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Evaluating Adherence to Evidence Based Clinical Guidelines in Initial Management of Acute Biliary Pancreatitis in Academic Medical Center in Nepal

Sandesh Shrestha,[1] **Sushim Bhujel**,[1] **Bipin Chaudhary**,[1] **Narayan Prasad Belbase**,[2] **Saroj Babu Pradhan**,[2] **Hari Prasad Upadhyay**[3]

[1]Department of General Surgery, [2]Department of Gastrointestinal Surgery, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal, [3]Department of Statistics, Birendra Multiple Campus, Bharatpur, Chitwan, Nepal.

ABSTRACT

Background

Acute biliary pancreatitis (ABP) is a common acute abdominal condition and is accompanied by potentially severe local or systemic complications, and high mortality. This study aimed to compare the current practice pattern in the management of ABP at our hospital with the recommendations provided by current guidelines.

Methods

A total of 55 patients with ABP managed between January 2024 and December 2024 were included in the study. Data were extracted from hospital records and reviewed for adherence to recommendations from recent guidelines on management of ABP. Compliance was calculated as a percentage of patients managed according to the recommendations from the guidelines.

Results

The majority of patients 35(63.6%) had mild ABP, followed by moderately severe 13(23.6%) and severe ABP 7(12.7%). The lowest adherence between daily clinical practice and recommendations included the implementation of early ERCP in patients with cholangitis with ABP (0%), the implementation of index cholecystectomy (14%), and the routine use of prophylactic antibiotics (35%).

Conclusions

The study demonstrated a generally low level of compliance to evidence-based recommendations for the treatment of ABP, with variability based on severity of ABP. Identifying gaps and implementing measures to address them allows for continued improvement in the management of patients with acute pancreatitis.

Keywords: acute biliary pancreatitis; audit; guidelines; compliance.

Correspondence: Dr. Sandesh Shrestha, Department of Gastrointestinal and General Surgery, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: drssbu@gmail.com, Phone: +977-9851240989.
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INTRODUCTION

Acute biliary pancreatitis (ABP) is an inflammatory condition of the pancreas caused by gallstones.[1] It is a common acute abdominal condition and is accompanied by potentially severe local or systemic complications, and high mortality.[3] Despite much research and guidelines, the management of acute pancreatitis still has poor outcomes; particularly among the severe cases.[4] The adverse outcome associated with acute pancreatitis is varied by regions with mortality reaching up to 2% in western countries[5–8] and 7.5% in Asia.[9] Unfortunately, in Nepal the rate of morbidity and mortality is still high, ranging from 6.5% to 9.3%.[13,14] One of the reasons for the poor outcome of acute biliary pancreatitis and the variation in outcomes among regions could be due to poor compliance to guidelines. With this in mind, this study aimed to compare the current practice pattern in the management of ABP at our hospital with the recommendations provided by current guidelines.[1,11–13]

METHODS

A retrospective cross sectional audit was conducted to evaluate compliance with established clinical guidelines in the initial management of patients diagnosed with ABP. Thi study was conducted at GI & General Surgery Department at College of Medical Sciences-Teaching Hospital (COMS-TH) Bharatpur, Chitwan, Nepal. The ethical approval was taken from Institutional Review Committee (IRC) of College of Medical Sciences-Teaching Hospital (COMS-TH), (Ref No. COMSTH-IRC/2025-030). All patients aged over 18 years who met the Revised Atlanta Classification (RAC) criteria[2] for a diagnosis of ABP during the study duration, i.e., from January 2024 to December 2024, were included in the study. Patients referred after management in other institutions for more than 72 hrs, patients with malignancies such as pancreatic cancer, prostatic cancer, and lung cancer, and patients with chronic pancreatitis were excluded. Data were extracted from hospital records and included patient demographics, comorbidities, severity (Revised Atlanta Classification), relevant laboratory tests, imaging tests, outcomes, local and systemic complications, SIRS response, admission to High Dependency Unit (HDU) and Intensive Care Unit (ICU), nutrition management, antibiotic use, biliary tract management, and surgical intervention for gallstone. Compliance was determined by comparing the collected data with recommendations from current evidence-based guidelines: IAP/APA (2013),[15] Japanese (2015),[16] AGA Institute guidelines (2018),[12] and WSES guidelines.[1] Initial clinical management for the first 7 days or until the patient was discharged (whichever came earlier) was evaluated to determine compliance. All collected data were analyzed with SPSS Version 16. Descriptive statistics were used to summarize demographic and clinical characteristics. Compliance was calculated by the percentage of patients who were managed according to each recommendation.

