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Original Research Article

Acute biliary pancreatitis: a prospective observational hospital-based study

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ABSTRACT

Background: Acute biliary pancreatitis (ABP) is one of the most serious complications of gall stone disease with a high risk of morbidity and mortality. Hence accurate diagnosis and prompt management of ABP is very crucial. Different management strategies exist regarding indications and timing for interventions, endoscopic retrograde cholangio-pancreaticography (ERCP) and cholecystectomy.
Methods: Ours is a prospective observational study of the different clinical presentations and management strategies and their respective outcomes in our hospital. All cases of ABP admitted over a period of one year were included in the study. The clinical presentation, severity and course of the disease, imaging studies, duration of ICU and hospital stay and timing of ERCP and cholecystectomy were studied.
Results: A total of 56 cases were included in the study. Average age was 45 years. Pain abdomen was the most common symptom at presentation. About 82% patients had mild to moderate disease while the rest had severe disease. The mean duration of intensive care unit stay was 8 days. ERCP was done in 6 cases. Cholecystectomy during the same admission was dine in 20 cases. There were 2 deaths during the course of the study.
Conclusions: Early intervention definitely reduces morbidity, mortality and recurrent admissions in cases of acute biliary pancreatitis. Same admission laparoscopic cholecystectomy is preferable in mild ABP. All cases of severe ABP must undergo early ERCP irrespective of biliary obstruction. This also helps in reducing readmissions due to pancreatic-biliary complications and is cost-effective.

Keywords: Pancreatitis, Biliary pancreatitis, ERCP, Early cholecystectomy, CT severity index

INTRODUCTION

Acute pancreatitis (AP) is a common diagnosis in cases presenting with acute abdomen. AP is an inflammatory process of the pancreas with variable degrees of severity and multi organ involvement.[1]

In India alcohol is the most common cause for pancreatitis followed by gall stones. Acute biliary pancreatitis (ABP) is a complication of gallstone disease with a variable course from mild to one with significant morbidity and mortality. Cholecystectomy in cases of ABP is known to prevent complications and recurrence. A high rate of recurrence is reported for patients who do not undergo cholecystectomy.[2] A debatable topic however is the timing of the cholecystectomy.

While interval cholecystectomy was recommended in the past a shifting trend towards early cholecystectomy is being seen. The indications and timing of endoscopic retrograde cholangio-pancreaticography (ERCP) have also been debated.[3] In this study we discuss the clinical profile and management of cases of ABP in a tertiary care hospital in South India.

METHODS

This was a prospective hospital based observational study conducted at SDM college of Medical Sciences and Hospital from June 2018 to May 2019. All the patients admitted with biliary pancreatitis during this time were observed during their course of hospital stay. Institutional ethical approval was obtained before conducting this study.

Diagnostic criteria for biliary pancreatitis were presence of at least two of the following. Acute abdominal pain and tenderness suggestive of pancreatitis. Serum amylase/lipase ≥3 times the normal (>160 U/l). Imaging findings suggestive of biliary pancreatitis i.e. calculi or sludge in the gall bladder or biliary tree.

Inclusion criteria were patients of biliary pancreatitis admitted to the department of surgery in our hospital fulfilling the diagnostic criteria and giving consent to be part of the study. Exclusion criteria were patients with history of alcohol intake, suffering from alcoholic pancreatitis, chronic pancreatitis and pancreatic malignancy.

Universal sampling was done, where all patients satisfying inclusion criteria were studied. A total of 56 patients were followed up in this study. A written informed consent was taken from all the patients. All the variables were collected in a pretested standard proforma. Patient demographic details, signs and symptoms along with detailed history was recorded. Laboratory investigations including a complete blood count, serum amylase or lipase, renal profile, lipid profile, liver function test and serum electrolytes were done and data recorded. Further radiological evaluation was done with contrast enhanced CT and/or magnetic resonance cholangiopancreatography (MRCP).

Data was entered and analysed in Microsoft Excel. Relevant analysis was done using SPSS v.16. Descriptive statistics like frequencies, percentages, mean, range and standard deviation were computed.

RESULTS

In our study period, a total of 272 patients were admitted in the department of surgery of SDM College of Medical Sciences and Hospital, our tertiary care hospital with acute pancreatitis. Among these cases 56 cases were those of biliary pancreatitis. The remaining 216 cases of pancreatitis were due to other aetiologies. The most common cause of pancreatitis was alcohol induced.

