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Original Research Article

Demographic and clinical profile of patients with acute biliary pancreatitis: an experience in Patan academy of health sciences

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ABSTRACT

Background: Acute pancreatitis is one of the most common causes of acute abdomen encountered in emergency department with wide range of severity from mild self-limiting disease to severe and rapidly progressive illness leading to multi organ failure and even death. Gall stones are leading cause of acute pancreatitis. This study has been carried out to find out demographic pattern and clinical profile of patients with acute biliary pancreatitis.
Methods: This is a prospective cross-sectional study carried out in the department of surgery in Patan academy of health sciences (PAHS) in the time period between May 1, 2021 and April 30, 2022. The process of data collection was started after obtaining ethical approval from institutional review committee (IRC) of PAHS, and written informed consent was obtained from patients. Total sampling was done and 66 patients were enrolled into the study, who were diagnosed as acute biliary pancreatitis. Data was analyzed with SPSS ver 25 and Microsoft excel 2016.
Results: Out of total 66 patients in the study 25 (37.9%) were male and 41 (62.1%) were female with male: female ratio of 1:1.64. Mean age was 48.42±16.62 years. ranging from 16-88 years. Epigastric abdominal pain was predominant presenting symptoms accounting for 57 (86.4%) cases. Pleural effusion was most common complication seen in 17 (25.8%) cases. Mortality occurs in 2 (3%) cases, both of cases had severe pancreatitis. Only 21 (31.8%) patients underwent cholecystectomy among which 13 (19.7%) interval and 8 (12.1%) index cholecystectomy.
Conclusions: Female gender with age group of 40-60 years. predominates acute biliary pancreatitis. Though most of the cases are mild and have benign course, severe cases and patients with advanced age are associated with high mortality. Acceptance of index cholecystectomy is very low.

Keywords: Acute biliary pancreatitis, Gall stone, Index cholecystectomy

INTRODUCTION

Acute pancreatitis is the inflammation of pancreas secondary to auto digestion of gland by its enzymes with wide range of severity from mild self-limiting disease to severe and rapidly progressive illness leading to multi organ failure and even death.[1,2]

It is one of the most common cause of acute abdomen encountered in emergency department with annual worldwide incidence of 4.9-73.4 cases per 100,000 population.[3] In Nepal hospital based data showed an annual incidence of 60-90 patients per year at tertiary care center at Kathmandu.[4]

Multiple factors plays a role for developing acute pancreatitis which includes alcoholism, gall stones, exposure to drugs, trauma, tumor, endoscopic retrograde cholagiopancreatography (ERCP), hyperlipidemia, viral infections etc.[5] Gall stones are leading cause of acute pancreatitis worldwide accounting for at least one half of the 4.8-24.2 cases of pancreatitis per 100,000 population

in western countries.[6] In Nepal data regarding cause of pancreatitis are unavailable but one study suggested biliary and alcoholic pancreatitis together accounting for about 66% of all causes.[7]

Patients with gall stones smaller than 5 mm, microlithiasis and biliary sludge are thought to be at higher risk for developing biliary pancreatitis.[8] Multiple theories has been studied how gall stones triggers acute pancreatitis but all remains controversial. Common channel theory, obstructive theory, and duodenal content reflux theory are commonly evaluated theory for developing biliary pancreatitis.[9]

Diagnosis of acute pancreatitis requires two of the following three features: Abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back). Serum lipase activity or amylase activity at least 3 times greater than the upper limit of normal. Characteristic finding of acute pancreatitis on contrast enhanced computed tomography (CECT) and less commonly magnetic resonance imaging (MRI) or trans abdominal ultrasonography (USG).[10]

Various scoring system has been developed such as Glasgow score, Ranson score, bedside index of severity in acute pancreatitis (BISAP) score, acute physiological assessment and chronic health evaluation (APACHE) score, revised Atlanta classification score. Among which revised Atlanta classification score has better results in predicting long term clinical prognosis, major complication and clinical interventions.[11]

Management of acute biliary pancreatitis is mainly supportive care with fluid replacement, pain management, electrolyte optimization, nutritional support followed by identifying and treating local or systemic complication and prevention of recurrence.[3]

Incidence of gall stone disease has been increasing in our region and thus corresponding increase incidence of gall stone related acute pancreatitis is also expected. But there is no detail study regarding gall stone related acute pancreatitis in our country. So, this study has been carried out to find out demographic pattern, clinical presentation and outcome of biliary pancreatitis in our context.