RESULTS

A total of 55 patients with acute biliary pancreatitis (ABP) were included in the audit. Data on a total of 63 patients were collected; however, 8 patients were excluded while 3 patients were cases of malignancy, including lung, periampullary, and prostate cancer; 3 cases already had cholecystectomy done; and 2 patients were cases of chronic pancreatitis. The majority of patients were female 42(76%) and the mean age was 59 ± 17 years. The most common comorbidity 19(35%) was hypertension, followed by diabetes mellitus 10(18%), COPD 4(7%), and ischemic heart disease 1(2%). According to the Revised Atlanta Classification, the majority of patients 35(63.6%) had mild ABP, followed by moderately severe ABP (23.6%) and severe ABP 7(12.7%) (Table 1).

Compliance with the selected evidence-based recommendations is shown in (Table 2). The audit involved evaluation of adherence among 36 patients with the recommendation against routine prophylactic antibiotics for patients without proven or suspected infection. The remaining 19 patients either had proven or had suspicion of infection due to persistent leukocytosis and fever. Adherence to this recommendation was 35% among all patients

Table 1. Baseline characteristics of the patient cohort, stratified according to revised atlanta classification (RAC). (n=55)

Variables	Revised Atlanta Classification			
	Overall n = 55	Mild Acute Pancreatitis n = 35	Moderately severe Acute Pancreatitis n = 13	Severe Acute Pancreatitis n = 7
Age (Mean ± SD)	59 ± 17	56 ± 17	62 ± 17	66 ± 11
Sex				
Female n (%)	42 (76%)	30 (86%)	8 (62%)	4 (57%)
Male n (%)	13 (24%)	5 (14%)	5 (38%)	3 (43%)
Previous episode of acute pancreatitis n (%)	6 (11%)	3 (9%)	3 (23%)	-
Comorbidities				
History of diabetes mellitus n (%)	10 (18%)	5 (14%)	3 (23%)	2 (29%)
History of HTN n (%)	19 (35%)	11 (31%)	5 (38%)	3 (43%)
History of COPD n (%)	4 (7%)	2 (6%)	2 (15%)	-
History of chronic kidney disease n (%)	-	-	-	-
History of ischemic heart disease n (%)	1 (2%)	1 (3%)	-	-

Table 2. Compliance with selected evidence-based recommendations. (n=55)

Statement	Target population (n)	Compliance n (%)
Routine prophylactic antibiotics are not recommended for all patients with acute pancreatitis	All patients with ABP without proven infection or suspected infection (36)	11 (35%)
	All patients with mild ABP without proven infection or suspected infection (29)	11 (42%)
	All patients with moderately severe ABP without proven infection or suspected infection (6)	0 (0%)
	All patients with severe ABP without proven infection or suspected infection (1)	0 (0%)
Patients with organ failure should be admitted to an intensive care unit (ICU)	Patients with severe ABP with transient organ failure (7)	4 (57%)
Patients with severe ABP need to be assessed with CE-CT	Patients with severe ABP (7)	6 (86%)
Optimal timing of index CE-CT assessment is 72-96 hours after onset of symptoms	All patients with ABP (21)	15 (71%)
	Patients with mild ABP (6)	5 (83%)
	Patients with moderately severe ABP (9)	6 (67%)
	Patients with severe ABP (6)	4 (67%)
Early (within 24 hrs) oral feeding as tolerated rather than keeping the patient nil per oral	All patients with ABP (55)	50 (91%)
	Patients with mild ABP (35)	35 (100%)
	Patients with moderately severe ABP (13)	12 (92%)
	Patients with severe acute biliary pancreatitis (7)	3 (43%)
Early ERCP/ES should be performed in gallstone-induced ABP when complications for cholangitis occur	Patients with ABP and cholangitis (ERCP/ES performed < 72 hrs) (2)	0 (0%)
Laparoscopic cholecystectomy during index admission rather than after discharge is recommended in mild acute gallstone pancreatitis	Patients with mild ABP (35)	5 (14%)

with ABP who had no proven or suspected infection. When stratified by severity, compliance was highest in patients with mild ABP (42%) but none of the patients with moderate or severe ABP without proven or suspected infection were managed according to this guideline. These findings indicate that there was substantial noncompliance with the recommendations, particularly in patients with higher disease severity. Patients with severe ABP (n=7) were evaluated for adherence to the recommendation regarding ICU admission for patients with organ failure. The compliance with the guideline was low, with only 4 patients (57%) admitted to the ICU. In these severe ABP individuals, respiratory failure was the most frequent organ failure (4, 57%), whereas renal failure, renal and respiratory failure, and renal, respiratory, and cardiovascular failure all occurred in one case each (Table 3).