The mean age of patients with biliary pancreatitis was 52.25 years. Majority of them belonged to age group of 46-55 years and 66-75 years with 25% in each group. 71.4% cases were aged above 45 years as shown in Table 1. Of the 56 cases, 32 (57.2%) were male patients, with a female-to-male ratio of 1:1.3.

Table 1: Age distribution.

Age in years	Number of patients	Percentage of cases
25 to 35	12	21.4
36 to 45	4	7.2
46 to 55	14	25
56 to 65	12	21.4
66 to 75	14	25

The most common signs and symptoms were pain abdomen (100%) and abdominal tenderness (100%) followed by nausea (72%), vomiting (58%), fever (21%), jaundice (42.8%) as shown in Figure 1. Acute kidney injury was seen in 28.5% of cases.

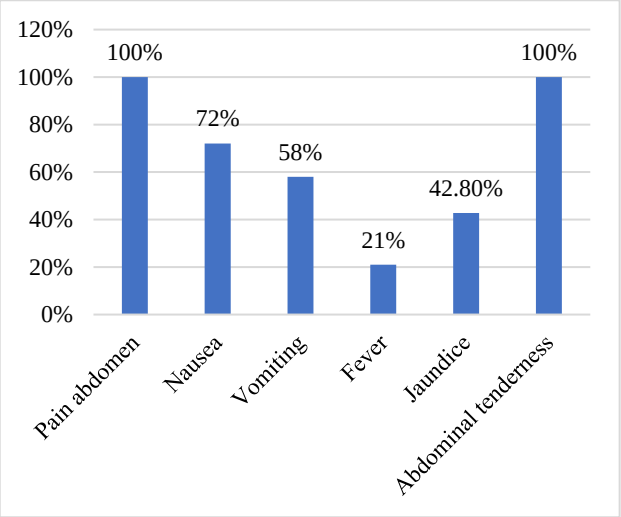

Figure 1: Clinical presentation and incidence.

Serum amylase and lipase elevation was diagnostic for pancreatitis and was noted in all the cases. Haematocrit values were raised (>44%) in 28.5% cases with mean±SD value of 41.3±6.77. Creatinine values were increased (>1.5 mg%) 32.14% cases with mean±SD value of 1.4±1.01.

Initial radiological evaluation was done with ultrasonography in all cases. In cases of biliary pancreatitis ultrasonography was able to diagnose gall stones or sludge along with dilatation of the biliary system in some cases. 7 cases had associated choledocholithiasis with dilatation of common bile duct and intrahepatic biliary radical dilatation.

Table 2: Classification of severity based on CT severity index.

CT severity index	Percentage of cases
Mild	17.8
Moderate	67.9
Severe	14.3

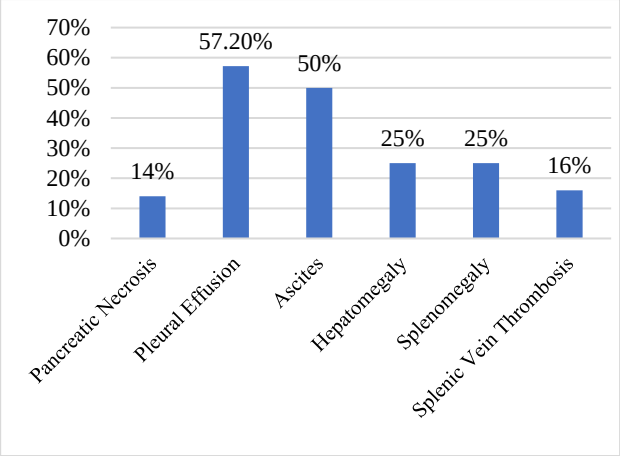

Figure 2: Findings on contrast enhanced CT scan of abdomen and pelvis.

Contrast enhanced CT abdomen and pelvis was done for further evaluation. Modified CT severity index was applied to all cases which categorised them into mild 17.8%, moderate 67.9% and severe category 14.3% as shown in Table 2. 8 cases i.e. 14% had pancreatic necrosis on CT scan. 57.2% cases were diagnosed with pleural effusion, 50% cases had ascites, 25% had hepatomegaly and 25% were diagnosed to have splenomegaly. Splenic vein thrombosis was seen in 16% cases. The findings are shown in Figure 2. MRCP was done in 14 cases for further evaluation. Pancreatic duct disruption was noted in 6 cases.