METHODS

This is a prospective cross sectional study that was carried out in the department of surgery in PAHS in the period from May 1, 2021 to April 30, 2022. The process of data collection was started after obtaining ethical approval from IRC of PAHS, and written informed consent was obtained from patients. Total sampling was done and 66 patients were enrolled into the study, who were diagnosed as acute biliary pancreatitis. Data was analyzed with SPSS ver 25 and Microsoft excel 2016.

All the patients who were suspected for acute pancreatitis in emergency department were first evaluated by duty doctor in emergency department. They were subjected to thorough history taking, physical examination, necessary laboratory and radiological investigation. Diagnosis of acute pancreatitis was made based on revised Atlanta classification. In this study USG was done to all cases as imaging modality. While CECT was done when diagnosis could not be established with clinical, laboratory and USG findings or to identify complications when patients were not improving.

Biliary cause of pancreatitis was isolated with USG findings of gall stones, biliary sludge or common bile duct (CBD) stone. Non biliary cause was excluded from study. Severity of patients was evaluated using Revised Atlanta Classification. Initially patients were categorized into mild and severe pancreatitis at the time of admissions. Mild cases were managed in surgical wards while severe cases were treated in Intensive care unit (ICU). After 48 hrs. of treatment in ICU patients with severe pancreatitis were reevaluated and patients who had transient organ failure were categorized into moderately severe acute pancreatitis.

All the patients irrespective of severity underwent following management.

Fluid therapy

Fluid resuscitation with Ringer lactate solution was started in emergency and continued in ward or ICU with aim to maintain urine out of 0.5 ml/kg and mean arterial pressure 65 mmHg or more. For unstable patients despite of adequate fluid resuscitation inotropes were added.

Pain management

Management of pain was done using modified world health organization (WHO) analgesics ladder

Nutritional support

Oral feeding was started as soon as pain subsides in patients with mild pancreatitis. For patients with severe pancreatitis without intestinal complications oral or nasogastric feeding was given as tolerated while total parenteral nutrition (TPN) was given for those patients with severe pancreatitis who had intestinal complications.

Antibiotics

No prophylactic antibiotics given to patients with mild and moderately severe pancreatitis. Carbapenems group of antibiotics given for patients with severe pancreatitis.

Intervention and prevention

ERCP was done in patients with cholangitis and choledocholithiasis.

Percutaneous catheter drainage was done for infected pancreatic necrosis. Index cholecystectomy was done in patients with mild acute pancreatitis who agreed for surgery. Remaining patients were advised for interval cholecystectomy.

All the relevant data were recorded from admission to discharge in a pre-formed proforma and data were analyzed using statistical package for the social sciences (SPSS) version 20. Chi square test was used for categorical variables and T test was used for continuous variable. P=0.05 was considered to be significant.

RESULTS

Total of 66 patients with acute biliary pancreatitis were managed during the study period in which 25 (37.9%) were male and 41 (62.1%) were female. Mean age was 48.42±16.62 years. ranging from 16-88 years. Most patients (50%) belong to age group between 40-60 years. Mean duration of illness prior hospital visit was 2.44±1.06 days ranging from 1 to 5 days. Pain was predominant symptom which was present in all patients. Pain was localized to epigastric region in 57 (86.4%) cases while remaining 9 (13.6%) had diffuse pain. Majority patients (57.6%) experienced severe pain while 20 (30.3%) had moderate and 8 (12.1%) had mild pain. Vomiting, fever and jaundice was present in 27.3%, 19.7%, and 15.2% respectively. The 15 (22.7%) patients gave past history of biliary pancreatitis indicating recurrence of disease. Regarding medical comorbidity, 31 (47%) had no medical comorbidity while hypertension was seen in 13 (19.7%), diabetes in 8 (12.1%), chronic kidney disease in 3 (4.5%) and hypothyroidism in 2 (3%) cases. Nine (13.6%) patients have the multiple comorbidities.

In laboratory investigations raised total leukocyte count was seen in 47 (71.2%) patients. Serum amylase and lipase was raised in 53 (80.3%) and 58 (87.9%) cases respectively. Ultrasound of abdomen shows features of pancreatitis in 15 (22.72%) cases only. Gall stone was detected in 58 (87.9%) cases, while CBD stone and biliary sludge were detected in USG in 10 (15.2%) and 4 (6.1%) cases respectively. CECT abdomen was done in 17 (25.8%) patients, 8 (12.2%) for diagnostic dilemma and 9 (13.6%) for deteriorating patients in which interstitial pancreatitis was present in 6 (9.1%) patients while 11 (16.7%) patients had necrotizing pancreatitis.

