 24-48 hours before admission for elective cases and when admission is decided for emergency cases, special COVID-19 isolation ward was designed in our hospital and all the isolated cases were screened for SARS COV-19.

The pancreatic pseudocyst was encountered in every pancreatic segment, but with a higher incidence at the tail level (50%).

The clinical data obtained from objective clinical examination and the patient’s problems and symptoms allowed the suspicion of a pancreatic pathology in most cases, and in the case of patients with a more affected general condition, investigations continued until the diagnosis of certainty was made.

The most encountered complains were abdominal pain, described by all the patients, dyspepsia (60%), palpable abdominal tumour (60%) and dynamic ileus (20%)

(Table -2)

Table -2 Clinical presentation and management	
Symptomatology, surgical treatment and complication	Patients
Clinical sign at admission	
Abdominal pain	10(100%)
Presence of a mass	6(60%)
Dyspepsia	6(60%)
Mechanical jaundice	1(10%)
Dynamic ileus	2(20%)
Types of surgery	
Ultrasound guided percutaneous drainage of pancreatic pseudocyst	5(50%)
Cysto-jejuno anastomosis	3(30%)
Conservative treatment	2(20%)

The surgical treatment was chosen in each case depending on the location of pseudocyst, and the clinical manifestations present since time of admission. Ultrasound

guided percutaneous drainage was performed in 50% of patients, whereas cysto-jujnostomy was performed in 30% of patients and the treatment was conservative in 20% of patients.

The post operative complications noticed in the study group were the suppuration of surgical wound (20%), bleeding, pancreatic fistula and incomplete discharge of pancreatic cyst in 10% of the patients. These were managed by conservative approaches in 5 cases and it was necessary to have a surgical re-intervention for the complete evacuation of the pancreatic pseudocyst in one patient.

(Table 3)

Table 3 Postoperative complications in the study group

Type of complications	patients
Suppuration of surgical wound	2
Bleeding	1
Pancreatic fistula	1
Incomplete discharge of pancreatic cyst	1

One particularly challenging case was one of a 53-year-old patient with personal history of operated duodenal ulcer, chronic alcoholism, hypertension, chronic ischemic cardiac disease and a 4 cm diameter pancreatic pseudocyst, detected by abdominal ultrasound, for which patient underwent conservative treatment. patient was presented with distended abdomen with spontaneous diffuse pain on palpation, present bowel sounds and bowel movements for faeces and gas. Biochemically, he had severe anaemia (Hb=7.6gm/dl, Ht=24.8%, amylase =269UI/l)

Although many therapeutic options that can be applied in the surgical resolution of the pancreatic pseudocyst pathology by classical, laparoscopic and minimally invasive techniques can be applied, there is a direct contraindication due to the altered general condition of the patient upon admission. Associated hydroelectrolytic rebalancing, correction of anaemia by blood administration, administration of anti-secretors, antibiotic therapy, anticoagulants were performed upon admission.

An abdominal CT is performed which reveals bilateral pleurisy, left basal pulmonary condensation, pseudocyst in the tail of the pancreas whose dimensions were 9/8 cm, multiple cystic images located in the left renal bed and small hepatic hypodense node (Figure 1). The position of the pseudocyst in the tail of the pancreas in direct contact with the space of the left renal bed allowed us to perform an ultrasound-guided incision in the left lumbar area by draining the pseudocyst's content through drainage tubes with a thick diameter, under intravenously induced anaesthesia potentiated locally with Xylocaine 1% (Figure 2).



Figure 1 Axial CT revealed a 4 cm diameter pseudocyst in the tail Of pancreas



Figure 2 Drainage tube inserted into left renal bed after drainage Of pancreas pseudocyst by USG guided puncture in left lumbar area

The efficiency of the external drainage of the pancreatic pseudocyst by inserting drainage tubes in the left lumbar area was favourable, with the persistence of evacuating the contents of the pseudocyst for a longer time of about 3 months, but with the decrease of the flow until its disappearance. The biochemical tests performed every 3 months did not show the recurrence of a pancreatic reaction whose main role is the formation and maintenance of the pseudocyst.

Postoperatively, the patient was HD and CR stable, with postoperative wound without reaction, permeable drainage tubes. The ultrasound examination at 3 postoperative days reveals residual fluid in the cyst, for which reason the surgical re-intervention with local anaesthesia by the repositioning of the drainage tubes is decided upon and performed

(Figure 3)



Figure -3. The ultrasound examination of pancreatic pseudocyst

The evolution was favourable, the patient being afebrile, with painless abdomen, good digestive tolerance, drainage gradually decreasing quantitatively, reaching about 80ml/24 hour at the time of the hospital discharge, present bowel movement, postoperative wound healing, without reaction. The prolonged hospitalization in intensive care unit led to pressure wounds, which were managed by antibiotics and essential oils, effective against the several microorganisms, such as *Bacillus subtilis*, *Clostridium perfringens*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Candida albicans* [17]. The abdominal CT at follow-up evidenced basal lung segments without changes, normal aspect of the liver, spleen, and kidneys, gallbladder with fluid and homogeneous content, pancreas with small cystic image in the tail, with an irregular contour, with a diameter of 1.9 cm, drainage tubes visible at this level, with an irregular anterior contour of the pancreas at this level, with the dilation of the Wirsung distal from the described formation.



Figure -4 Axial CT showing pancreatic pseudocyst drainage tube located in left renal bed

Due to the small size of the pancreatic cyst and to the cessation of the drainage on the drainage tubes, it was decided to suppress them. The patient returned for periodic check-ups every 3 months, when abdominal ultrasounds were performed revealing the total evacuation of the pancreatic pseudocyst and the evaluation of the biological constants without significant changes (Figure 5).