Of the 8 patients with necrotising pancreatitis, 6 cases recovered with conservative management with nutritional support with naso-jejunal tube feeding. The mean duration of intensive care unit (ICU) stay for these cases was 8 days. Two cases had percutaneous pig tail catheter insertion for walled off necrosis. Two admitted in the ICU, which eventually succumbed to death had a significantly longer duration of ICU stay with multiple admissions to the ICU. One of the mortality cases had severe necrotising pancreatitis progressing to walled off pancreatic necrosis (WOPN). She underwent ERCP after 2 weeks of admission owing to her hemodynamic instability. Percutaneous pigtail catheter insertion for WOPN and chest tube drainage was done. But patient deteriorated and developed infective myocarditis. Owing to persistent hemodynamic instability surgical intervention could not be done and patient expired due to septicaemia after a prolonged stay.

ERCP was done for 6 cases 11.5%. Cholecystectomy was done in the primary admission itself for 20 cases (35.7%). Interval cholecystectomy was done for 34 cases (60.7%) (Figure 3).

Two cases had special considerations. One female patient aged 52 years was also suffering from cancer breast. She was admitted early cholecystectomy was done in the same setting. She was admitted into the ICU and recovered within 2 days. Another female patient aged 26 years was pregnant. She was managed conservatively with ICU stay of 5 days. She recovered and completed her pregnancy. She underwent interval cholecystectomy.

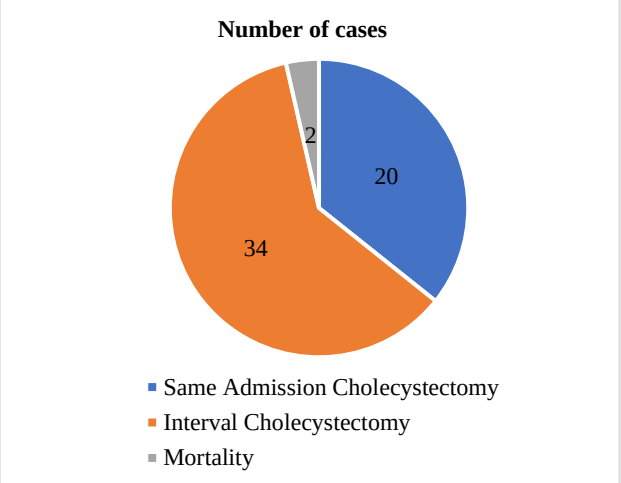

Figure 3: Management strategy for cholecystectomy.

DISCUSSION

AP is one of the most common conditions presenting as acute abdomen in the emergency department.[4] Although alcohol induced AP is the most common aetiology in India, the incidence of biliary pancreatitis is increasing. In western countries, ABP is more common than AP secondary to alcohol. ABP is one of the most serious complications of gall stone disease with a high risk of morbidity and mortality.[5] Hence accurate diagnosis and prompt management of ABP is very crucial.

In our study ABP accounted for 20.5% of all cases of AP admitted to the hospital. This is lesser than studies conducted in the west but is comparable to a study done by Chauhan et al in Dehradun. The average age of presentation was 52.2 years and male to female ratio was 1:1.13 which was similar to most other studies. The most common presenting symptom was pain abdomen seen in all the patients. All the patients were evaluated with ultrasonography initially followed by contrast enhanced computed tomography (CECT) abdomen and pelvis. Ultrasonography is the most sensitive for picking up gall stones. However, evaluation of the distal cannabidiol and pancreas is usually made difficult by bowel gas artifacts. CECT is useful in diagnosing pancreatitis and its local complications and defining the severity of the disease. The modified CT severity index was used to define severity of the disease. MRCP was done in selected cases for evaluation of the biliary tree which also was used as a road map for ERCP. Laboratory investigations done to confirm the diagnosis were serum amylase and lipase levels. Serum lipase levels were elevated in all the cases of ABP. Serum lipase levels are the most definitive laboratory investigation for confirming the diagnosis of

acute pancreatitis. This is consistent with most of the studies where serum lipase elevation is diagnostic.

