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Clinical profile, severity stratification, complications and management of acute gall stone induced pancreatitis: A prospective observational descriptive study

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Abstract

Acute biliary pancreatitis is common surgical emergency with wide array of symptoms. Revised Atlanta Classification has devised criteria for the diagnosis of the pancreatitis and has defined the severity of pancreatitis and various complications arising from the pancreatitis. Early diagnosis is imperative to start the management of the patients which is usually supportive. In our study, we assessed clinical profile, severity, complications and managed patients based on standard guidelines. Majority of cases, in our study, followed a mild course and a few developed local or systemic complications. Definitive treatment involved early cholecystectomy for mild cases wherever possible and interval cholecystectomy for the severe cases. Management of complications has improved with step-up approach. Recurrence of acute pancreatitis was witnessed when patient did not undergo cholecystectomy or was waiting for the definitive procedure.

Keywords: Clinical profile, severity stratification, complications and management, gall stone

Introduction

Acute biliary pancreatitis is common emergency witnessed in the surgery department which presents with range of the symptoms. Its incidence varies from 5- 40 per 100,000 persons annually ^[1]. It is commonly seen in elderly women. Acute biliary pancreatitis occurs in 3-8% of the patient with symptomatic cholelithiasis ^[2]. Ongoing choledocholithiasis is observed in up-to 25% of the patient ^[3]. Patients are classified to have mild, moderately severe or severe pancreatitis depending upon the presence or absence of organ failure or local/systemic complications & upon duration of persistence of organ failure. About 20% patients follow a severe course and develop local/systemic complications ^[4]. Overall mortality with acute biliary pancreatitis is 1-3% ^[5]. In this study, we demonstrate the overall clinical profile, severity and management of the patients and the complications arising out of pancreatitis.

Materials and Methods

For this prospective observational study, all the reviews on the acute biliary pancreatitis were assessed and were taken as the starting point. 100 patients were included in the study who had biliary pancreatitis. Patients with <18years of age, pancreatitis of non-biliary aetiology, chronic pancreatitis, immunocompromised status and pregnant patients were excluded from the study. All the patients were diagnosed to have acute biliary pancreatitis on the basis of criteria devised by Revised Atlanta Classification and were admitted in the hospital. Patients were stratified to have mild, moderately severe and severe pancreatitis based on presence/absence of organ failure and local/systemic complications & upon duration of persistence of such organ failure. Investigations included basic blood workup, with main emphasis on haematocrit, serum creatinine, liver function tests, serum amylase and lipase levels and ABG of the patients and imaging in the form of plain chest radiographs and ultrasonography of the abdomen. CECT abdomen was done, at least after 72 hours of the appearance of symptoms, only in the patients who failed to improve despite adequate resuscitation, clinically deteriorating or when there was a diagnostic dilemma. Patients were managed with supportive care which included oxygen supplementation, goal directed fluid therapy, analgesics and nutritional support. Prophylactic antibiotics were not used but antibiotics were used when there was evidence of sepsis, infected pancreatic/peripancreatic necrosis and infected peripancreatic/pancreatic collections. Definitive

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treatment in the form of laparoscopic/open cholecystectomy was undertaken in 98 patients as 2 patients were lost to follow up. Complications were managed according to step up approach. Early cholecystectomy was undertaken, wherever possible, in the patients who had mild pancreatitis within the 2 weeks of acute attack at the index admission and interval cholecystectomy was undertaken for severe cases after at-least 6 weeks of the acute attack.

Results

In one year study, conducted between April 2019 to march 2020, we found female preponderance with females being 81 in number out of 100 patients with biliary pancreatitis and male to female ratio being 1:4.2. Middle age group was affected most commonly with 46% of the presenting population being between 41-60 years of age. The most common presenting symptom was persistent epigastric pain radiating to the back which was found in every patient. It was associated with nausea and vomiting which was present in about 97% of the patients. Jaundice was seen in 20% of the patients. Tachycardia and hypoxia were manifested in 23% and 22% of the patients respectively. No patient presented with or developed hypotension subsequently in the course of the disease.