Figure -5. The postoperative wound after removal of the drainage tubes

Discussion

In a recent study by Mofleh et al. [15], the aetiology of acute pancreatitis was found to be of a biliary aetiology in 35- 49% of the cases and of alcoholic origin in 20% of the cases, results which are similar to the results of our study. Less frequently, acute pancreatitis may have metabolic, posttraumatic or postoperative causes. A rare association was reported by Nasri et al., in a case with neglected diaphragmatic hernia following trauma, which developed into acute pancreatitis by the stretching of the transverse mesocolon due to increased intra-abdominal pressure inducing posterior fascia loosening, thus leading to pancreatic mobility and herniation [13]. In these complicated cases, a preoperative CT exam is extremely valuable for both diagnosis and management [12]. An inadequate diet, rich in fats, alcohol, and spicy food may exacerbate the inflammation of the pancreas [11,18]. Patients with acute pancreatitis should be followed-up on a long term for local and general complications. Diabetes mellitus represents a heavy burden for society in the form of a long-term disability, healthcare use and costs [10,16]. In a systematic review by Das et al., diabetes mellitus was reported to be much more frequent in the following 5 years after an episode of acute pancreatitis compared to the normal population [10].

The imaging follow-up by CT examinations of pancreatic pseudocysts showed that 40% of them with a diameter of less than 6 cm spontaneously regress if there is no communication with the pancreatic duct [14]. However, previously published studies found that symptomatic pseudocysts and those with a diameter over 6 cm must be drained surgically or by nonsurgical and minimally invasive methods (echo-CT-guided puncture, laparoscopic internal or external drainage, drainage by digestive endoscopy), because they may develop evolutionary complications represented by the relapse of acute pancreatitis, cyst abscess, rupture of the cyst in the peritoneum or fistula formation in adjacent viscera. Radiologically guided percutaneous drainage allows the insertion of a catheter that will drain the pancreatic secretions on the outside, having as disadvantage the case in which the pseudocyst communicates with the main pancreatic duct, turning the pseudocyst into an external pancreatic fistula.

The indications of this method still remain limited (immature or infected pseudocysts located or fused in the immediate vicinity of the abdominal wall), due to the large number of failures (54% described in the literature) and relapses (63% described in the literature), as well as the incidences of complications that can be generated by lesions of the adjacent viscera, digestive bleeding, cellulitis at the site of implantation of the catheter [21,22].

Other modern methods of drainage of the pseudocyst included laparoscopic and endoscopic drainage techniques, by different approaches. Posterior laparoscopic pseudocystogastrostomy has been described as a technical alternative to trans gastric pseudocystogastrostomy. Laparoscopic trans gastric cystogastrostomy involves the creation of a trans gastric cystogastrostomy, without the need of creating pneumoperitoneum. It is performed with the help of laparoscopic instruments inserted directly into the stomach through the abdominal wall during its maximum distension after insufflation with the help of endoscopic instruments. Trans papillary drainage is recommended in pseudocysts that communicate with the ductal system and it involves performing an endoscopic sphincterotomy with its risks and inserting a drainage catheter [27].

The choice of the type of surgery depends on the size, location and relationship that the pseudocyst has with the neighbouring structures, but also on the general condition of the patient [23]

Carefully perioperative care is extremely important, with fluid and metabolic rebalance, especially in elderly patients, with multiple comorbidities, to ensure a favourable outcome [28,30,32]. Regular patient monitoring is a key element and it allows: monitoring the efficiency of drainage and the position of drainage tubes by repeated ultrasound examinations, monitoring the biological constants, and imaging tracking of the size of the remaining cavity by injecting radiological contrast medium into the drainage tube [34-35].

The advantages of percutaneous drainage are represented by the simplicity of the technique in the case of an experienced surgical team, the possibility of performing it at the patient's bedside under some conditions and the less expensive cost. The disadvantages are long hospital stay, the risk of infection, the risk of external pancreatic fistula, repeated hospitalization, and the recurrence of pseudocysts. Our study has some limitations: the limited number of patients included in the study, the retrospective character and the incomplete radiological follow-up. However, the present research provides useful information on a topic that is still under debate: when and how it is appropriate to treat pancreatic pseudocysts. We considered the symptoms of persisting pain, weight loss, jaundice or obstruction as main indicators for the surgical intervention, and our clinical management was less influenced by the size and the duration of the pancreatic pseudocyst.

HIGHLIGHTS

The pancreatic pseudocyst represents the main late complication (3-6 weeks) of severe acute or chronic pancreatitis, with an incidence of complications of 10-15%. ✓ The modern therapeutic attitude pays more attention to the surgical procedures that preserve the pancreas, and one of these is the percutaneous drainage guided by imaging.

CONCLUSIONS

The identification of a pancreatic cystic lesion is a challenging diagnosis, and the abdominal ultrasound is usually sufficient, but specifying the nature of the cyst is much more difficult. The type of pancreatic cystic lesion decisively determines the strategy and the operative tactics, and the errors of the therapeutic conduct can have severe effects on the prognosis, including the vital one. The modern therapeutic attitude pays more attention to the surgical procedures that preserve the pancreas, and one of these is the imaging-guided percutaneous drainage for critical patients who cannot undergo surgery.

CONFLICT OF INTEREST DISCLOSURE

There are no known conflicts of interest in the publication of this article. The manuscript was read and approved by all authors.

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