Table 3. Organ failure, stratified according to Revised Atlanta Classification (RAC). (n=55)

Variables	Revised Atlanta Classification			
	Overall n (%)	Mild Acute Pancreatitis n (%)	Moderately severe Acute Pancreatitis n (%)	Severe Acute Pancreatitis n (%)
Organ Failure during hospitalization	14 (26%)	-	7 (54%)	7 (100%)
Cardiovascular	-	-	-	-
Cardiovascular, Renal	-	-	-	-
Cardiovascular, Respiratory	-	-	-	-
Cardiovascular, Renal, Respiratory	1(2%)	-	-	1 (14%)
Renal	2(4%)	-	1 (%)	1 (14%)
Respiratory	10(18%)	-	6 (%)	4 (57%)
Renal, Respiratory	1(2%)	-	-	1 (14%)

The adherence to guidelines regarding assessment with CECT in severe biliary pancreatitis was high, with six (86%) of these patients undergoing CECT assessment. CECT was not done in the remaining one patient as the patient was referred to another center for ERCP. Compliance with the guideline for timing of CE-CT assessment after 72-96 hours of onset of symptoms was 71% among all patients with acute biliary pancreatitis. The highest compliance was observed in patients with mild acute biliary pancreatitis (83%), while compliance was lower but similar in moderately severe (67%) and severe cases (67%). In two patients each of moderately severe and severe ABP and one patient of mild ABP, early CE-CT assessment was done for diagnostic dilemma. However, no information was available for the reason of early imaging in remaining cases.

Compliance regarding early oral feeding, as recommended by guidelines, was good; all patients with mild ABP and 95% of moderately severe ABP were allowed early oral feeding. However, compliance dropped notably in patients with severe ABP (43%). While one patient with severe ABP could not tolerate oral feeding within 24 hours, the other three patients had no obvious reason for the delay. None of the patients with cholangitis underwent ERCP/ES within the recommended 72 hours window, resulting in no compliance with the guideline. Index cholecystectomy was performed on a very modest number of individuals 5(14%) with mild ABP. Three of these patients underwent laparoscopic cholecystectomy, one underwent open cholecystectomy due to advanced age, comorbidities, and concern about suitability for general anesthesia, and one patient required laparoscopic converted to open cholecystectomy for intraoperative difficulty.

DISCUSSION

This audit reveals significant variability in adherence to evidence-based guidelines for the management of ABP across different recommendations. Although compliance was satisfactory in areas like assessment with CECT in severe ABP, early oral feeding, and optimal timing of index CECT assessment, there

is potential for improvement with regard to the use of prophylactic antibiotics, admission to Intensive Care Unit (ICU) in cases of organ failure, index cholecystectomy, and early ERCP in cases of cholangitis. Many factors may contribute to the high variability in the compliance rate of each selected item. These factors include hospital facilities, organizational pathways and surgeons' skill in performing laparoscopic surgery of hot gallbladders.[10] Prophylactic antibiotics were frequently prescribed, with 65% of patients being prescribed antibiotics in the absence of proven or suspected infection, highlighting the need for better antibiotic stewardship. This result is similar to the study by Baltatzis et al., that reported_widespread antibiotic use in acute pancreatitis, with prophylaxis rates ranging from 41% to 88%.[17] From the global healthcare perspective, inappropriate use of antibiotics is a key driver in antibiotic resistance, which has risen alarmingly over the last few decades, and represents a potent threat to the welfare of humanity in the 21st century. [18]

Moreover, unnecessary antibiotic use can lead to several adverse outcomes in ABP, including antibiotic resistance, increased risk of fungal infections, and adverse drug reactions. [19] Although routine prophylactic antibiotics are generally not recommended, there are specific scenarios in which antibiotics may be necessary and beneficial; including cases of infected necrosis, cholangitis, or extra-pancreatic infections.[19] One of the challenges in management is difficulty in differentiating infection from persistent fever with SIRS; thereby increasing the prescription of prophylactic antibiotics. Thus, further research is required to understand the role of biomarkers in guiding antibiotic use and the development of tailored antibiotic strategies.[21]

Regarding admission to ICU for severe ABP patients, only 57% (n=4) of patients were managed in ICU. Tan et al., also reported a low compliance of 40 %.[22] Similar to the study by Tan et al., in our hospital as well, all the remaining patients of for severe ABP not admitted to ICU were managed in HDU, where the patients were observed closely to be shifted to ICU if ventilator support was required. However, none of these patients required ventilator support and thus did not require an upgrade to ICU management from HDU.