Amongst laboratory investigations, which were done in all patients, haematocrit was found to be raised (>44%) in 25% of the patients and decreased (<34%) in 17% of the patients, at the time of admission. Serum creatinine was deranged in 4% of the patients with one patient having baseline above 1.8mg/dl. Serum creatinine levels were used as one of the markers for assessment of organ failure. Serum bilirubin was found to be raised in 33% of the patients whereas appearance of jaundice was seen in only 20% of the patients. Serum Alkaline phosphatase levels were assessed as their increased levels served as an evidence of ongoing choledocholithiasis along with acute pancreatitis. The raised levels (≥ 150 IU/L) were seen in 49% of the patients at the time of admission. Serum amylase and lipase levels were done at the time of admission, which are also used as one of the diagnostic criteria if raised ≥ 3 times of their upper limit of normal range. Serum amylase and lipase levels were raised in 86% and 91% of the patients respectively at the time of admission.

Arterial blood gases were done in all the patients at the time of admission and later on repeated after 48hrs, for assessment of organ failure. PaO₂/ FiO₂ ratio was calculated based on findings of Arterial blood gases and were used as another marker for assessing organ failure. PaO₂/FiO₂ ratio ≤ 300 was taken as respiratory failure and was present in 43% of the patients at presentation.

Modified Marshall score (MMS) was calculated using three parameters representing a particular organ system viz. PaO₂/FiO₂ ratio representing respiratory, serum creatinine representing renal and systolic blood pressure representing cardiovascular system. MMS ≥ 2 suggestive of organ failure, even if single system was affected, it was taken as organ failure. At presentation organ dysfunction was observed in 49 patients however, after 48 hours it was observed in 31 patients only meaning thereby that acute pancreatitis is a dynamic disease.

Plain chest radiographs were ordered for all the patients at the time of admission. Pleural effusion was present in 37% of the patients (left > right), out of which 91.89% were result of local complication, 8.10% were due to acute exacerbation of underlying chronic lung disease. Ultrasonography of abdomen was done in all the patients to confirm the gall bladder stones, to demonstrate choledocholithiasis or indirect evidence of

choledocholithiasis. Cholelithiasis was consistent finding in 89% of the patients however, 11% of the patients demonstrated gall bladder sludge only. 18% of the patients had dilated common bile duct whereas only 5% demonstrated choledocholithiasis on ultrasonography. Bulky pancreas was observed in 27% of the patients. Local complications like peripancreatic collections and ascites were observed in 4% and 3% of the patients respectively. Contrast enhanced computed tomography of the abdomen was ordered, when indicated, in 30 patients. It was observed that 14 patients had oedematous pancreatitis and 16 patients had necrotizing pancreatitis with Modified CT severity index of 4-6 in 14 patients and 8-10 in 16 patients of acute oedematous pancreatitis and acute necrotizing pancreatitis respectively. MRCP was done in the patients who had the persistent jaundice and/or had indirect evidence of choledocholithiasis on ultrasonography. It was done in 18 patients. On MRCP, out of these 18 patients, 10 had choledocholithiasis, 2 had dilated common bile duct and 2 had common bile duct stricture while rest of the 4 patients had no choledocholithiasis or stricture. Severity stratification was done based on the criteria devised by the Revised Atlanta classification. Out of the 100 patients, 69% patients had mild pancreatitis and 31% had severe pancreatitis.

Local and systemic complications were observed in 70% and 10% of the patients respectively. Most common local complication was pleural effusion (48.5%) followed by pancreatic necrosis (20%), acute peripancreatic fluid collection (14.2%), pancreatic ascites (10%), pseudocyst/walled off necrosis (4.2%) and vascular complications (2.85%). The most common systemic complication was metabolic (50%) in the form of hypocalcemia followed by pulmonary complications (30%), renal (10%) and neurological complications (10%).