The 52 (78.8%) patients had mild pancreatitis who were managed in ward while remaining 8 (12.1%) patients had moderately severe pancreatitis and 6 (9.1%) patients had severe pancreatitis and were managed in ICU. All patients were managed following same protocol with additional antibiotics therapy given to severe cases only. Two (3.03%) patients needed percutaneous drainage of infected pancreatic necrosis while ERCP was done for 8 (12.12%) cases, 1 for cholangitis and other for choledocholithiasis. The 21 (31.8%) patients underwent cholecystectomy among which 13 (19.7%) was interval and 8 (12.1%) were index cholecystectomy

Pleural effusion was most common complication accounting for 17 (25.8%) cases which was followed by renal failure and shock seen in 12 (18.2%) and 7 (10.6%) cases respectively. Acute necrotic collection was seen in 5 (7.57%) patients. Among 66 patients' mortality occurs in 2 (3%) cases, both of the cases had severe pancreatitis. Mean duration of hospital stay was 5±3.02 days ranging from 1 to 18 days.

Though severity of disease was increased with increase in age it is statistically insignificant.

Increased in severity was associated with increase in mortality and is statistically significant.

Increased in age was associated with increase in mortality and is statistically significant.

Table 1: Age distribution and severity of patients with acute biliary pancreatitis.

Age group (in years)	Atlanta classification			Total	P value
	Mild	Moderate	Severe		
<20	1	0	0	1	0.092
20-40	16	3	0	19	
40-60	28	3	2	33	
>60	7	2	4	13	
Total	52	8	6	66	

Table 2: Severity of disease and outcome.

Atlanta classification	Outcome		Total	P value
	Improved	Expired		
Mild	52	0	52	0.000
Moderate	8	0	8	
Severe	4	2	6	
Total	64	2	66	

Table 3: Age distribution and outcome of patients.

Age group (in years)	Outcome		Total	P value
	Improved	Expired		
<20	1	0	1	0.038
20-40	19	0	19	
40-60	33	0	33	
>60	11	2	13	
Total	64	2	66	

Table 4: Relation between duration of illness and outcome.

Duration of illness at presentation (Days)	Outcome		Total	P value
	Improved	Expired		
1	12	1	13	0.741
2	23	1	24	
3	19	0	19	
4	7	0	7	
5	3	0	3	
Total	64	2	66	

Outcome of disease and length of hospital stay was independent to duration of illness prior presentation.

DISCUSSION

Out of 66 patients 25 (37.9%) were male and 41 (62.1%) were female with male: female ratio of 1:1.64. This female predominance of biliary pancreatitis was also explained by Manandhar et al (M:F ratio of 1:1.5) and Hegab et al (M:F ratio of 1:1.5).[3,12] This female predominance can be explained by increasing gall stone disease among females. However study by Prasad et al and Krishna et al shows male dominance of biliary pancreatitis with M: F ratio of 1.2:1 and 1.08:1 respectively.[13,14] So, further study is needed to conclude sex distribution of biliary pancreatitis.

Mean age in this study was 48.42±16.62 years. ranging from 16-88 years. mostly (50%) belonging to age group between 40-60 years. Similar results have been reported in Manandhar et al (45±10 years. mostly belonged to 40-50 years) and Maibam et al (median of 48 years. mostly belonged to 41-60 years).[6,12]

Though pain was predominant symptom which was present in all patients, characteristic epigastric pain was present only in 86.4% cases while rest of the case had diffuse pain. Study done by Phillip et al and Reid et al reported classical abdominal pain presented in 97% and 79% cases.[15,16] Thus, this study shows comparable results to other studies. It also shows that patients with diffuse pain abdomen may occurs due to pancreatitis as well.

Though classical pain in acute pancreatitis as per revised Atlanta classification is severe, some of the patients experience moderate pain in 20 (30.3%) cases and mild pain in 8 (12.1%) cases with majority patients (57.6%) experiencing severe pain. This may be explained by threshold of pain tolerating capacity of patients which may vary person to person.

In this current study vomiting, fever and jaundice was present in 27.3%, 19.7%, and 15.2% respectively. In the study by Ramzan et al vomiting was associated in 47% cases.[17] In the studies of Ramzan et al and Liu et al jaundice was present in 17.65% and 12% respectively.[17,18] Similarly fever was present in 22% and 18.75% according to Liu et al and Maibam et al.[6,18] All the results are comparable to each other's concluding the facts that patients with pancreatitis presents with multiple symptoms along with classical pain abdomen.

