

CT Guided Percutaneous Drainage of Pancreatic Abscess

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ABSTRACT

Objective To determine the outcome of CT guided percutaneous drainage of pancreatic abscess.

Study design Descriptive case series.

Place & Duration of study Department of General Surgery Unit I, Jinnah Postgraduate Medical Centre Karachi, from October 2011 to October 2015.

Methodology All patients with acute pancreatitis who developed pancreatic abscess which was diagnosed on clinical grounds and with CT scan abdomen underwent CT guided percutaneous drainage. Following aspiration fluid sent for culture and sensitivity and drain was placed in the abscess cavity. CT scan was repeated and if no residual collection found with clinical improvement of symptoms, patients were discharged. Patients who did not improve up to 40 days, or clinically deteriorated and developed complications like sepsis or pancreatic fistula formation, underwent surgical intervention. Data was collected on specially designed performa.

Results Five Hundred and fifty eight patients of acute pancreatitis were admitted during the study period and among them 25 (4.48%) patients developed pancreatic abscess. Four (16%) patients were male and 21 (84%) female. Mean age was 45±10 year. Twenty (80%) patients were cured with percutaneous drainage in 20 - 40 days and five (20%) developed complications for which open surgical intervention was done. One (4%) developed pancreatic fistula and one (4%) patient died. Three patients improved with surgical intervention.

Conclusion CT guided percutaneous drainage is minimally invasive and effective surgical treatment for pancreatic abscess.

Key words Acute pancreatitis, Pancreatic Abscess, Percutaneous drainage.

INTRODUCTION:

Pancreatic abscess is a late complication of acute pancreatitis occurring after four weeks of the initial attack. Pancreatic abscess is a collection of pus resulting from tissue necrosis, liquefaction and infection. It is estimated that approximately 3% of patients suffering from acute pancreatitis will develop an abscess.¹ According to Balthazar and Ranson staging criteria, single collection of fluid has less

han 20% chance of developing abscess and possibility of developing abscess increases to nearly 60% in patients with more than two pseudocysts and gas within pancreas.¹ Patients with pancreatic abscess present with fever and chills or inability to eat or may present with abdominal mass, nausea and vomiting four weeks following the attack of acute pancreatitis due to infection in pseudocyst. Causes of pancreatic abscess are penetrating peptic ulcers, alcohol consumption, drugs, blunt trauma etc.^{2,3}

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Abdominal CT scan, MRI and ultrasound are helpful in providing diagnosis of pancreatic abscess. Role of antibiotic for cure is still controversial. Prophylactic antibiotics against bacteria such as *E.coli*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, *Staphylococcus*

aureus, *Pseudomonas aeruginosa*, *Proteus mirabilis* and *Streptococcus* species may be helpful.⁴ Primary drainage of abscess is recommended. CT guided percutaneous drainage of pancreatic abscess is considered inferior to open surgical drainage. To successfully resolve the abscess endoscopic treatment is another treatment option which over the years is gaining popularity.

If abscess is not drained timely then sepsis, fistula formation and recurrent pancreatitis may occur.² This can result in organ failure and mortality that can reach up to 100%.³ Mortality rate of sterile pancreatic necrosis is up to 10% and rises to 30% with infection in necrotic area. It is noted that if organ failure and infected pancreatic necrosis are present together, it worsens the prognosis with mortality reaching up to 43%.^{5,6} The objective of this study was to find the outcome of CT guided percutaneous drainage of pancreatic abscess which is minimally invasive and cost effective.

METHODOLOGY:

This descriptive study was conducted at Department of Surgery Unit I, Jinnah Postgraduate Medical Center Karachi, from October 2011 to October 2015. Five hundred and fifty eight patients with the clinical diagnosis of acute pancreatitis were included. Patients with post traumatic pancreatitis were excluded. All the patients were above 12 year of age. Serum amylase and lipase were sent. Severity of acute pancreatitis was assessed by Ranson criteria and CT scan Balthazar scoring system.

Complications of acute pancreatitis like organ failure, fluid collection, ileus and ascites was recorded and treated. All patients followed up and those who did not recover and developed fever, chills, abdominal swelling, nausea and vomiting were investigated again for infected pancreatic necrosis and pancreatic abscess. CT scan was repeated and if collection of fluid found then its aspiration done and culture was sent. Patients were diagnosed as cases of pancreatic abscess if organism were grown.

All patients of diagnosed pancreatic abscess was prepared for CT guided percutaneous drainage. Following drainage pigtail drain was kept for 20 to 40 days and antibiotic continued according to the culture report. CT scan was repeated if symptoms persisted. On CT scan if loculated collection was noted again or patient developed pancreatic fistula, open surgery was done for necrosectomy or drainage of pus. Morbidity and mortality of acute pancreatitis were noted.