Patients were managed with supportive care which involved oxygen supplementation, early fluid resuscitation (goal directed fluid therapy), analgesia and nutritional support. Antibiotics were prescribed in cases of sepsis, infected necrosis and necrotic collections. Definitive management in the form of laparoscopic/open cholecystectomy was undertaken. Index cholecystectomy could be performed in only 24 patients out of 69 patients with mild pancreatitis due to unavailability of OT slots. Interval cholecystectomy was undertaken for all the patients with severe pancreatitis and rest of patients with mild pancreatitis, who could not be taken up for index cholecystectomy, after 6 weeks of initial attack of acute pancreatitis. 2 patients were lost to follow up.

Endoscopic retrograde cholangiopancreatography with stenting was undertaken in all the 10 patients who demonstrated choledocholithiasis on MRCP followed by cholecystectomy after 6 weeks. ERCP failed in 1 case where open cholecystectomy with choledochoduodenostomy was performed. Complications were managed using step-up approach. In our study, 2 patients underwent percutaneous pigtail catheterization, as one had acute necrotic collection and other had infected necrotic collection. Post-pigtail drainage patient improved and interval cholecystectomy was performed after at least 6 weeks. Out of 2 patients with pseudocyst, 1 patient underwent cystogastrostomy along with cholecystectomy, while other patient had no pseudocyst on follow up and underwent open cholecystectomy only.

Out of total 100 patients of acute biliary pancreatitis, 94 patients improved/recovered from the attack. While 2 patients had recurrent attack within 4 weeks of initial attack and with increased severity of the attack, one of them succumbed to the recurrent 3rd attack. Overall mortality was low i.e., 2%. 2 patients left against medical advice in their acute attack.

Discussion

Our prospective observational study of acute biliary pancreatitis demonstrated that this clinical condition is commonly seen in middle aged women who harbour gall stones. Pain abdomen, being the most common presenting symptom, was present in almost all patients. It is comparable to other studies^[6]. Jaundice was observed in 20% of the patients at the time of presentation which is found equivalent to the study conducted by William Mcollom *et al* where it was 20%. Serum amylase and lipase levels were found to be raised in 86% and 91% patients respectively which was comparable to the study done by Clavien PA *et al*. PaO₂ /FiO₂ ratio defines the respiratory function and its value ≤ 300 signifies the respiratory dysfunction and was found in 43% of all the patients. 87.1% of the patients with severe pancreatitis and 23.19% of the patients with mild pancreatitis demonstrated PaO₂/FiO₂ ≤ 300 .

MMS was done to define organ failure. In our study, 49% of the patients had organ failure at the time of presentation and only 31% had persistent organ failure beyond 48hours which correlated to severe cases.

Plain chest radiographs were obtained to observe the findings correlating with the organ failure. 37% of the patients demonstrated pleural effusion on chest radiographs out of which 72.9% patients were with severe pancreatitis and 32.2% patients were with mild pancreatitis. Transabdominal ultrasonography was done in all the patients to confirm gall stones, assess biliary tree and to demonstrate evidence of pancreatitis. Choledocholithiasis was seen in 5% of the patients. In our study, ultrasonography had sensitivity of 30% in detecting choledocholithiasis which was comparable to the Cucher *et al* study where it was 25-60% and specificity of 88.89% which was comparable to study conducted by Valeriu Surlin *et al*. Ongoing choledocholithiasis, as confirmed by MRCP, was seen in 10% of the patients whereas reported incidence is as high as 25%.

Severity stratification was done at the time of admission and repeated after 48 hours. 31% of the patients were found to have severe acute pancreatitis and 69% of the patients had mild pancreatitis. As per Dedemadi G *et al* study 15-20% of the patients suffer severe attack of acute biliary pancreatitis.

Local and systemic complications were subsequently observed in 70% and 10% respectively. Out of local complications acute peripancreatic fluid collections were observed in 14.2% which was comparatively lower than the studies conducted by Emma Upchurch and Dick C. Kuo *et al* which have demonstrated them up to 25% and 25-30% respectively. Pancreatic/peripancreatic necrosis was found in 14% of the patients in our study which was comparable to studies conducted by Marco J Bruno and Peter A banks *et al* which showed it up to 20% and 15% respectively. 41.9% of severe cases had pancreatic necrosis whereas its reported incidence is 20-25% in the patients with severe pancreatitis^[7]. Pseudocyst/walled off necrosis was observed in only 4.2% of the patients and was comparable to the studies^[8] where it was 6-8%. Overall vascular complications are rare and, in our study, it was observed in 2%.