In our study about 82% of cases had moderate to severe pancreatitis on CT. 57% cases had pleural effusion and 50% ascites with pancreatic necrosis noted in 8 cases. The probable cause for large number of cases having complications may be attributed to delayed presentation or incorrect diagnosis and patients being wrongly treated for gastritis before referral. The patients with mild and moderate pancreatitis were managed conservatively. Those with severe pancreatitis were admitted in the ICU. Six cases with pancreatic necrosis were managed conservatively. A step-up approach was used in the management of these cases. Two of these patients had per cutaneous pig tail catheters inserted under radiological guidance to drain the necrosis. They responded to the same and catheters were removed after radiological conformation of the resolution of the necrotic collections. They were discharged and underwent interval cholecystectomy. They had a stay in the ICU of 8 days with IV carbapenems thereby escalating the cost and prolonged hospital stay. Six patients underwent ERCP either for biliary duct disruption or for choledocholithiasis. These patients also recovered and underwent interval cholecystectomy after 6 weeks. Among all the cases of ABP 20 cases underwent laparoscopic cholecystectomy during the index admission. There were no intraoperative complications reported like biliary injuries or conversion to open surgery. The case which expired had severe pancreatitis with all the complications and a fulminant course with persistent hemodynamic instability. The tube drainage of the necrosis and ERCP in this case was done late during the course of the disease which proved detrimental to the prognosis of the patient. Although infective myocarditis was final complication after which the patient succumbed to death, an early intervention would probably have altered the course of disease in this patient.

Conservative management of ABP with interval cholecystectomy has been an accepted line of management for long. Interval cholecystectomy has been preferred following an attack of pancreatitis.[6] The proponents of this line of management attribute it to the higher risk of biliary injuries due to a difficult dissection of Calot's triangle following pancreatitis. There is also a presumed higher risk of conversion to open surgery. Also, the non-availability of operating rooms and logistic problems in the emergency setup were also impediments which prompted surgeons to prefer interval cholecystectomy. There was also a belief that early cholecystectomy would have a pronged hospital stay and an escalation in costs to be borne by the patients.[7]

The PONCHO trial has been one of the biggest multicentre randomised control trials for same admission cholecystectomy in cases of biliary pancreatitis. The results of the trial suggest that in cases of mild biliary pancreatitis same admission cholecystectomy within 72 hours of admission reduced the rate of recurrent gall stone related complications. Also, the cholecystectomy related complications were also fewer.[8] The cost effectiveness of the same was also studied. Same admission cholecystectomy had the benefit of lesser readmission rate due to gall stone related complications like a recurrent attack of pancreatitis. Early cholecystectomy cases had reduced morbidity and fewer conversions to open surgeries thereby reducing the costs.[9] A study by Kim et al also proved that a delayed cholecystectomy increases the risk of pancreatico-biliary complications.[10]

The role of ERCP too was not clearly defined in ABP. Hence it was reserved for cases with proven choledocholithiasis with cholangitis or if there was a biliary duct disruption demonstrated on imaging. Most studies now suggest that an early ERCP must be done. As per a study by Fogel and Sherman all cases of severe pancreatitis must undergo ERCP with sphincterotomy within 72 hours of admission. Even cases without any biliary obstruction with severe pancreatitis must undergo ERCP with sphincterotomy. However, cases of mild biliary pancreatitis without any biliary obstruction may not require ERCP. They may undergo early cholecystectomy.[11] A study by Fan et al suggests early ERCP within 24 hours of admission.[12] A study in Germany by Folsch et al suggested that ERCP has no benefit in cases without biliary obstruction.[13]

In our study most of the cases were managed conservatively. The number of cases undergoing ERCP was much lower. However, even cases managed conservatively had a favourable outcome. Twenty cases underwent early cholecystectomy during the same admission. These indications for these early cholecystectomies were not uniform. Hence protocols for early interventions would have definitely helped in reducing the morbidity, mortality, duration of stay and costs incurred by the patients. As most recent studies indicate early intervention has to be the rule in managing acute biliary pancreatitis.[14]

All cases with mild biliary pancreatitis with no biliary obstruction must undergo laparoscopic cholecystectomy in the same admission preferably within 72 hours of admission. All cases of severe biliary pancreatitis with or without biliary obstruction must undergo an early ERCP followed by cholecystectomy. This will greatly benefit patients of biliary pancreatitis.

Limitation

The limitations of our study are its small sample size and observational design. Although our findings provide an insight into the scenario, further appropriately designed studies are required to validate our findings and suggestions.

CONCLUSION

To conclude, the study suggest that early intervention definitely reduces morbidity, mortality and recurrent admissions in cases of acute biliary pancreatitis. An early laparoscopic cholecystectomy may be done in all mild biliary pancreatitis cases with very little risk of complications. An early ERCP is required in severe cases irrespective of biliary obstruction.

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