In this study serum amylase and serum lipase was raised in 53 (80.3%) and 58 (87.9%) cases respectively. In study by Ramzan et al and Papavramidis et al raise serum amylase was seen in 72.6% and 95.37% respectively.[2,17] In the study by Hegab et al threefold elevation of serum amylase and lipase seen in 88% cases.[3] Thus, lab findings of threefold elevation of amylase and lipase levels helps us to diagnose case of pancreatitis in suspected cases.

Current study shows that USG can demonstrate features of pancreatitis in 15 (22.72%) cases only but it can distinguish between biliary, non-biliary cause of known case of acute pancreatitis in 100% cases. Similar results were shown by Hegab et al with detection of signs of acute pancreatitis by USG only in 20% cases.[3] This could be due to presence of overlying bowel gas, operator's experience and refinement of devices. Thus, USG is more useful to separate biliary cause of known case of acute pancreatitis rather than diagnosis of acute pancreatitis.

In this study CECT abdomen could demonstrate features of pancreatitis in 100% cases. CECT was also useful to detect complications in this study. This 100% detection of pancreatitis by CECT was also shown by Hegab et al

and van Randen et al.[3,19] Thus CECT abdomen is the most sensitive and specific investigation for diagnosis of pancreatitis with additive benefit of detecting complications. Since people in developing countries like ours are financially poor this investigation is used only in limited cases for diagnostic dilemma and to detect complications.

In this study only 6 (9.1%) patients had severe pancreatitis which is comparable with Anand et al and study by Reid et al with prevalence of 15% and 12.2% respectively.[16,20] This shows that most of the cases have benign course and is treatable if managed properly.

This study followed modified WHO analgesic ladder for pain management. Meng et al did not favor any particular analgesics for pain management in acute pancreatitis.[21] So, choice of analgesics may vary depending upon severity of pain, choice of treating physician, and hospital guidelines.

In this study only the patients who had severe pancreatitis were treated with antibiotics of carbapenems group. The Japanese guidelines 2015 advocated for use of antibiotics within 72 hours of disease onset in order to decrease mortality rate and infectious complications in severe pancreatitis cases.[22] While American college of gastroenterology (ACG) and international association of pancreatology/American pancreatic association (IAP/APA) guidelines don't support for prophylactic use of antibiotics. So prophylactic use of antibiotics in severe cases is still in dilemma.[23,24]

In this study management of infected necrosis was done by step up approach with antibiotics along with percutaneous drainage in 2 (3.03) cases. None of the patients needed necrosectomy. 2019 world society of emergency surgery (WSES) guidelines for management of severe acute pancreatitis advised for step up approach starting with percutaneous or endoscopic drainage followed by minimally invasive surgical techniques like trans gastric endoscopic necrosectomy or video assisted retroperitoneal debridement (VARD).[25]

In this study 21 (31.8%) patients underwent cholecystectomy among which 13 (19.7%) was interval and 8 (12.1%) were index cholecystectomy. This less acceptance of index cholecystectomy could be attributed to patients' lack of awareness, unwillingness for surgery, financial crisis, limited resources. In this study mortality occurs in 2 (3%) cases, both of the case had severe pancreatitis and belong to age group of >60 years. Both increase in age and severity of disease was associated with poor prognosis and is statistically significant. So, patients with advanced age and severe pancreatitis should be managed carefully to improve outcome.

Current study shows recurrence of biliary pancreatitis in 15 (22.7%) patients. While Hammarstrom et al and Paloyan et al shows recurrence of 12.5% and 48% respectively when patients were not subjected to cholecystectomy.[26] Van Baal et al in their study conclude that risk of recurrent biliary pancreatitis is high in those patients who are waiting for interval cholecystectomy so index cholecystectomy should be advised for suitable patients.[27]

Limitations

It was conducted in single center. As PAHS is a tertiary center referral bias may present which may alter the actual incidence and severity of disease.

CONCLUSION

Female gender with age group of 40-60 years. predominates acute biliary pancreatitis. Though most of the cases are mild and have benign course, severe cases and patients with advanced age are associated with high mortality. USG has better role in distinguishing biliary and non-biliary cause of acute pancreatitis than diagnosis of pancreatitis. While CECT is the most sensitive and specific to diagnose pancreatitis with additional ability to detect complications. Acceptance of index cholecystectomy is very low.

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