RESULTS:

Among five hundred and fifty eight patients, 25 (4.48%) patients were diagnosed as having pancreatic abscess. Among these four (16%) were males and 21 (84%) females with mean age of 45±10 year. CT guided percutaneous drainage of pancreatic abscess and placement of pigtail catheter was done. In 20 (80%) patients the pancreatic abscess got resolved in 20 - 40 days. Antibiotics according to culture were also given and the symptoms improved with no residual collection. Five (20%) patients did not improve so laparotomy was performed. Drainage of abscess and necrosectomy was done. One (4%) patient later on developed pancreatic fistula and one (4%) died due to sepsis. Three patients improved with surgical intervention. Patient of pancreatic fistula was put on TPN and later distal pancreatectomy was done. He was discharged in stable condition.

DISCUSSION:

Fluid and necrotic collection can occur as complications of acute pancreatitis. According to latest classification, they can be divided into acute or delayed depending on whether such a collection is of less than or more than four weeks duration.⁶ In the acute period the fluid collection is not well defined and is simply described as peripancreatic fluid collection. It is often associated with tissue edema. After four weeks the fluid collection is much more organized with definite wall and described as pseudocyst. Pseudocyst is peripancreatic fluid collection containing high concentration of pancreatic enzymes with definite fibrous wall and lacking in epithelial lining. When pseudocyst gets infected, it is called pancreatic abscess. Similarly pancreatic necrosis can be an acute necrotic collection in which there is variable amount of fluid and necrosis. By around four weeks, a walled off pancreatic necrosis may form in which collection is defined by fibrotic and inflammatory wall. Of all the patients presenting with acute pancreatitis only 3% usually develop pancreatic abscess.¹ In this study 4.48% of patients with acute pancreatitis developed pancreatic abscess. This is slightly above the reported frequency.

The term infected necrosis refers to bacterial invasion of necrotic pancreatic tissue. The mortality rate can exceed 20% in pancreatitis, if infected pancreatic necrosis is associated with organ failure.¹ Devitalized tissue becomes the bed for infection. The rate of mortality is 5% without necrosis and as high as 40% if necrosis develops because necrotic tissue is the seat of infection and sepsis.⁷ In this study mortality of pancreatic abscess was 4%. A study showed that

patients with pancreatic necrosis had mortality of 23% and 82% complication rate and patients without necrosis had 0% mortality and 6% morbidity.⁸ Serious complications like abscess develop if there is necrosis in more than 30%.⁸ In this study patients who presented with acute severe pancreatitis developed pancreatic abscess and patients with acute mild pancreatitis did not develop any complication due to same reason.

In the study females were predominantly involved because cholelithiasis is common in females and major cause of acute pancreatitis. Cholelithiasis is also common around 40 year of age. Patients in this study were also around this age group. Treatment of pancreatic abscess can be done by CT guided percutaneous drainage, endoscopic drainage of abscess or open surgical treatment of infected necrosis. CT guided percutaneous drainage of pancreatic abscess may be useful for initial stabilization of septic patients. In cases of drainage of further abscess after surgical intervention, when abscess for reexploration will be difficult, percutaneous technique is recommended.⁹ A paradigm shift is occurring in the treatment of pancreatic necrosis and peri pancreatic infection. In most tertiary care centers, open surgical procedures are being replaced by endoscopic or percutaneous procedure. Surgery is now reserved for cases where endoscopic or percutaneous approach is not feasible like infection, when pancreatic bed is not well formed and in abdominal compartment syndrome. Open procedures if carried out early have significant mortality and morbidity and should be delayed until patient's clinical condition is stable. Transluminal drainage or necrosectomy by natural orifices, trans luminal endoscopic surgery approach are evolving as the preferred strategy for the management of pancreatic necrosis and abscess. This procedure is ideally performed under endoscopic ultrasonography guidance.¹⁰

CT guided drainage is the next best strategy when a good transluminal window is not available for endoscopic ultrasonography (EUS) guided trans gastric drainage. If the need for drainage is early in the course of pancreatitis or if patient is too sick to undergo an endoscopic procedure, which often requires at least a deep sedation, this approach is preferred. Endoscopy is usually performed after four weeks when wall is mature. Endoscopic intervention leads to immediate symptomatic relief especially in the abdominal pain which is caused by tense or infected collection.^{11,12} Sterile or infected walled off pancreatic necrosis require minimally invasive drainage in 40% of the cases and operative

intervention in 20%.^{13,14}

ERCP is needed in most of the patients with gall stone pancreatitis as well as for pancreatic abscess and pseudocyst. It may be possible to drain abscess through the skin (percutaneous) but open surgery is frequently needed.¹⁵ In this study abscess was drained through percutaneous route under CT guidance and 80% patient cured. Only 20% patients developed complications and surgical intervention was required. In another study trans luminal endoscopic intervention was chosen and in 40% patients surgical intervention was required.¹

CONCLUSIONS:

Percutaneous CT guided drainage of pancreatic abscess provided good outcome. Mortality occurred in only one case.

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