Systemic complications were seen in 10% of the patients. In our study the most common was metabolic complications (50%) among the patients with systemic complications followed by respiratory (30%), renal (10%) and neurological (10%). However most common systemic complication observed in other studies, conducted by Yoshifumi Takeyama *et al*, was pulmonary failure (50%).

Early cholecystectomy was done in the patients with mild pancreatitis wherever possible. The mean duration of surgery and post-operative complications were compared between index

and interval cholecystectomy. It was found to be similar between the two groups.

Overall mortality in our study was 2% whereas it reaches up to 5% in other studies^[9]. Recurrent pancreatitis was observed in 2% of the patients in our study which is lower as compared to other studies^[10] where it is reported to be at least 19%.

Conclusion

Acute biliary pancreatitis is a clinical condition which is commonly encountered in surgical emergency and has a wide spectrum of clinical presentations.

In our study, female preponderance was seen and patients were stratified into mild, moderately severe and severe pancreatitis based on Revised Atlanta classification using Modified Marshall Score. 31 patients were found to have severe pancreatitis out of which 2 patients left against medical advice in their acute attack due to the poor prognosis of the patients.

Patients were subjected to contrast enhanced computed tomography wherever indicated, routine prophylactic antibiotics were not used but were used in the presence of sepsis, infected necrosis or acute infected necrotic collections. Patients were initially managed with supportive care with oxygen supplementation, intravenous fluids and adequate analgesia. Early enteral feeding was promoted in all the cases. Patients were assessed for local/systemic complications and managed accordingly. Definitive management of cholelithiasis in the form of laparoscopic/open cholecystectomy was undertaken in index admission in mild cases wherever possible and after 6 weeks in all severe cases. Local complications [pseudocysts/WON] which failed to resolve after 6 weeks were managed surgically along with definitive surgery for gall stones. In our study, index cholecystectomy in the mild cases were associated with minimal intraoperative difficulty and had lower complication rates as well.

References

1. Steinberg W, Tenner S. Acute pancreatitis. *N Engl J Med* 1994;330(17):1198-210.
2. Uhl W, Muller CA, Krahenbuhl L *et al*. Acute gallstone pancreatitis; timing of laparoscopic cholecystectomy in mild & severe disease. *Surg Endosc* 1999;13(11):10706.
3. Jonathan B, Mitchem, David C, Linhem. *Washington Manual of Surgery*. 6th ed. Philadelphia, USA: Lippincott Williams &Wilkins 2012,331p.
4. Ye-Chen Feng, Min Wang Feng, Ren-Yi Qin. Study on acute recent stage pancreatitis. *WJG*. 2014;20(43):16138-16145.
5. Banks PA, Freeman ML. Practice guidelines in acute pancreatitis. *Am J Gastroenterol* 2006;101(10):2379-400
6. Mitchell S. Acute pancreatitis: etiology, clinical presentation, diagnosis and therapy. *Med Clin N Am* 2008;92:889-923.
7. Nicholsan LJ. Acute pancreatitis: Should we use antibiotics? *Curr Gastroenterol Rep* 2011;13(4):336-343.
8. Dedemadi G, Nikolopoulos M, Kalaitzopoulos I, Sgourakis G. Management of patients after recovering from acute severe biliary pancreatitis. *World J Gastro* 2016;22(34):7708-7717.
9. Veit P, Steiner JM, Algul H. Early phase of acute pancreatitis: assessment and management. *World J gastropathophysiology* 2014;5(3):158-168.
10. Whitlock T *et al*. A scoring system to predict readmission of patients with acute pancreatitis to the hospital within thirty days of discharge. *Clin Gastroenterol Hepatol* 2011;9(2):175-80.