Regarding imaging, compliance was good for the assessment of severe ABP with CECT. However, the timing of CECT needs improvement. Almost one third of these patients underwent CECT before 72 hours. Bhatt et al. also reported a similar compliance of 67%.[23] Unless for diagnostic dilemmas, it is advisable to wait for 72 hours for assessment with CECT, as CT scans acquired early have low yield and have no implication in clinical management.[24] Seven patients (two patients each of severe and moderately severe ABP and one patient of mild ABP) among the overall patients with ABP had undergone early CECT for severity assessment; however, there was no obvious reason in others. Thus, development and reinforcement of hospital protocol could ensure better compliance. Providing nutrition through the digestive tract is important in patients with ABP because it helps to maintain gut barrier function, reduce the risk of infection, and promote healing.[25] In our hospital, compliance was good regarding early oral feeding in mild and moderately severe patients: 100% in mild and 92% in moderately severe patients. Although only 43% of severe patients had taken oral feeding within 24 hours, the overall compliance in all patients of ABP was 91%.

This compliance is much better than those reported by Podda et al.,[10] who reported a compliance of 44%, and Machicado et al., [26] who reported a compliance of only 27% among all patients of ABP. Overall, compliance was better in our study, probably due to our institution being a teaching institute with academic programs where cases are discussed during rounds and implementation of guidelines is encouraged. However, there is still room for improvement in adherence to this recommendation among severe patients. Use of urgent ERCP in ABP patients with cholangitis has been supported by Cochrane meta-analysis.[27] However, none of the patients with cholangitis in our study underwent urgent ERCP within 72 hours. Podda et al., also reported a

compliance of only 46%.[10] One of the reasons for this delay is due to the clinical challenges of distinguishing patients with cholangitis and those with cholestatic liver function tests and SIRS.[22] In addition, due to the lack of an ERCP facility at our institution, these patients are referred to another center, contributing to delays in timely ERCP management. Performing LC during the index admission for mild AGP provides the benefits of prevention of recurrent biliary attacks, reduced hospital stays and cost-effectiveness.[29, 30] Despite these clear benefits of index LC, studies have consistently reported suboptimal compliance with guideline recommendations. Although some studies have reported good compliance, most others have reported poor compliance. For instance, Zainab et al. reported compliance of 67% of patients regarding index cholecystectomy(29) while Jeremy Cheong et al. reported compliance of only 15%.[32] Some of the reasons contributing to the lack of compliance may include the unavailability of advanced laparoscopic instruments, surgeons' avoidance of perceived increased operative difficulty and complications, and patient preference. Thus, further studies are required to evaluate reasons why patients do not receive index cholecystectomy for mild ABP and develop strategies for better adoption.

CONCLUSIONS

The study demonstrated a generally low level of adherence to evidence-based recommendations for the treatment of ABP. The most commonly discordant gaps between daily clinical practice and recommendations included the implementation of index cholecystectomy, the use of prophylactic antibiotics, the implementation of early ERCP in patients with cholangitis, and the optimal timing of the index CT scan.

Limitations: It is a retrospective study performed by chart review; therefore, we could not adequately account for the rationale that the managing clinician may have used to manage the included patients. Although the charts have been extensively reviewed and cases were discussed with the treating physicians, the retrospective study design creates limitations. For instance, regarding the choice of index cholecystectomy for mild cases, there may be a cohort of patients who were not suitable for early surgery. Secondly, the study was conducted at a single center, which restricts the applicability of the results to other settings with different clinical practices, or resource availability. A multi-center approach would have provided a more diverse and representative sample. Finally, the small sample size limits the ability to establish causal relationships and may affect the generalizability of the findings, and thereby limit the reliability and validity of the conclusions.

Clinical Implications

There is variability in adherence to various guidelines among different severity groups. To reduce variation in areas such as early oral feeding and optimal timing of CECT assessment, regular clinical audits and strict protocol reinforcement might suffice. However, further research is needed in other areas, such as delayed ERCP, inadequate index cholecystectomy, and excessive use of prophylactic antibiotics.

Future Research directions

Further studies are needed to understand the reasons for the lack of adherence. For instance, a study regarding the use of biomarkers such as procalcitonin to differentiate infection from fever with SIRS could help reduce the use of prophylactic antibiotics. The reason for the poor index cholecystectomy rate could be due to the unavailability of advanced laparoscopic tools or perceived fear of intraoperative difficulty and surgical complications by the operating surgeons. Detailed studies to identify the hindrance to adherence could help develop strategies to improve compliance.

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